

SYMPOSIA

S1- THE NIA AND FNIH SARCOPENIA PROJECT 2: PROJECT UPDATES AND PRELIMINARY RESULTS.

S. Bhasin (Boston, USA)

Introduction: In this ongoing project funded by the National Institute on Aging and the Foundation for the NIH, we aim to develop and assess diagnostic cut-points for low muscle mass and strength that predict mobility disability (objectively defined as walking speed <0.8 m/s). To do this, we have collected and harmonized data from two types of studies: large cohort studies of older adults, and smaller randomized trials and studies of those with specific medical conditions (such as HIV). Data from the large cohort studies will be used to develop cut-points, and the cut-points will be evaluated in the smaller randomized studies and clinical populations. **Objectives:** For this symposium, we will present preliminary analyses and results from the pooled analysis of the cohort studies. First, we will discuss harmonization of data (including lean mass values from DXA) across the studies, and highlight challenges and solutions developed. Second, body size is postulated to be an important confounder of the relation between strength, lean mass and mobility. Thus, we will summarize various approaches to allometrically scale muscle mass, strength and physical performance measures. Third, we will present preliminary results and initial identification of cut-points in measures of lean mass and/or strength that are associated with greater likelihood of mobility disability (walking speed <0.8 m/s). **Discussion:** A major goal of this project is to develop consensus surrounding these evidence-based cut-points, thus we aim to present interim results and gather feedback to address concerns and identify novel analyses to complete. **Conclusion:** The information presented at this symposium is a first step in developing consensus for sarcopenia definitions. Broad consensus for cut-points used for sarcopenia research will have important implications for clinical practice, public health and policy, and drug development.

Communication 1: *Harmonization of data including lean mass from dual x-ray absorptiometry*, K. Pencina, T. Travison (Boston, USA)

Communication 2: *Use of allometric scaling when considering body size in sarcopenia research*, T. Manini (Gainesville, USA)

Communication 3: *Preliminary results from cohort studies, and initial identification of cut-points*, P.M. Cawthon (San Francisco, USA)

S2- DO-HEALTH SARCOPENIA & FRAILTY. H.A. Bischoff-Ferrari¹, B. Vellas² (1. Zurich, Switzerland; 2. Toulouse, France)

Introduction: The European population is ageing rapidly, and the number of seniors aged 70 and older is predicted to increase from 25% to 40% by 2030, as is the number of seniors with mobility disability, physical frailty and resulting consequences, such as falls, fractures, and loss of autonomy. This causes enormous challenges to the individual, health economy, and societies as a whole, further magnified by unmet therapeutic needs for seniors and neglect of functional endpoints in today's medical care systems. A condition that is considered central to the development of physical frailty and its consequences is sarcopenia, the loss of muscle mass and strength. DO-HEALTH is the largest European healthy aging study and a 2x2x2 factorial design randomized controlled trial testing the role

of vitamin D and/or omega 3-fats and/or a simple home exercise program among 2157 community-dwelling seniors age 70+ and from 5 European countries. Apart from the 5 primary endpoints fractures, blood pressure, cognitive function, lower extremity functional decline, and rate of infections, DO-HEALTH includes several key secondary endpoints such as falls, incident sarcopenia and incident frailty. DO-HEALTH started in 2012, successfully recruited 2157 participants and will end at the beginning of 2018. At this point, baseline data is being entered into the data base and first analyses will be presented at the Mini-Symposium Frailty & Sarcopenia - DO-HEALTH (<http://dohealth.eu>). **Objectives:** We will present the baseline prevalence of sarcopenia, frailty and their relation with cognitive health in the 2157 participants from 5 DO-HEALTH countries (Switzerland, Germany, Austria, France, Portugal). Additionally, we will compare the instrument library of sarcopenia (muscle mass, gait speed, grip strength, SPPB) among seniors who reported a fall in the year prior to enrollment and those who did not. All analyses will address differences by gender and age. **Discussion:** With our analysis we aim to validate the instrument library of sarcopenia, further elucidate geographic variations in the prevalence of physical frailty and the "at-risk"-state of pre-frailty and its correlation with markers of physical function and their measures among participants with and without a prior fall. Furthermore, the coexistence of impaired cognition and physical frailty will be elucidated. Notably, the identification of an association between early changes in cognitive function and physical frailty asserts a potential window of opportunity for future preventive and therapeutic measures.

Communication 1: *Sarcopenia Prevalence in 5 DO-HEALTH countries – cross-sectional validation of the sarcopenia instrument library*, H.A. Bischoff-Ferrari (Zurich, Switzerland)

Communication 2: *Prevalence of frailty and pre-frailty in 5 DO-HEALTH countries – correlation with markers of physical function*, M. Gagesch (Zurich, Switzerland)

Communication 3: *Functional measures among fallers and non-fallers in 5 DO-HEALTH countries*, G. Freystätter (Zurich, Switzerland)

Communication 4: *Physical frailty and cognitive health in 5 DO-HEALTH countries*, P. Chocano (Zurich, Switzerland)

S3- WHO SYMPOSIUM: HEALTHY AGEING AND INTEGRATED CARE FOR OLDER PEOPLE

B. Vellas (Toulouse, France)

Communication 1: *Aligning health systems to the needs of older people: community care model for optimising trajectories of intrinsic capacity*, I. Araujo De Carvalho (Geneva, Switzerland)

Communication 2: *Biological theory for the construct of intrinsic capacity*, M. Cesari (Toulouse, France)

Communication 3: *Operational definition of Intrinsic capacity: evidence from clinical data*, C. Cooper (Southampton, United Kingdom)

Communication 4: *Closing the evidence to practice gap: WHO ICOPE guideline recommendations*, J. Amuthavalli Thiyagarajan (Geneva, Switzerland)

S4- PITFALLS IN THE MEASUREMENT OF LEAN BODY MASS: A NEED FOR CONSENSUS AND STANDARDIZATION OUTCOMES OF AN ESCEO WORKING GROUP UNDER THE AUSPICES OF WHO-EUGMS-IAGG-GARN AND IOF.
Y. Reginster¹, B. Vellas² (1. Liège, Belgium; 2. Toulouse, France)

Communication 1: *Welcome and scope of the meeting,* I.A. de Carvalho (Geneva; Switzerland)

Communication 2: *Why do we need standardization of Appendicular Lean Body Mass (ALBM) Assessment ?* M. Cesari (Toulouse, France)

Communication 3: *How can we achieve standardization of Appendicular Lean Body Mass (ALBM) Assessment ?* K. Engelke (Hamburg, Germany)

Communication 4: *Discussion,* F. Landi (Rome, Italy)

S5- DETECTING FRAILTY AND GERIATRIC CARE IN CLINICAL AND NON-CLINICAL SETTINGS.
L. Rodriguez-Mañas (Madrid, Spain)

Introduction: Frailty has emerged as one of the main risk factors, if not the most important, of disability. In addition, recent evidences have shown the effectiveness of different approaches, mainly based in physical exercise programs, in preventing or reversing frailty. These two facts, taking together, jointly to the difficulties in reversing disability when it has come, underline the crucial role of frailty in the contemporary approach to disability. However, three main issues have raised barriers to the broad implementation of strategies addressing this problem appropriately. First, there is a huge amount of data on population-based studies, but very few in clinical settings, which are the ones where the risk for functional decline is the highest. Second, the instruments to assess frailty have been validated in epidemiological settings, but very scarcely in the clinical settings where, moreover, they have not been directly compared in the same patients. And finally, the diagnosis of frailty is still based on purely clinical criteria, without having incorporated analytical variables in its refinement, like it is the usual case with other relevant clinical entities. These three main barriers are now being approached by three EU funded running projects: "FRAILTOOLS, FRAILCLINIC and FRAILOMIC". Although frailty is recognized in the scientific community and the object of major scientific investigation, its application in outpatient and inpatient care is complicated by the lack of a consensus on the assessment of frailty. Several assessment tools are described in the literature: L.P. Fried phenotype; FRAIL scale; 35-item Roockwood frailty index; Clinical Frailty Scale; the Survey of Health, Ageing and Retirement in Europe Frailty Instrument (SHARE-FI); Gérontopôle Frailty Screening Tool, Short Form Frailty Trait Scale, Tilburg Frailty Indicator, Gröningen Frailty Indicator, etc . Unfortunately, at this stage, the performance of these scales in the clinical and social scenario is unknown. **Objective:** The aim of the FRAILTOOLS project is to investigate the different domains of frailty that are assessed by some of these tools, compare them in their predictive power for negative health outcomes in elderly and inform about the feasibility to implement each tool in routine care by collecting information on completion rate, time needed to completed the assessment and the general health status of the participant. As a result, a recommendation on how to incorporate the assessment of frailty including guidelines for distinct settings (Inpatient Wards, Outpatient Consultations, Primary Care, and Nursing Homes) will be given. This is also one of the aims of the first phase of FRAILCLINIC project in no Geriatric clinical settings. In the -OMIC era, an important

area of research is dedicated to identifying OMIC biomarkers that correlated strongly with the diagnosis, incidence, and progression of frailty. FRAILOMIC is a large scale European research initiative that measured the following -OMIC biomarkers in 4 different nested case-control studies of European population-based cohorts: metabolism/muscle function, insulin and IGF1 signalling, stress response, cardiovascular homeostasis, inflammation, regulation of cell proliferation, regulation of gene expression, and candidate single nucleotide polymorphisms. **Discussion:** Apart from the complexity of assessing frailty, it has been recognized that the care of frail elderly patients requires specialized attention because of the heterogeneous health status in this population. Geriatric care provides this special attention but is often not available to or not though after by the different specialties in the hospital. FRAILCLINIC is a randomized clinical trial aimed at identifying the differential effect of adding a geriatric evaluation to the protocol routine care in the cardiology, oncology), major surgery wards and Emergency Rooms. This study is a multi-centre study with participating institutions located in Spain, Italy, and the United Kingdom. The first phase of FRAILCLINIC studying the feasibility of assessing frailty in the clinical settings using different questionnaires is complete. This phase highlighted that in addition to using the Fried criteria as the gold standard, the FRAIL scale showed a high kappa with Fried's criteria and was the most feasible in the inpatient setting. By the time of the conference, first results on the effectiveness of the geriatric care intervention will be available and presented. In FRAILOMIC project, the exploratory phase has been completed and biomarkers with a strong evidence of association with the diagnosis, the incidence, and the progression of frailty have been forward to the replication phase in 6 different case-control studies from Europe and South Africa. **Conclusion:** In this symposium, we will discuss the combined implications of the most recent results of FRAILTOOLS, FRAILCLINIC, and FRAILOMICS for clinical practice and research in frailty. For doing so, under the moderation of Prof. L. Rodriguez Mañas, who will make a brief introduction, Dr. M. Checa will address the topic of the performance of some frailty tools in non-geriatric clinical settings. She will also make a brief description of the intervention of a geriatrician in frail patients in order to improve the prognosis of these patients under FRAILCLINIC project. Dr. A. Pardo will address the topic of frailty assessment screening tools in geriatric clinical settings, primary care and nursing homes under FRAILTOOLS project. Dr. S. Walter will address the topic of the contribution of omics and non-omics to the best diagnosis and prognosis of frailty; to be covered by FRAILOMIC.

Communication 1: *Adequacy and Feasibility of Frailty Index in Inpatient Wards, Outpatient Consultations, Primary Care, and Nursing Homes: Results from the FRAILTOOLS,* A. Pardo (Madrid, Spain)

Communication 2: *Performance and concordance of frailty screening tools in clinical settings. Impact of supplementary Geriatric Interventions in hospitalized frail patients: Results from the FRAILCLINIC study,* M. Checa (Madrid, Spain)

Communication 3: *Biomarkers for diagnosis, risk, and progression of frailty: Results from the FRAILOMIC study,* S. Walter (San Francisco, USA)

S6- WEAKNESS, OBESITY, AND DISABILITY IN OLDER ADULTS: THE PREVENTABLE TRIAD. P. Cawthon (San Francisco, USA)

Introduction: Worldwide, there are more than 380 million people with diabetes, and the associated economic burden has reached nearly \$550 billion in the U.S. alone. Age-related declines in physical function and morphological health further contribute to exaggerated risk at the individual level; and yet, increases in the incidence of diagnosed diabetes combined with declining mortality or increased life-expectancy have led to an acceleration of lifetime risk and more years spent with diabetes at the population level. The expansion of the aging population combined with decreasing mortality has led to a diversification of cardiometabolic disease morbidity, including increased prevalence of aging-related mobility impairments and a substantial reduction in the number of nondisabled years. Recent evidence has suggested a compression of morbidity and disability among older adults with diabetes in the U.S., which may be a result of improved clinical management and public health advocacy regarding healthy lifestyles. Thus, early screening and continued health promotion efforts for healthy aging are vital to reduce the escalating burden associated with the multimorbidity of obesity and disability. Of relevance to both, there is a growing body of evidence linking muscular weakness, as determined by low grip strength, and a host of negative health outcomes including diabetes, disability, and early mortality. Given these links, grip strength has been labeled a “biomarker of ageing”; and yet, there is still a lack of consensus regarding the extent to which prevention of weakness may curtail the impending risk of chronic disease and disability in the older adult population. **Objectives:** The purpose of this symposium is to discuss current knowledge and new findings pertaining to the interrelationship between muscle weakness, diabetes, and disability in the older adult population, as well as evidence for prescription of exercise for the preservation of musculoskeletal and metabolic health throughout the lifespan. Current and late-breaking evidence from both clinical and epidemiological research will be provided to specifically discuss: (1) the current and newly-proposed definitions of “sarcopenia” and “weakness”; (2) the links between weakness, obesity, and frailty; (3) global estimates of sarcopenia, weakness, diabetes and disability; (4) the context of how weakness and diabetes during midlife influence disability onset and early mortality; and (5) the multi-directional association between age-related weakness, decreased movement efficiency, fatigue accumulation, and obesity. Moreover, case-reports and clinical vignettes will be provided to buttress the research-oriented discussion with the perspective of a world-renowned geriatrician.

Communication 1: *Fat and Musculoskeletal Interactions in Obesity, Aging and Neuromotor Disabilities: Unraveling Cause from Consequence*, M. Peterson (Michigan, USA)

The purpose of this lecture will be to highlight new findings from 4 recent population studies that sought to unravel the cross-sectional and longitudinal associations between weakness, diabetes risk, disability, and early mortality, among older adults from the Hispanic Established Population for the Epidemiological Study of the Elderly (H-EPESE), the Health and Retirement Study (HRS), the Mexican Health and Aging Study (MHAS), the China Health and Retirement Longitudinal Study (CHARLS), the English Longitudinal Study of Aging (ELSA), and the National Health and Nutrition Examination Survey (NHANES). Published and unpublished research will also be presented to highlight the phenotypes for high-risk clinical populations, such as neurological disabilities (e.g., cerebral palsy), as models reflecting premature/accelerated aging: 1. Peterson, M.D.,

Al Snih, S, Serra Rexach, SA, Burant, CF. Android Adiposity and Lack of Moderate and Vigorous Physical Activity Are Associated with Insulin Resistance and Diabetes in Aging Adults. *J Gerontol A-Biol.* 70(8): 1009-17, 2015. 2. Peterson, M.D., Zhang, P., Haapala, H.J., Wang, S.C., and Hurvitz, E.A. Adipose tissue distribution and musculoskeletal density in adults with cerebral palsy. *Arch Phys Med Rehab.* 96(10): 1828-33, 2015. 3. Peterson, M.D., Zhang, P., Duchowny, C., Markides, K.S., Ottenbacher, K., and Al Snih, S. Declines in grip strength and mortality risk among older Mexican Americans: Joint Modeling of survival and longitudinal data. *J. Gerontol. Ser A-Med. Sci.* 71(12):1646-1652. 2016. 4. Peterson, M.D., McGrath, R, Zhang, P, Markides, KS, Al Snih, S, Wong, R. Muscle weakness is associated with diabetes in older Mexicans: The Mexican Health and Aging Study. *J Am Med Dir Assoc.* 2016. 17(10): 933-938, 2016. 5. Research in Progress-Preliminary findings: Bidirectional association between muscular strength and diabetes in older adults: Results from the ELSA.

Communication 2: *Harmonizing, Operationalizing and Understanding Dynapenic Obesity: A Global Perspective*, T. Manini, (Gainesville, USA)

The purpose of this lecture is to discuss Dynapenic obesity in the context of population-based studies. Dynapenia— defined as the age-related loss in muscle strength— is due multiple factors stemming from both the muscular and nervous systems. Low strength alone is a consistent marker of poor health in older adults. Obesity coupled with low muscle strength appears to accelerate the risk of poor physical function and mortality. We will investigate this phenomenon in a pooled sample of 19,378 participants from three countries – US, Hong Kong, and Sweden. These cohorts also provide for a diverse sample— 32% are non-white— in which to compare racial and ethnic differences. We will first layout the harmonization procedures for comparing across cohorts and regions, providing a basis for operationalizing the analysis. Second, a series of analyses will examine the association of Dynapenic obesity (as compared to participants without Dynapenia and obesity and those who are obese and non-Dynapenic), mobility impairments, mortality and other geriatric health-related outcomes (e.g. falls). At the conclusion, the consistency of association across cohorts, regions, and ethnicities will provide a foundation for understanding the global impact of Dynapenic obesity.

Communication 3: *Frailty and Diabetes in the Clinic and the Nursing Home: Insights from the Bedside*, J. Morley (Saint Louis, USA)

The purpose of this lecture will be to discuss the clinical implications of obesity and diabetes in medically-complex older adults. Specific attention will be given to the obesity paradox, wherein obesity among diabetic older adults is associated with reduced mortality, and weight loss results in increased disability and mortality. Our studies have shown that frailty and sarcopenia are common in persons 50 to 60 years. In these persons both conditions increase mobility disability, functional impairment, hospitalisation, nursing home admission and mortality. Frailty is particularly common in inner city African Americans. Loss of muscle mass leads to reduced insulin receptors. Simple screening tools such as FRAIL and SARC-F can be used to identify diabetics who need intervention. Besides loss of muscle mass, depression, sleep apnea and hypotension cause fatigue. While sarcopenia is an important cause of falls in persons with diabetes other causes include orthostasis, postprandial hypotension and arrhythmias. The mechanisms underlying sarcopenia in diabetes

will be discussed. Most importantly, during this session clinical cases will be introduced to provide examples of the complexities of screening and diagnosing secondary conditions within the sarcopenia-diabetes-disability triad. **Conclusions:** The faculty of this symposium represent a diverse expertise and collectively have an extensive professional track record of scholarship in the fields of geriatrics and gerontology, exercise physiology, physical activity epidemiology, biostatistics, musculoskeletal physiology, and internal medicine. The overall purpose of this symposium will be to present both cutting edge research and insight from the clinic, with the specific intent to improve understanding regarding prevention of weakness, obesity and disability in older adults. We will provide evidence from ongoing harmonized global research efforts from numerous countries, and we will examine specific cases studies to underscore the implications of obesity, frailty and diabetes in medically-complex older adults.

S7- FRAILTY MEASUREMENT USING BODY WORN SENSORS: PROS, CONS AND EXAMPLES. J. Mohler (Tucson, USA)

Introduction: Frailty is an important geriatric syndrome linked to increased morbidity, higher health utilization, poorer health outcomes, and higher associated costs, and mortality. Objective, precise, reliable, and easily performed low-cost measurement of frailty is needed for both clinical and research purposes. Sensor based frailty measures (either clinical frailty tools akin to blood pressure measurement, or algorithms detecting frailty patterns using activity monitoring data) are becoming more common, and hold potential. However, these same measures may be impractical in busy clinical settings, and presently there is a lack of meaningful consumer / provider notification for activity monitoring based algorithms. Clinical determination of frailty can inform individualized treatment, optimizing outcomes, and potentially avoiding poor outcomes. Research determination of frailty can serve as an accurate measure of age-related heterogeneity, helping to risk stratify, and to identify best care practices. **Objectives:** The objective of this symposium is to discuss the relative merits of frailty measurement using body worn sensors, to provide specific examples, and to assess the measurement utility and practicality of each. **Discussion:** Symposium attendees will encouraged to discuss their perceptions and suggestions for improved sensor-based frailty measures. **Conclusion:** Sensor based frailty measures are becoming more common, and hold potential. Development of these tools must be informed by clinicians and researchers so as to assure practicality.

Communication 1: *Frailty Assessment – High Tech versus Low Tech Approaches and the True Nature of Frailty*, J. Bauer (Heidelberg, Germany)

Introduction: Although the concept of frailty has received wide recognition in geriatric medicine, and beyond, there is still no consensus on its definition and diagnosis. The physical phenotype of Fried and the deficit model of Rockwood may be regarded as antithetical approaches that are linked to differing operationalization. However, both concepts were developed primarily from a medical perspective. Future research in geriatric medicine and gerontology may have to return to the multidimensional nature of frailty that would include physical, psychological and sociological traits in a more balanced way. **Objectives:** In this presentation conventional tools, mostly questionnaires, will be presented that focus on the multidimensional nature of frailty including physical, psychological and sociological aspects. Next, technological approaches will be discussed that may be able to measure parameters that reflect the complexity of this syndrome. **Discussion:** The provocative nature and

the feasibility of a sensor-based multidimensional approach will be discussed with the other lecturers and the attendees of this symposium. **Conclusion:** Future technological advances will have to go beyond strength and mobility assessments to reflect the true nature of frailty.

Communication 2: *Sensor-based Upper Extremity Frailty Measurement*, N. Toosizadeh, C. Wendel, J. Mohler (Tucson, USA)

Introduction: Numerous multidimensional assessment tools have been developed to measure frailty; however, the clinical feasibility of these tools is often limited due to time, space and mobility concerns. We previously developed and validated a 20 second upper-extremity function (UEF) assessment method that incorporates wearable motion sensors, and negates the need to measure gait speed or grip strength. We performed a cross-sectional validation and index development study within the Banner University Medical Center, Tucson, and Banner Sun Health Research Institute, Sun City, Arizona. Community-dwelling and outpatient older adults (≥ 60 years; $n = 352$; 132 non-frail, 175 pre-frail, and 45 frail based on Fried criteria) were recruited. For the UEF test, each participant performed a 20-second trial of elbow flexion, within which they repetitively, and as quickly as possible, flexed and extended their dominant elbow. Using elbow motion outcomes two UEF indexes were developed (categorical and a change-sensitive score). The Fried index was compared as the gold standard. **Objectives:** The purpose of the current study was to validate the Arizona UEF method in a sample of community dwelling and outpatient older adults, integrating the extant Fried-equivalent categorical score (e.g., non-frail, pre-frail, and frail); and to develop a change-sensitive UEF score using the Fried index. **Discussion:** For the categorical index, speed of elbow flexion, elbow range of motion, elbow moment, number of flexion, speed variability and reduction within 20 seconds, as well as body mass index (BMI) were included as the pre-frailty/frailty predictor parameters. Results from 10-fold cross-validation showed receiver operator characteristic area under the curve of 0.77 ± 0.07 and 0.80 ± 0.12 for predicting Fried pre-frailty and frailty, respectively. UEF score (0.1 to 1.0) was developed using similar UEF parameters. **Conclusions:** We present an objective, sensor-based frailty assessment tool based on physical frailty features including slowness, weakness, exhaustion (muscle fatigue), and flexibility of upper-extremity movements. Within the current study, the method was validated cross-sectionally using the Fried index as the gold standard and the UEF categorical index and UEF frailty score were developed for research purposes and potentially for future clinical use.

Communication 3: *Sensor-Based In-Home Assessment of Gait, Balance, and Physical Activity for Discrimination of Frailty Status*, M. Schwenk^{1,2}, C. Wendel, B. Najafi, J. Mohler (1. Heidelberg, Germany; 2. Tucson, USA; 3. Houston, USA)

Introduction: Impaired physical function is a major indicator of frailty, and measures of functional performance are useful frailty screening tools. Most studies have used subjective or semi-objective (i.e., stopwatch) assessments, despite limitations including self-report bias and non-objective parameters. Using objective sensor-based measures may allow quantification of more sensitive parameters related to physical function for identifying frailty; however, to our knowledge, this has not been adequately explored. In addition to impairment in physical function, a low level of self-reported physical activity is a key indicator of frailty. Self-report questionnaires may not be suitable to document frailty-related physical activity characteristics due to limited validity in measuring low intensity activities of daily living– the most prevalent activities in frail older adults. In contrast to self-report, objective physical activity assessment using wearable

sensors can provide precise documentation of everyday activities including walking, standing, sitting, and lying, and in turn, may allow the identification of frailty-specific physical activity patterns in the home and community. Loss of complexity in the dynamics of physiologic systems (i.e., heart rate, hormonal rhythms) have been associated with frailty and may also be reflected by a less variable physical activity pattern. **Objectives:** In this presentation, sensor-derived markers of physical function (i.e., deficits in objective gait and balance parameters) and everyday physical activity (i.e., changes in walking, standing, sitting, lying, and transfer characteristics) useful for home-based frailty screening (i.e., separating between non-frail, pre-frail, and frail) will be presented. Subsequently, it will be shown that the 'loss of complexity paradigm' related to frailty is reflected not only by physiologic systems but also by everyday physical activity behavior. **Discussion:** To our knowledge, we present the first study that compared multiple instrumented assessments for quantifying physical function and physical activity across levels of frailty in a home and community environment. The presented sensor-based approach of monitoring frailty-specific sensor parameters may be incorporated into mHealth technologies (i.e., smartphone) and may serve as a 'frailty meter', similar to a Holter monitor. Steps towards an objective screening tool for the identification of clinical frailty syndrome will be discussed with the other lectures and the attendees of this symposium. **Conclusion:** mHealth technologies for accurate frailty screening have to incorporate both objective parameters related to physical functioning and physical activity.

S8- FRAILITY IN CLINICAL PRACTICE

Communication 1: *Tackling the challenges of frailty screening and care in low resource clinical settings*, M. Gutierrez Robledo (Mexico)

Communication 2: *Is Frailty the Clinical Expression of Sarcopaenia? An Exploration of this Hypothesis in Older People with Diabetes*, A. Sinclair (London, United Kingdom)

Communication 3: *A technical approach for providing an integrated care to frail people*, R. Rueda Cabrera (Granada, Spain)

S9- LOW MUSCULARITY AND LOW MUSCLE ATTENUATION IN EARLY STAGE CANCER: PREVALENCE, PREDICTORS AND SHORT AND LONG TERM PROGNOSTIC OUTCOMES: INSIGHTS FROM LARGE SCALE EPIDEMIOLOGICAL STUDIES.

B. Caan (Oakland, USA)

Emerging evidence suggests that low muscularity and poor muscle quality as measured by radiodensity has been associated with increased treatment toxicity, decreased time to tumor progression, and overall mortality and cancer-specific mortality in both breast cancer (BC) and colorectal cancer (CRC). In the cancer setting, with the typical age at diagnosis being over 50, it is likely that both age-related and cancer related (e.g., inactivity-, disease-, treatment-, and nutrition-related) factors play a role in contributing to low muscularity and poor muscle quality in cancer survivors. Those studying cancer cachexia and those in the gerontological sciences have long recognized the import of sarcopenia and muscle function and their contribution to optimal health outcomes. However, the prevalence and prognostic role of these characteristics of muscle in non-metastatic cancer patients has been greatly underappreciated. This session will contain three talks based on body composition data from the largest to date epidemiological cohorts of BC (n=3156) and CRC (n=3276) patients.

We will discuss the prevalence and predictors of low muscularity and low muscle attenuation in these populations as well as methods utilized to determine cut points for this population. Data will be presented on effects of low muscularity and low muscle attenuation and overall and BC and CRC specific mortality. Data on effects of low muscle on severe chemotoxicity, early stoppage and dose delays will be presented from a variety of studies and clinical translation discussed.

Communication 1: *Effects of low muscularity and low muscle attenuation on survival in early stage breast and colorectal cancer patients*, B. Caan (Oakland, USA)

Introduction: The relationship between BMI and cancer survival of many cancers is U-shaped. Those who are overweight or even Class I obesity, appear to have better survival. Consideration of muscle and body composition phenotypes may explain why patients with BC and CRC with higher than normal BMI have better survival. **Objectives:** Computerized Tomography Scans (CT) collected at diagnosis (2006-2011) from non-metastatic colorectal cancer patients (3276) and breast cancer patients (3,156) were used to estimate muscle area, muscle radiodensity and visceral and subcutaneous adiposity. Associations between muscle, muscle radiodensity and total adiposity and survival were examined using Kaplan Meier curves, Cox proportional hazards regression, and restricted cubic splines models. Low Muscle (LM) and Low Muscle Radiodensity (LMR) was defined using sex and body mass index specific cutpoints. Primary outcomes were overall mortality (OM) and cancer specific mortality. **Discussion:** Forty-two percent of CRC patients and 34% of BC patients had LM. Both LM CRC patients (HR 1.28; 95% CI 1.10, 1.49) and LM BC patients (HR 1.45; 95% 1.22, 1.73) had a higher risk of OM, compared to their counterparts who were not LM. For both CRC and BC, female patients who had both LM and high adiposity had even higher risks of OM when compared to female patients who had adequate muscle and lower adiposity or those with LM alone. Similarly, those with LM and LMR had worse outcomes than those with LM alone or those with adequate muscle radiodensity and no evidence of LM. **Conclusion:** Sarcopenia is associated with increased mortality, and should be a standard oncological marker among non-metastatic BC and CRC patients.

Communication 2: *Predictors of low muscularity and poor muscle quality in early stage breast cancer: An undetected risk factor*, W. Chen¹, E. Cespedes Feliciano² (1. Boston, USA; 2. Oakland, USA)

Background: Low muscle quantity and lower muscle radiodensity (low muscle quality, suggested by fat infiltration into muscle) increase risk of surgical complications and chemotherapy toxicity and are associated with worse survival in advanced cancer. Little is known about the prevalence or predictors of low muscle quantity and low muscle quality in early-stage breast cancer. **Methods:** We studied 2,468 Kaiser Permanente members diagnosed with Stage II-III breast cancer from 2005-2013. Using computed tomography (CT) scans of the third lumbar vertebra obtained as part of routine clinical care, we determined low muscle quantity (defined as skeletal muscle index < 41 muscle [cm²]/height [m²]) and low muscle quality (defined as < 25-Hounsfield Units for non-obese; < 33 for obese) based on previously published cutpoints. We assessed associations with key characteristics, including age, race/ethnicity, body mass index (BMI), stage, and co-morbidities using logistic regression. **Results:** Average age was 55 years and mean time from diagnosis to CT was 1 month. Both low muscle quantity (39%) and low muscle quality (28%) were common. In multivariable analyses, the odds of low muscle quantity and low muscle quality increased with age (per 5 years, Odds Ratio

[OR] 1.33; 95% confidence interval CI: 1.27- 1.40 and OR=1.57; 95%CI: 1.49-1.66, respectively). With higher BMI, the odds of low muscle quantity decreased (OR 0.79; 95% CI: 0.78-0.81 per kg/m²), but the odds of low muscle quality increased (OR per kg/m²=1.05; 95%CI: 1.03-1.06). Black and Latina women had lower odds of low muscle quantity and low muscle quality than Caucasians, whereas Asian women had higher rates of low muscle quantity. A higher Charlson co-morbidity score was associated with a higher odds of low muscle density, but there was no association with low muscle quantity. **Conclusion:** Low muscle quantity and low radiodensity are highly prevalent among breast cancer survivors. While older age is strongly associated with low muscle quantity and quality, these conditions occur across ages and stages. Differences in body composition by race/ethnicity and age may underlie differences in the association of BMI with cancer outcomes and may help guide clinical interventions.

Communication 3: *Skeletal muscle and severe treatment toxicity in cancer*, E.C. Feliciano (Oakland, Canada)

Background: Individualizing chemotherapy treatment is a significant challenge in oncology settings. While lower doses may be insufficient to treat the tumor, excessive dosing leads to severe toxicity .These toxicities are associated with dose delays, reductions, early stoppage, hospitalization or death. Emerging evidence suggests that a source of inter-individual variability is skeletal muscle mass. **Objectives:** This presentation will review the evidence and mechanisms behind skeletal muscle depletion and severe treatment toxicity in cancer including data results from a cohort of non-metastatic CRC patients that demonstrate that patients identified as low skeletal muscle have more treatment-related adverse outcomes such as grade 3-4 CTCAE toxicities, early discontinuation and dose delays. **Discussion:** The use of body surface area to individualize chemotherapy treatment ignores the large variability in skeletal muscle mass in contemporary cancer populations, as only height and weight is considered in its calculation. As such, people who have larger body weights, but low skeletal muscle may receive a large amount of chemotherapy, which for certain regimens cannot be efficiently metabolized in the lean tissue compartment. Emerging evidence suggests that muscle depletion is an independent predictor of severe toxicity in non-metastatic cancer treatment. This in turn, negatively affects cancer treatment and its outcomes. Dose-escalating studies personalized by body composition are underway, and will highlight whether skeletal muscle can be used to personalize chemotherapy treatment, and the consequential effect of incidence of severe toxicity and number of planned chemotherapy cycles. **Conclusion:** Our study shows that muscle measurements obtained from computed tomography (CT) images performed during routine oncologic care has the potential to individualize chemotherapy dosing better than body surface area. Body composition is a promising approach to individualizing chemotherapy treatment and should be explored in randomized controlled trials.

S10- SARCOPENIA RESEARCH UPDATE SINCE THE ASIAN CONSENSUS. H. Arai (*Obu, Japan*)

Sarcopenia is one of the most important geriatric syndromes nowadays and a major challenge to healthy aging. People with sarcopenia have worse clinical outcomes and higher mortality than those without. In this symposium, I will invite 3 distinguished researchers of sarcopenia in Asian countries who significantly committed to the development of the Asian consensus for sarcopenia and address major advances in sarcopenia research in Asia.

Communication 1: *Updates of Sarcopenia Research in Asia*, L.-K. Chen (Taipei, Taiwan)

Sarcopenia is a major challenge to healthy aging, while affected patients tend to have worse clinical outcomes and higher mortality than those without sarcopenia. The Asian Working Group for Sarcopenia (AWGS) published regional consensus guidelines in 2014, and more and more research studies from Asia have been published since then. After the introduction of the AWGS consensus, the reported prevalence of sarcopenia estimated by the AWGS criteria ranges between 4.1% and 11.5% of the general older population. However, the prevalence rates were higher when European Working Group on Sarcopenia in Older People cut-offs were used. Reported risk factors included age, sex, heart disease, hyperlipidemia, daily alcohol consumption, and low protein or vitamin intake; physical activity is protective. Some Asian studies found no significant skeletal muscle loss along with aging, and muscle strength might be a better indicator. Although AWGS 2014 diagnostic cut-offs were generally well accepted, some may require further revision in light of conflicting evidence from some studies. Asian people tend to have lower muscle mass, weaker grip strength, slower gait speed, and higher body fat mass with central distribution. Compared to Western populations, the rate of age-related muscle mass decline in older Asian people remains relatively unchanged, but the decline rate in muscle strength or physical performance is more significant along with aging. With aging, Asian people presented with greater increase in fat mass and higher prevalence of central obesity, especially in women. Due to the great impact of sarcopenia, a life course program for good nutrition and physical activities would be of great benefit. However, various research challenges remain to be resolved in the future and more outcome-based trials are needed to formulate the most optimal strategy for sarcopenia in Asia.

Communication 2: *Comprehensively preventive approach for sarcopenia-related multi-dimensional frailty in the community elderly*, K. Iijima (Tokyo, Japan)

Frailty is accelerated by sarcopenia, age-related loss of muscle mass and strength, and is largely overlapping geriatric conditions upstream of the disabling cascade. There are many multi-faced environmental and medical factors that contributes to the worsening of sarcopenia-based frailty. We therefore investigated the association of various contributing factors, including three categories (nutrition/oral functions, physical activity and social engagement), with sarcopenia. A Japanese large-scale longitudinal study, 'KASHIWA study', was based on data randomly selected community-dwelling older adults (aged 65-94) who participated in Kashiwa city, Japan. Using validation of hypothesis model by structural equation modeling, we found that social disengagement affected subsequent unbalanced diet, oral dysfunction and inadequate physical activity, leading to sarcopenia even in the early-stage. Intriguingly, the fault of all three categories significantly deteriorated odds ratio (OR; 3.5) of risk of sarcopenia compared to the complete attainment of three categories (OR; 1.0 as reference). In addition, with a renewed focus on "eating ability" in the elderly, we created the new concept, so-called 'ORAL FRAILITY'. This concept means the important message that slight decline and its overlay in multiple oral functions easily lead to sarcopenia-related physical frailty and further declines in oral functions (negative spiral flow) even at the earlier stage. In conclusion, our data suggest that the importance of the TRINITY, social engagement, nutrition (i.e., dietary intake and dental/oral management) and physical activity, in comprehensive assessment and effectively preventive approach for sarcopenia. Therefore, we have

already developed the community system to carry out the very simple health-checkup conducted by 'the healthy elderly citizen supporters' to prevent sarcopenia-based frailty. We first have to let the elderly in the community know the fundamental concept of "chew well, eat well, move well, and participate highly in society!" from the earlier stages, consequently leading to their behavior modification.

Communication 3: *Implications in using cutoff of gait speed and handgrip strength presented by Asian Consensus: experience from KFACS (Korean Frailty & Aging Cohort Study), C. Won Won, M. Kim (Seoul, Korea)*

Gait speed and handgrip strength are important factors to make diagnosis of sarcopenia and frailty, but their cutoff points are still controversial. The Asian Working Group for Sarcopenia (AWGS) recommended using the lower 20th percentile of handgrip strength of the study population as the cutoff value for low muscle strength before outcome-based data is available. Accordingly, low handgrip strength was suggested to be defined as <26 kg for men and <18 kg for women by AWGS. AWGS also suggested using 0.8 m/s of gait speed as the cutoff for low physical performance after extensive consideration of data available in Asian studies. As for handgrip strength, the measured values can depend on the used tool type and elbow position. Therefore, the methods used to characterize grip strength vary according to the choice of dynamometer or the measurement protocol used. Of note, the Smedly spring-type hand dynamometer tends to be measured lower compared to the Jamar hydraulic hand dynamometer. As for usual gait speed, the value varies with the distance measured, presence/absence of the acceleration phase, and using automatic sensor or just time watch. For example, 2.5 m gait speed measures less than 4 m gait speed. Furthermore, gait speed with standing-start is slower than that with acceleration phase. Anyhow, there is no international consensus on the method of measuring gait speed. A research project <Construction of Frailty Cohort for Elderly and Intervention Study(KFACS)> funded from Ministry of Health, Korea has been ongoing since December, 2015. KFACS recruits the sample (n=3,000) aged 70-84 years, stratified by age and gender, from urban and rural regions nationwide. An in-person interview and health examinations will be performed every 2 years. A preliminary data analysis including 483 subjects showed that lowest quintile of handgrip strength in men was 27.8 kg and that in women was 16.9 kg. And the lowest quintile of gait speed was 1.03 m/s in men and 0.93 m/s in women. What cutoffs of gait speed and handgrip strength are related to the bad outcomes including fractures will be analyzed after follow-up data are gathered.

S11- MOVING TOWARDS STANDARDIZED DATA AND OUTCOMES FOR FRAILTY STUDIES. J. Muscedere (*Kingston, Canada*)

Frailty and late life are one of the most pressing healthcare challenges facing the aging global population. Frailty is defined as a state of increased vulnerability resulting from (1)m reduced physiological reserve and loss of function across multiple systems, reducing the ability to cope with normal or minor stressors which can cause rapid and dramatic changes in health (2-4). Frailty is under recognized, underappreciated and associated with increased morbidity, mortality and healthcare resource consumption (5-9). Frailty is being increasingly reported in the geriatric literature and large number of frailty scales have been reported and validated (10, 11). No matter how it is measured or in what setting, frailty is associated with worsened outcomes (12-15). Despite poor outcomes and increasingly large frail populations, research on how to improve outcomes is in its infancy. A recent systematic review found only 38 published randomized trials

studying interventions for frailty (16). In the studies included in this review, frailty was variably defined as were the outcomes reported. Outcomes reported included changes in the frailty scales used, mobility, strength, weight, gait speed, insulin resistance and muscle mass. In addition, although the degree of frailty has been advocated as a potential outcome in frailty interventional studies, 20 potential instruments have been reported and there is no consensus as to which should be routinely used (17). Similarly in a recent scoping review of evidence for measuring frailty in pre-hospital and hospital settings, the majority of the studies identified patients included as frail but did not measure frailty objectively (18). In addition, many frailty studies report outcomes which are not patient centered and it is unknown as to outcomes preferred by patients, their families and/or caregivers. As an example, a survey of elderly patients identified quality of life, surviving with intact neurological function and avoidance of institutionalization in long term care facilities as being the most important as opposed to mortality and other process measures such duration of hospitalization (19). Moreover, it is necessary to make frailty research relevant globally. Frailty is a health concern not only in high-income countries but also of concern in low-and-medium income countries. To date, instruments and interventions have been largely developed in high resource countries challenging their translation to settings with different resources, needs, and priorities. To enable this, it is conceivable to conceptualize two different concepts of frailty. First, «as a disease» with physiological underpinnings and biologically based identification instruments. Second, frailty may also be conceptualized «as a condition of public health interest». As such, the frailty identification instrument would be tailored to models of care allowing response to local priorities of healthcare systems, implicitly accepting the possibility that different instruments and cut-points might be chosen. In both cases, frailty assessments and criteria would be based on key aspects of an individual's health status allowing for the collection of universal key items of data that could be tailored to the conceptualized model allowing plans of interventions tailored to the person and relevant health care system as advocated by the World Health Organization. Given the considerations above and in order to facilitate the future conduct of relevant, generalizable and healthcare context interpretable frailty research, it is important to reach consensus on; what is an appropriate outcome for a frailty study? What are key data elements and their definitions? How do we enable cross study comparisons and evaluations? How do we make frailty research relevant to all economic environments? This process has been conducted or is in process for other disease conditions (20). One of most advanced initiatives is OMERACT (Outcome Measurement in Rheumatology Clinical Trials) (21). Through this international effort, outcomes for many aspects of rheumatoid arthritis care have been articulated and frailty would benefit from similar efforts. An additional consideration is that funding agencies are increasingly advocating and embracing open scholarship and open data access (22, 23). The collection of standardized core data sets and outcomes would allow for data integration and comparisons across studies. Although all frailty studies would collect the same core data set and outcomes, study-specific data could be collected based on the needs of study investigators. To advance the study of frailty and interventions for frailty outcome improvement, we propose to convene an international panel of frailty researchers, clinicians, stakeholders and patients/caregivers. The objectives of this initiative will be: 1. To articulate the data elements and their definition that should be collected in frailty studies; 2. To articulate the outcomes that should be reported in frailty studies; 3. To articulate any further research that needs to be conducted to inform objectives 1 and 2. We will use a Delphi approach to reach consensus on common data elements/data dictionaries for frailty data, admission demographics and outcomes (24). 1. Bergman H, Beland F,

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Communication 1: *The need for standardized outcomes and data for frailty studies*, J. Muscedere (Kingston, Canada)

Communication 2: *Standardized frailty outcomes and data relevant to health care systems across the world*, M. Cesari (Toulouse, France)

Communication 3: *What can we learn from Outcome Measures in Rheumatology Clinical Trials (OMERACT)?* P. Tugwell (Ottawa, Canada)

S12- DOES NUTRITION PLAY A ROLE IN THE PREVENTION AND MANAGEMENT OF SARCOPENIA? R. Fielding¹, R. Rizzoli² (1. Boston, USA; 2. Geneva, Switzerland)

Communication 1: *Welcome and scope of the meeting*, I.A. de Carvalho (Geneva, Switzerland)

Communication 2: *Role of proteins*, L. Van Loon (Maastricht, The Netherlands)

Communication 3: *Role of calcium, dairy products and vitamin D*, Heike Bischoff-Ferrari (Zurich, Switzerland)

Communication 4: *Role of other nutrients*, Y. Rolland (Toulouse, France)

Communication 5: *Wrap-up*, R. Fielding (Boston, USA)

ORAL COMMUNICATIONS

OC1- UPDATE ON EFFECT OF BIMAGRUMAB IN PATIENTS WITH SPORADIC INCLUSION BODY MYOSITIS – IMPLICATIONS FOR FUTURE TRIALS. R. Roubenoff for the BYM338 Project Team (Basel, Switzerland; Cambridge, USA)

Background/Purpose: Bimagrumab (BYM338) is a novel fully human monoclonal antibody that binds competitively to activin type II receptors with greater affinity than natural inhibitory ligands such as activin and myostatin, thereby inducing skeletal muscle hypertrophy. This study examined efficacy and safety of bimagrumab on physical function, muscle strength and muscle mass in patients with sporadic inclusion body myositis (sIBM). **Methods:** RESILIENT was a multicenter, randomized, double-blind, placebo-controlled, dose-finding study (clinicaltrials.gov NCT01925209). Eligible participants were randomized (1:1:1:1) to receive i.v. infusions of bimagrumab 10, 3, 1 mg/kg or placebo every 4 weeks for at least 48 weeks. Change from baseline to Week 52 in 6-minute walk distance test (6MWD; primary outcome), quadriceps quantitative muscle testing (QMT), sIBM physical functioning assessment (sIFA) and lean body mass (LBM) were assessed. Safety assessments included recording of adverse events (AEs) and serious AEs. **Results:** 251 patients (mean[SD] age: 68.1[8.2] years; 162[64.5%] men; mean time since sIBM diagnosis: 4.6[3.53] years) were randomized and treated.

Participants on placebo and 1 mg/kg bimagrumab had a mean 6MWD decrease from baseline to Week 52 of 8.96 and 10.27 m, respectively, vs. an increase of 9.63 m for 3 mg/kg and 8.63 m for 10 mg/kg bimagrumab. Differences between treatment vs. placebo did not reach statistical significance ($p>0.1$). No consistent differences in quadriceps QMT were observed vs. placebo. However, at Week 52, there was less deterioration (mean treatment difference: 5.10; 0-100 scale) in the patient-reported outcome (PRO) instrument, sIFA, in 10 mg/kg bimagrumab vs. placebo ($p=0.03$), resulting in a clinically relevant and statistically significant increase in responders in this group (55% vs. 30%; $p=0.0115$). Bimagrumab showed a dose-dependent increase in LBM vs. placebo (mean treatment ratios: 3 and 10 mg/kg vs. placebo: 1.033 and 1.058, respectively), and substantial reductions in body fat ($p<0.01$). At Week 52, the difference was statistically significant for the 3 and 10 mg/kg doses ($p\leq 0.0001$). The most frequently reported AEs in the bimagrumab groups were diarrhea and muscle spasm. About one-third patients in all groups reported serious AEs, except for bimagrumab 3 mg/kg (17.5%). **Conclusion:** Bimagrumab was well-tolerated, increased LBM and showed a potential benefit in PRO, but did not reach the primary endpoint of improving 6MWD or showed an improvement in muscle strength. The combination of increased LBM and reduced FM suggests potential benefit in obesity.

OC2- A RANDOMIZED DOUBLE-BLIND (SPONSOR UNBLIND) PLACEBO CONTROLLED STUDY IN HEALTHY SUBJECTS TO EVALUATE: SAFETY, TOLERABILITY, PHARMACOKINETICS, AND PHARMACODYNAMICS OF THE REPEAT DOSES OF GSK2881078, A SELECTIVE ANDROGEN RECEPTOR MODULATOR. D. Neil, A. Russell, J. Billiard, A. Walker, M. Magee, E. Lewis, A. Chan (*King of Prussia, USA*)

Background: GSK2881078 is a non-steroidal, selective androgen receptor modulator (SARM) under investigation by GlaxoSmithKline (GSK) for treatment of mobility, disability, and functional limitation in men and women with muscle loss associated with chronic and acute illnesses. A non-steroidal, selective androgen receptor agonist can potentially act positively on muscle and bone while not adversely affecting the prostate gland in men or inducing hirsutism or virilization in women. **Objective:** GSK2881078 had previously been administered at doses up to 0.75 mg twice a day (BID) for 3 days and then once daily for 11 days in healthy male subjects, and at doses up to 0.35 mg BID for 3 days and then once daily for 11 days in healthy post-menopausal women. The intention of this phase 1B study was to provide sufficient confidence in the safety of the molecule at doses which suggest adequate target engagement to inform progression to proof of concept studies. **Measurements:** This was a randomized, placebo controlled, parallel group, repeat dose, dose-escalation study. The study population were healthy older males and post-menopausal females and approximately 90 subjects (about 15 per cohort) were randomized to complete approximately 72 (about 12 per cohort). A total of 6 cohorts were investigated: 3 cohorts of males and 3 cohorts of females. Within each cohort, subjects were randomized 2:1 to a single dose level of GSK2881078 or placebo. The doses for the first two cohorts of males were 1.5 mg and 0.75 mg, respectively, administered BID for 3 days followed by once daily for 25 days. The dose for the third cohort of males was 4 mg administered BID for 3 days followed by once daily for 53 days. The doses for the first two cohorts of females were 0.75 mg and 0.5 mg, respectively, administered BID for 3 days followed by once daily for 25 days. In the third cohort, women received 0.35 mg of GSK2881078 for 28 days and then a 1.5 mg of GSK2881078 for an additional 28 days. Both doses were administered BID for 3 days followed by once daily for

25 days. The initial doses for females were lower since women have higher sensitivity to androgens. DXA and MRI cross-sectional thigh scans were performed at baseline (up to 2 weeks prior to dosing), Day 14, on the last day of dosing (± 1 day) and at follow-up. In addition to routine safety monitoring and laboratory investigations, serum and plasma were sampled at various time points throughout the study to allow for investigation of exploratory biomarkers. **Results and conclusion:** Results and implications for further research will be presented at the meeting.

OC3- THE USE OF DIETARY SUPPLEMENTS AMONG OLDER ADULTS IN THE USA 2007-2010. J.T. Dwyer¹, R.L. Bailey², J. Gahche¹ (*1. Bethesda, USA; 2. West Lafayette, USA*)

Background: In the USA, dietary supplement (DS) use is high and more than 70,000 products of many different types are available for purchase. DS are regulated like foods and so premarket screening for safety, adverse reactions and efficacy is more limited than in countries where they are regulated as medicines. **Method:** Describe prevalence of DS use to identify possible risks of adverse reactions among older adults participating in two large US national health surveys: the National Health and Nutrition Examination Survey (NHANES; 2007-2010; 60+ years) and the National Health Interview Survey (NHIS; 2010; 65+ years). **Results:** Use of DS in NHANES over the past 30 days was high and increased from 66.1% to 67.6%, and 72.4% among those aged 60-69, 70-79, and 80 yrs. and older, respectively. Only 35.1% of users took a single DS, 24.9% used 2, 14.9% used 3, and 25.1% used ≥ 4 . DS use was 54.6% among non-users of prescription medications, 69.4% among those using 1-2, and 69.8% among those using 3 or more prescription medications. Motivations for DS use included both general health and condition-specific issues, such as bone health/strong bones/osteoporosis (36.2%), heart health (19.6%) healthy joints and arthritis (16.7%), preventing colds and boosting the immune system (11.6%), eye health (8.1%), anemia and low iron (5.6%), muscle related issues and muscle cramps (1.6%), and kidney and bladder health (1.1%). The vast majority of DS used were vitamins, minerals, fiber or fatty acids. Additionally, 7.9% of older adults reported using at least 1 botanical or herbal product, and 70% of those who used botanicals/herbals had done so for over 2 years. In the NIH's Dietary Supplement Label Database (DSLDB), a repository of virtually all DS product labels sold in the US, 6659 products had "herbal" on the label and 1043 in product names; 2452 labels included "botanical" and 122 in product names. In the NHIS, 22.6% of older adults reported functional limitations involving mobility, vision, hearing, communication, cognition and self-care. Limitations increased from 17.4% in 65-74 yr., 21.9% in 75-84 yr. to 41.9% in those ≥ 85 yr. Mobility difficulties were most common (17.1%) and markedly increased from 10.6% in 65-74 yr., to 14.6% in 75-84 yr. to 30.9% at ≥ 85 yr. In NHANES, 8.9% of older adults reported at least 1 glucosamine/chondroitin product (often marketed for mobility). Those who reported a history of arthritis were more likely to report using them than those without arthritis. In DSLDB appeals to those with functional limitations included 6733 products with "function" on the label and 33 product names including "function", and 432 products with "mobility" on the label and 14 with "mobility" in product names. **Conclusion:** DS use is pervasive among older adults in the USA, rising with advanced age and greater use of prescription medications. Healthcare providers should document DS use and counsel older adults to avoid adverse reactions and inefficacious therapies.

OC4- THORACIC CUT-OFF VALUES FOR CT ASSESSMENT OF SARCOPENIA. U. Nemeč, B. Heidinger, C. Sokas, L. Chu, R. Eisenberg (Boston, USA)

Background: The imaging of sarcopenia focuses on the qualitative and quantitative assessment of skeletal muscle mass, which can be accomplished effectively using computed tomography (CT). This imaging modality not only provides anatomic details, but also permits a visual evaluation of intramuscular and visceral fat content and allows for the calculation of total muscle areas (1). Sarcopenia has been implicated as a factor leading to adverse clinical outcomes (such as increased infection rate, prolonged hospital stay, higher risk of falling, and decreased overall survival) in surgical, oncologic, and cardiovascular patients (2-4). These diverse patient populations often undergo CT examinations for various reasons, so that these studies are frequently available for the assessment of skeletal muscle mass. Skeletal muscle cross sectional area (SMA) at the level of the third lumbar vertebra (L3) has been shown to correlate strongly with body muscle distribution, and internationally recognized cut-off values have been defined for this area (5). However, a diagnosis of sarcopenia for patients undergoing chest CT alone is limited, since this examination often extends only to the level of the twelfth thoracic vertebra (T12). Therefore, this study aims to define thoracic cut-off values for the CT-based diagnosis of sarcopenia by correlating thoracic skeletal muscle areas at the T7 and T12 levels with SMA3 values in CT scans of the entire aorta. **Method:** This retrospective, IRB-approved study included all patients at our institution who underwent transcatheter aortic valve replacement (TAVR) from October 2012 to May 2016 and had a preoperative contrast-enhanced CT examination of the entire aorta. SMA was measured on cross-sectional CT images at the L3 (SMA3), T7 (SMA7), and T12 (SMA12) levels. To calculate skeletal muscle index (SMI), SMA was normalized for stature [SMA (cm²)/height (m²)]. SMI3 cut-off values (men < 52.4 cm²/m²; women < 38.5 cm²/m²) were used according to the definition proposed by Prado et al (5). The strength of the relationship between SMI3 and both SMI12 and SMI7 was analyzed by calculating the Pearson correlation coefficient. Linear regression analysis was used to determine cut-off values for these regions. ROC analysis was performed to calculate the sensitivity and specificity of SMI7 and SMI12 cut-off values. **Results:** The study population consisted of 157 patients (men 79/157, women 78/157) with a mean age of 82±10 years (range, 33 to 100 years). Overall, 34% (54/157) of these patients were classified as sarcopenic according to the internationally accepted guidelines measured at L3. Of these, sarcopenia was diagnosed significantly more frequently in men (41/79; 52%) than in women (13/78; 27%) (P<0.001). The correlation between SMI3 and SMI12 was stronger (r=0.724, P<0.001) than that between SMI3 and SMI7 (r=0.594 P<0.001). Using linear regression analysis, thoracic cut-off values for the diagnosis of sarcopenia using SMI12 were calculated for males as 42.6 cm²/m² and for females as 30.6 cm²/m². For SMI7, cut-off values were determined as 46.5 cm²/m² for males and 32.3 cm²/m² for females. The sensitivity, specificity and ROC area of SMI12 cut-off values were 76%, 83%, and 0.79, respectively; for SMI7 cut-off values, they were 78%, 74%, and 0.76, respectively. **Conclusion:** This study shows that the diagnosis of sarcopenia can be made easily on chest CT, with SMI12 showing a stronger correlation than SMI7 with the internationally used SMI3. It also provides thoracic cut-off values for the T12 level that could be used to diagnose sarcopenia in the absence of an abdominal CT examination. 1. Rubbieri, G., E. Mossello, and M. Di Bari, Techniques for the diagnosis of sarcopenia. Clin Cases Miner Bone Metab, 2014. 11(3): p. 181-4. 2. Peterson, S.J. and C.A. Braunschweig, Prevalence of Sarcopenia and Associated Outcomes in the Clinical Setting. Nutr Clin Pract, 2016. 31(1): p. 40-8. 3. Larsson,

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OC5- IMPACT OF A LAY LED HOME-BASED INTERVENTION PROGRAMME ON QUALITY OF LIFE AND FEAR OF FALLING IN COMMUNITY-DWELLING PRE-FRAIL OR FRAIL OLDER ADULTS: A RANDOMISED CONTROLLED TRIAL. A. Kapan¹, E. Luger¹, S. Haider¹, S. Titzel², K. Schindler¹, T.E. Dorner¹, C. Lackinger¹ (1. Vienna, Austria; 2. Graz, Austria)

Background: In older individuals, mobility and fear of falling (FOF) interact with each other. FOF leads to a decline of daily physical activity and quality of life, an increased risk of falling and a loss of self-confidence. Due to the demographic aging process and the shortage of healthcare professionals, new intervention-based approaches are necessary. The aim of this study was to assess the effects of a 12-week home-based intervention program carried out by lay volunteers on different quality of life (QoL) domains and fear of falling (FoF) in frail older adults. **Methods:** In this randomised controlled trial (12 weeks), lay volunteers carried out home based interventions twice a week. Thirty-nine participants were randomised to a physical training and nutrition (PTN) group and 41 participants to a social support (SOSU) group. In the PTN group, strength training and conversation about optimising nutrition were performed twice weekly, and the SOSU group received home visits without intervention. FOF and change of FOF were assessed using the Falls Efficacy Scale – International (FES-I). Nutritional status (MNA®-LF), the Short Physical Performance Battery (SPPB), the Physical Activity Scale for the Elderly (PASE) and maximum handgrip strength and their changes were also assessed. The QoL was assessed with the WHOQOL-BREF and the WHOQOL-OLD instruments. The covariates, physical performance, daily physical activity, maximum handgrip strength and nutrition status were added to the model to explain the QoL and their changes. **Results:** Eighty participants were included, 86 % of the participants were female, the mean age was 83 years (standard deviation 8), 24% were older than 90 years. The mean FES-I score at baseline was 42.7 points and was significantly associated with the MNA®-LF, SPPB and PASE scores. The FES-I score significantly changed in the PTN group from 44.1 to 39.9 points over the course of the intervention. Twenty-seven percent of the participants showed a decreased FES-I score of at least 4 points. This decrease was associated with an increase in the SPPB score and an increase in handgrip strength. Further a significant between-group difference in past, present & future activities domain [(β (95% CI) 3.66 (0.13 to 7.18)] was revealed in the PTN group. In the PTN group significant within-group differences were observed in overall QoL, social relationship, and social participation. This effect was mediated through positive changes in maximum handgrip strength, physical performance, daily physical activity and nutritional status. In the SOSU group, no significant effect was observed in any QoL domains. **Conclusion:** A 12-week structured physical training and nutritional intervention carried out by lay volunteers, which leads to an increase in handgrip strength and improved physical performance, can reduce FOF by about 10% and has a significant influence on several QoL domains. The structured lay-led intervention showed to be an appropriate approach to tackle the shortage of healthcare professionals.

OC6- SAFETY, PHARMACOKINETICS AND PHARMACODYNAMICS OF BIMAGRUMAB: A PHASE I, RANDOMISED, DOUBLE-BLIND STUDY IN ELDERLY AND OBESE HEALTHY HUMAN PARTICIPANTS. D. Rooks¹, M. Bartlett², O. Petricoul², D. Laurent², R. Roubenoff² (1. Novartis Institutes for Biomedical Research, Cambridge, MA USA; 2. Novartis Institutes for Biomedical Research, Basel, Switzerland)

Background: Bimagrumb, a human monoclonal antibody, binds to activin type-II receptors and prevents binding of myostatin, activin A, and other ligands which inhibit muscle growth and protein anabolism, leading to increases in muscle mass in adults. The age-related progressive loss of muscle strength and body composition abnormalities, including obesity, can result in physical disability and loss of independence. This study aimed to investigate the safety, pharmacokinetics (PK), and pharmacodynamics (PD) of bimagrumb administration to elderly and obese men and women. **Methods:** This was a randomised, double blind, phase I study conducted in two groups: healthy elderly (aged 70-85 years) and obese adults (body mass index [BMI] 30-45 kg/m²). Elderly subjects were randomised to receive single intravenous (IV) infusions of 30 mg/kg bimagrumb (n=6) or 3 mg/kg bimagrumb (n=6) or placebo (n=4) and were followed-up for 20-weeks. Obese participants were randomised to receive a single IV infusion of 30 mg/kg bimagrumb (n=6) or placebo (n=2) and were followed-up for 12-weeks. Safety was assessed by physical exam, ECG, changes in laboratory values and the incidence of adverse events (AEs). PK parameters were assessed using the non-compartmental method. The PD effects of bimagrumb on thigh muscle volume (TMV; by magnetic resonance imaging), lean body mass (LBM; by dual-energy X-ray absorptiometry) and muscle strength (by one-repetition maximum leg press) were evaluated in the elderly cohort. **Results:** All randomised participants in the elderly (n=16) and obese cohorts (n=8) completed the study. Mean (standard deviation; SD) age of the elderly subjects was 74.5 (3.4) years who were predominantly Caucasian (94%) women (69%). The obese subjects weighed 98.03 (11.3) kg, had a BMI of 34.3 (3.9) kg/m² and, involved predominantly Caucasian (88%) men (63%). AEs mostly mild in severity were more frequent in subjects administered bimagrumb compared with placebo in both elderly and obese cohorts. The most common AEs in the elderly were upper respiratory tract infection (bimagrumb [n=1, 8.3%], placebo [n=2, 50%]), rash (bimagrumb [n=2, 16.7%], placebo [n=1, 25%]), pruritus (bimagrumb [n=2, 16.7%], placebo [n=1, 25%]), papule (bimagrumb [n=2, 16.7%], placebo [n=1, 25%]), and diarrhoea (bimagrumb [n=3, 25%], placebo [n=0, 0%]). Muscle spasms, muscle pain, and myalgia were reported in 3 of 12 elderly subjects on bimagrumb. In the obese group, rash and muscle spasms (bimagrumb [n=5, 83.3% each], placebo [n=0, 0% each]) were the most commonly reported AEs, suspected of being treatment-related. The variability in PK of bimagrumb in the elderly (~20% coefficient of variation [CV]) and obese (~10-20% CV) were comparable with those of healthy young subjects measured in prior studies. Non-linearity was observed in the concentration profiles that could be linked to target-mediated drug disposition, as previously described with healthy younger subjects, with a threshold for full saturation of the non-linear clearance at approximately 10-20 µg/mL. Dose proportionality for maximum drug concentration (C_{max}) was observed, but not for area under concentration-time curves (AUC_{last}) (Table 1). TMV increased to a similar level at Weeks 2 and 4 (p<0.01) in the two groups receiving bimagrumb, but remained unchanged in elderly subjects receiving placebo (Table 1). At Week 16, TMV values remained elevated in the 30 mg/kg group (p<0.01) and returned to baseline levels in the 3 mg/kg group (Table 1). Total LBM increased

in both bimagrumb groups compared with placebo. The mean change in LBM from baseline was greatest in 30 mg/kg group compared with 3 mg/kg and placebo groups but for both groups, LBM returned close to baseline values at the study end (Table 1). There was a significant decrease (9.3%; p=0.02) in body fat mass from baseline at Week 16 with 30 mg/kg bimagrumb. No trend for changes in muscle strength was detected in any group over the study period. **Conclusion:** Bimagrumb demonstrated acceptable safety and an appropriate PK profile in both elderly and obese populations. Exposure to a single dose of bimagrumb resulted in immediate increases in TMV and lean body mass. The duration of muscle hypertrophy was sustained in a dose-dependent manner in older adults.

Table 1
Pharmacokinetic parameters, thigh muscle volume, and lean body mass, in elderly and obese populations

Pharmacokinetic parameters:								
Bimagrumb dose (mg/kg)	AUC _{last} (day*µg/mL)			C _{max} (µg/mL)			T _{max} (h)	
	n	Mean	SD	n	Mean	SD	n	Median (min/max)
Elderly group								
3	6	399.0	68.7	6	90.7	11.3	6	4.0 (2.18-4.03)
30	6	7320.0	1490.0	6	982.0	171.0	6	4.0 (2.33-4.00)
Obese group								
30	6	7650.0	526.0	6	944.0	185.0	6	3.10 (2.05-4.00)
Thigh muscle volume: Elderly group								
% change from baseline								
Mean								
SD								
At Week 2								
3	3.83						1.844	
30	4.94						1.563	
Placebo	-0.6						1.859	
At Week 4								
3	5.33						1.752	
30	6.05						2.190	
Placebo	0.48						2.120	
At Week 16								
3	0.01						3.035	
30	4.52						3.310	
Placebo	-1.20						1.830	
Total lean body mass: Elderly group								
% change from baseline								
Mean								
SD								
At Week 16								
3	2.301						3.2990	
30	4.372						6.1877	
Placebo	-1.602						2.6344	
At study end								
3	0.742						2.5809	
30	0.713						4.7945	
Placebo	0.190						3.3754	

AUC_{last}, area under concentration-time curve up to last observed drug concentration; C_{max}, maximum observed drug concentration; SD, standard deviation; T_{max}, time to reach maximum drug concentration

OC7- FRAILTY IN CENTENARIANS: INSIGHTS FROM THE 5-COOP STUDY. M. Herr¹, K. Andersen-Ranberg², J. Aankri¹, Y. Arai³, S. Fors⁴, F. Herrmann⁵, B. Jeune², M. Parker⁴, Y. Saito⁶, D. Zekry⁵, J.M. Robine⁷ and the 5-COOP group (1. Paris, France; 2. Odense, Denmark; 3. Tokyo, Japan; 4. Stockholm, Sweden; 5. Geneva, Switzerland; 6. Nihon, Japan; 7. Paris & Montpellier, France)

Background: Because life expectancy is steadily increasing, information about the health and healthcare needs of the oldest old are needed. Frailty has emerged as a relevant predictor of health outcomes that can be used to target preventive actions. This study aims to describe the prevalence of frailty and associated factors in the centenarians participating in the Five Country Oldest Old Project (5-COOP). **Method:** People aged 100 years old were randomly selected in Japan, France, Switzerland, Sweden, and Denmark. Participants were interviewed and examined at their place of residence using standardized evaluation instruments. When not possible, the questionnaire was administered by phone (15.5%) or mailed to the

person (3.5%). The five frailty dimensions described by Linda Fried were investigated: weight loss (self-reported weight loss and/or body mass index ≤ 18.5 kg/m²), self-reported fatigue (when moving, resting or all the time), weakness (measure of grip strength lower than the 20th percentile and/or difficulty carrying a bag weighting 5kg), slowness (self-reporting low walking speed and/or difficulty walking up a flight of stairs), and low level of physical activity (no regular exercise or outdoor activity, self-reported). Differences between countries were investigated using logistic regression models for each individual criterion and Poisson modeling for the total number of criteria. Models were adjusted for gender, interview mode, proxy interview, and nursing home residency. Of note, information about fatigue was imputed based on gender and information about the other four criteria for Swedish people and sample weights were used to take into account men oversampling in Sweden. **Results:** Among the 1,253 participants, 80.1% were women and 47.6% lived in nursing home. Weakness was the most prevalent criterion (83.7%), followed by slowness (77.3%), low level of physical activity (71.1%), fatigue (42.9%), and weight loss (23.9%). Only 5.6% of the subjects were free from frailty criteria. The prevalence of frailty, defined as having 3 criteria or more, was 63.7% and the values varied from 48.9% (Sweden) to 78.8% (Switzerland) depending on the country. After adjustment for gender, interview mode, proxy interview, and nursing home residency, centenarians living in France, Switzerland, and in a lower extent in Denmark had on average more frailty criteria compared to centenarians living in Japan. Part of these differences is explained by the very low prevalence of self-reported fatigue in Japan (26.8%). Centenarians living in Sweden actually had lower risk of weight loss, weakness, slowness, and low level of physical activity compared to centenarians living in Japan. **Conclusion:** This study shows that frailty is highly prevalent among centenarians and that weakness, slowness, and low level of physical activity are the most reported frailty criteria. Differences between countries exist and may involve methodological and cultural factors. Further work will investigate health factors associated with frailty in centenarians.

OC8- GERIATRIC TRAUMA AND FRAILITY: INITIATIVES AT A LEVEL I TRAUMA CENTER. C. Maxwell¹, M. Dietrich¹, M. Karlekar², R. Miller² (1. Vanderbilt University, Nashville, TN, USA; 2. Vanderbilt University Medical Center, Nashville, TN, USA)

Background: Geriatric trauma exemplifies the convergence of aging, frailty and injury with a high prevalence of cognitive impairment (> 40%) and physical frailty (> 50%) among patients admitted to acute care. Since 2013, initiatives at our Level I trauma center have included 1) an 18-month longitudinal examination of the influence of pre-injury frailty on patient outcomes (mortality, functional decline, readmissions to acute care); 2) use of bedside frailty screening as a trigger for early geriatric palliative care; and 3) exploration of older adults and family caregivers perceptions about frailty and the influence on patient outcomes. **Methods:** 1) Prospective longitudinal cohort study (October 2013-March 2015). 395 injured older adults were admitted over a 6-month period and we enrolled and followed 188 patients for one year. 2) Prospective quality improvement project (March-May 2015). Bedside nurses were trained to implement a validated frailty screening process on older adults admitted to our trauma unit. The process included interdisciplinary discussions and referrals for early geriatric palliative care consultations. 3) Qualitative content analysis (June-December 2016). Focus groups (2) were held at a senior living community; and individual interviews were conducted with hospitalized injured older adults (n=25) and family caregivers (n=15). Respondents were shown prognostication data on frailty and outcomes using simple

pictographs. Semi-structured interviews were conducted by a trained research assistant. **Results:** 1) 34 patients (18%) died by 6 months, and 47 (25%) by 1 year. Overall, median physical frailty scores did not return to baseline in the majority of survivors at 6-months and 1-year. Multivariate regression analysis revealed that pre-injury cognitive impairment, and pre-injury physical frailty are independently associated with functional status at 6-months and 1-year. Multivariate logistic regression analysis revealed that age (OR=1.09, CI 1.04-1.14), injury severity (OR=1.07, CI 1.02-1.12), and pre-injury physical frailty (OR=1.28, CI 1.14-1.47) are independently associated with overall mortality. 2) 131 patients (age 65 and older) were admitted to the trauma unit and 64 (49%) were screened for pre-injury frailty. Forty-four of 131 (34%) patients received palliative care consultations over the project period, an increase of 150% from four consecutive prior years (2011-2014). 3) Themes emerged among five coded categories: 1) reactions to information, 2) approaching the topic/receptiveness, 3) presence of others, 4) considerations related to a fall, and 5) suggestions about information delivery. Differences among older adults were observed, based on pre-injury frailty status. **Conclusion:** Pre-injury physical frailty is the predominant predictor of poor outcomes among geriatric trauma patients. Trauma teams can implement a screening process for frailty and cognitive impairment into their daily workflow. Positive screens effectively trigger an increase in earlier referrals to palliative care. Communication with patients and families about frailty, injury, and outcomes can be enhanced with simple prognostication aids.

OC9- PHYSICAL ACTIVITY: WHICH TYPE FOR WHICH PROFILE? M. Aubertin-Leheudre (Québec, Canada,)

In parallel with the aging of the population, life expectancy increases. However, this lifetime gain is not synonymous with active and healthy living. Aging is characterized by 3 states: successful, normal or pathological. Each incident increases the risk of moving from one state to another. Consequently, more than 50% of people aged over 65yrs will develop mobility disorders or functional disabilities that will eventually lead to loss of autonomy, disability, and increase morbidity and mortality. Among the main causes of functional disabilities related to mobility that occur during normal aging, physical inactivity, trauma, obesity and decreased muscle function are the most well-known. Thus, a vicious cycle leading to loss of mobility is established, since physical inactivity (sedentariness, fatigue and injury) induces a loss of muscular function and a gain in fat mass (obesity), leading to a reduction in physical performance and mobility which in turn drives to physical inactivity. In addition, normal aging is characterized by physiological and biological changes in muscle function despite the stability of body weight with age. Thus, all individuals of the same age will not exhibit the same body phenotype and functional state, which complicates the understanding and management of loss of mobility. It is therefore important to find solutions to identify and intervene with this population since 65% of the health care costs are due to the elderly people. The aim of this symposium will therefore be to the different possible mode of physical activity interventions aim at preventing mobility loss and explain how gender or physical state interferes in this relationship. In fact, there is strong scientific evidence that indicates that rehabilitation and physical activity interventions could counteract frailty and prevent functional loss in healthy, pre-frail or frail elderly. In spite of this, more than 55% of the elderly population is sedentary and, more importantly, there is no specific recommendation on physical activity to adequately address the need of the elderly according to their physical status or gender. Thus, identifying the most efficient physical activity intervention to manage aging process is therefore a necessity and will be addressed

by the second speaker. In conclusion, with the aging of the population, a better understanding of this health condition on treatment efficiency is absolutely a priority for geriatricians, clinicians or other health professionals.

OC10- BODY COMPOSITION, IGF 1 STATUS, PHYSICAL FUNCTIONALITY AND METABOLIC SYNDROME IN NONAGENARIANS FROM THE LOUISIANA HEALTHY AGING STUDY: IMPLICATIONS FOR OSTEOSARCOPENIA.

E. Poggiogalle^{1,2}, K.E. Cherry¹, L.J. Su³, S. Kim⁴, L. Myers⁴, D.A. Welsh⁴, S.M. Jazwinski⁴, E. Ravussin¹ (1. Baton Rouge, USA; 2. Rome, Italy; 3. Little Rock, USA; 4. New Orleans, USA)

Background: Body composition alterations occur during aging. The purpose of the present analysis was to explore the functional and metabolic consequences of the overlap of sarcopenia, osteoporosis and obesity, and the potential role of insulin-like growth factor 1 (IGF1) in their development in the oldest old. **Methods:** 87 nonagenarians from the Louisiana Healthy Aging Study were included. Obesity was defined as BMI \geq 30 kg/m²; different definitions of sarcopenia were used. Osteoporosis was diagnosed based on bone mineral density (BMD) T-score. Four phenotypes were compared: 1) nonosteoporotic nonsarcopenic (NONS); 2) osteoporotic (O); 3) sarcopenic (S) and 4) osteosarcopenic (OS). IGF1 concentrations were measured. The Continuous Scale-Physical Functional Performance (CS-PFP) test was performed. The metabolic syndrome (MetS) was diagnosed; HOMA-IR and the Lipid Accumulation Product (LAP) were calculated. The carotid intima-media thickness (cIMT) was measured by ultrasound. **Results:** 34.5% of nonagenarians had sarcopenia alone, 16% had osteosarcopenia, and 42.5% had the MetS. ALM was not lower in the OS group than the S group; BMD was similar to that of the O group. IGF1 levels were positively associated with ALM (p=0.01). HOMA-IR and LAP were significantly lower in the OS group compared to the NONS or O groups. HOMA-IR (p=0.02) and LAP (p=0.02) were positively associated with IGF1 concentration while cIMT was not. **Conclusion:** Osteosarcopenia did not result in a more deleterious impact on functional and metabolic status than sarcopenia or osteoporosis alone. Higher IGF1 levels were positively associated with increased ALM as well as with insulin resistance and LAP, but not with better physical functional ability. **Keywords:** osteosarcopenia, insulin-like growth factor 1, physical functional ability, insulin resistance, atherosclerosis. **Funding:** This research was supported in part by grants from the National Institute of General Medical Sciences of the National Institutes of Health (P20GM103629) to S.M.J. and S.K. and by the Louisiana Board of Regents through the Millennium Trust Health Excellence Fund [HEF (2001–2006)-02], by the National Institute on Aging (P01 AG022064) to S.M.J. and by the NORC Center Grant (P30DK072476) to E.R..

OC11- THE UNSUSPECTED INTRINSIC PROPERTY OF MELANIN TO DISSOCIATE THE WATER MOLECULE, AS CHLOROPHYLL IN PLANTS. IMPLICATIONS IN THE MOLECULAR LOGIC OF FRAILTY AND AGING.

A. Solis Herrera (*Aguascalientes, Mexico*)

No abstract

OC12- CALORIC RESTRICTION AND HEALTHY LIFESPAN: FRAIL PHENOTYPE OF NON-HUMAN PRIMATES IN THE WISCONSIN NATIONAL PRIMATE RESEARCH CENTER CALORIC RESTRICTION STUDY.

Y. Yamada¹, J.W. Kemnitz², R. Weindruch³, R.M. Anderson³, D.A. Schoeller⁴, R.J. Colman⁵ (1. Department of Nutritional Science, National Institutes of Biomedical Health, Innovation, and Nutrition, Tokyo, Japan; 2. Department of Cell and Regenerative Biology, University of Wisconsin-Madison, Madison, WI, USA; 3. Department of Medicine, University of Wisconsin-Madison, Madison, WI, USA; 4. Biotechnology Center, University of Wisconsin-Madison, Madison, WI, USA; 5. Wisconsin National Primate Research Center, Madison, WI, USA)

Background: Calorie restriction (CR) without malnutrition increases longevity and delays the onset of age-associated disorders in multiple species. Recently, greater emphasis has been placed on healthy lifespan and preventing frailty than on longevity. Here we show the beneficial effect of long-term CR on frailty in later life in a non-human primate. **Method:** Frail phenotypes were evaluated using metabolic and physical activity data and defined using the Fried index. Shrinking was defined as unintentional weight loss of >5% of body weight. Weakness was indicated by decline in high intensity spontaneous physical activity. Poor endurance or exhaustion was indicated by a reduction in energy efficiency of movements. Slowness was indicated by physical activity counts in the morning. Low physical activity level was measured by total energy expenditure using doubly labeled water divided by sleeping metabolic rate. **Results:** Weakness, poor endurance, slowness, and low physical activity level were significantly higher in control compared with CR (P<0.05) as was total incidence of frailty (P<0.001). **Conclusion:** In conclusion, we developed a novel set of measurable criteria of frailty in non-human primates, and using these criteria, showed that CR is associated with reduced incidence of frailty in addition to increased healthy lifespan in non-human primates.

OC13- POST-HOSPITAL INTERVENTIONS IN COMMUNITY DWELLING OLDER ADULTS TO ACCELERATE RECOVERY OF PHYSICAL FUNCTION AS MEASURED BY THE SHORT PHYSICAL PERFORMANCE BATTERY.

R. Deer¹, J. Dickinson², S. Fisher¹, J. Baillargeon¹, E. Volpi¹ (1. University of Texas Medical Branch, USA; 2. Arizona State University, USA)

Background: Acute hospitalization can have devastating effects on physical function and levels of independence in older adults. Post-hospital syndrome, the inability to regain function following a hospital stay, is a strong predictor of re-hospitalization and mortality. In healthy older adults, we have previously shown, that interventions (including protein/nutrition, rehabilitation/exercise, and anabolic steroids) can independently increase muscle size and function, and thus represent promising therapeutic strategies. **Methods:** The goal of this pilot study was to collect preliminary data on the efficacy of post-hospitalization interventions [isocaloric placebo (p), whey protein supplement (w), in-home rehabilitation + placebo (r+p), rehabilitation + whey (r+w), or testosterone (t)] to accelerate recovery of physical function in older adults. Subjects (\geq 65 years, n=100) were recruited from Jan 2014- July 2016 during an acute hospitalization at UTMB. Demographics and short physical performance battery (SPPB) were collected prior to hospital discharge (baseline) and 1-month post discharge (follow-up). **Results:** There were no significant differences between groups at baseline in SPPB total score or SPPB component scores (balance, gait speed or chair rise). Mean baseline score was

6.93 ± 0.33 indicating moderate functional impairment. At follow-up testing, there were improvements in all groups in raw SPPB score (P: 1.3, N: 2.7, E+P: 2.0, E+N: 2.8, T: 2.8) and in the percent of subjects with a clinically meaningful improvement (≥1 point) (P: 54%, N: 80%, E+P: 82%, E+N: 75%, T: 94%). Interventions, when grouped together, significantly increased SPPB total score improvement as compared to placebo (p=.03). There was a trend (p=.11) for significant difference between all groups in clinically meaningful improvement (≥1 point) at week 4. At follow-up, there was a significantly greater number of subjects with a clinically meaningful improvement (p=.001) in the intervention groups compared to placebo. Trends and significance remained after intention to treat analysis (carrying the last value forward). **Conclusions:** Data from this pilot clinical trial suggest that post-hospitalization interventions in acutely ill older adults are feasible and can improve physical function in older adults. Further analysis to adjust for covariates (age, comorbidity index, length of stay, etc) is ongoing. Funding: National Dairy Council (1229), UTMB Pepper OAIC (P30- AG024832), and CTSA (TL1TR001440).

OC14- POLYPHENOL-RICH DIET INTAKE AND FRAILTY SYNDROME. RELEVANCE TO POLYPHENOL RECOMMENDATIONS AND AGING-HEALTH PROMOTING.

C. Andres-Lacueva¹, M. Rabassa¹, P. Casas-Agustench¹, R. Zamora-Ros¹, M. Urpi-Sarda¹, S. Bandinelli², L. Ferrucci³, A. Cherubini⁴ (1. Barcelona, Spain; 2. Florence, Italy; 3. Baltimore, USA; 4. Ancona, Italy)

Background: There is growing evidence of the health-protective role of dietary polyphenols intake on aging. However, assessing dietary polyphenol intake from self-reported questionnaires tends to be inaccurate and not very reliable. Metabolomic fingerprinting is revolutionizing the field of dietary exposure assessment. Thus, a promising alternative is to use urinary biomarker concentrations (i.e. urinary polyphenol concentrations) as a more accurate measure of intake. **Objective:** We investigated whether the intake of rich-polyphenol dietary exposure has a protective effect in the prevention of physical and cognitive decline, frailty and total mortality in older adults aged ≥ 65 y or more within the InCHIANTI study, an Italian cohort study with 12 years of follow-up. **Method:** The dietary intake of total polyphenols and resveratrol was estimated using a validated food frequency questionnaire and an ad hoc database of food composition on polyphenols. The presence of these bioactive compounds in urine was also studied as a reflection of their bioavailability in humans. The urinary concentration of total polyphenols and resveratrol was determined by Folin-Ciocalteu colorimetric and mass spectrometry methods, as biomarkers of the dietary of total polyphenols and resveratrol, respectively. **Results:** The intake of total polyphenols and resveratrol was 555.2 mg/d and 0.5 mg/d, respectively. The most important food sources of total polyphenols were coffee, apples, red wine and oranges. In addition, red wine was the main dietary source of resveratrol. Results showed that total urinary polyphenols expressed by 24-h volume is a better biomarker of total dietary polyphenol than by urinary creatinine normalization. The highest tertile of total urinary polyphenols was inversely associated with the risk of cognitive and physical decline, frailty and total mortality, in comparison with the lowest tertile. However, no association with total dietary polyphenols was observed. Additionally, habitual dietary exposure of resveratrol was associated with a lower risk of developing frailty over a 3-year follow-up using both approaches combined (diet and biomarker), as well as, individually. **Conclusion:** Our results suggest a protective effect of polyphenol-rich diet, using a biomarker of total dietary polyphenols (the total urinary polyphenols expressed by 24-h urine), against cognitive and physical decline, frailty and

all-cause mortality in older persons. In addition, it demonstrates the importance of assessing dietary polyphenol exposure, whenever is possible using nutritional biomarkers in combination with self-reported questionnaires..

OC15- EFFECTIVENESS OF A MULTIFACTORIAL INTERVENTION TO MODIFY FRAILTY PARAMETERS IN THE ELDERLY.

F. Orfila, L. Romera, J.M. Segura, M.L. Fabra, A. Ramirez, M. Möller (Barcelona, Spain)

Background: The prevalence of disability increases with age. Identifying frail population to conduct effective interventions that can prevent or delay the loss of autonomy is a public health priority. Primary Health Care Centers are best suited to identify and prescribe interventions to tackle frailty while elderly people are still living in the community. We aim to evaluate the effectiveness of a multifactorial intervention based on physical activity, diet, memory workshops and medication review, to modify muscle strength and physical and cognitive performance in frail people 65 years or older who live in the community. **Method:** A randomized clinical trial with control group (CG) and blind evaluations, conducted in eight Primary Care Centers in Barcelona. A total of 352 patients, 176 in each group. Inclusion criteria: ≥65 years old, Barber test ≥1, Get up and go test (TGUGT) 10 to 30 seconds, no severe cognitive impairment. Intervention (IG): Rehabilitative therapy, hyperproteic shakes. Memory Workshop. Review of medication. **Measurements:** Short Physical Performance Battery (SPPB, range 0-12), Hand Grip Strength (HGS), quadriceps strength (digital dynamometer), neuropsychological evaluation (Barcelona Test) and number of prescriptions at baseline and after the intervention, in both groups. A follow-up of 18 months has been conducted. Analysis of variance for repeated measures was performed between baseline and after intervention. Size effects and intention to treat analyses were performed. **Results:** 75.3% women, mean age 77.3 (DE:7.2). Mean number of prescriptions 7.5, mean TGUGT 14.8 seconds, mean SPPB 7.2, mean HGS 16.5. No differences between groups at baseline. After intervention, in the IG prescriptions decreased (7.7 to 6.9) and SPPB, HGS and quadriceps strength improved (7.1 to 8.1; 16.5 to 18.7; 129 to 161), p<0.001, while the contrary was observed in CG. Cognitive performance (Verbal Memory, Animal Naming Test, Evocation of words, Verbal abstraction) also improved in the IG, and compared to CG (p<0.001). Adverse outcomes have been evaluated and the IG has lower rates of fractures and lower inclusion in home care programmes than CG (p<0.001). **Conclusions:** The intervention on frail patients has proved to be effective in terms of strength and cognitive performance at short term and adverse outcomes at 18 months. While long term effectiveness is being evaluated, the satisfaction among IG patients also encourages the continuity of this type of interventions.

OC16- CHANGE IN INFLAMMATORY PARAMETERS IN PREFRIL AND FRAIL PERSONS OBTAINING PHYSICAL TRAINING AND NUTRITIONAL SUPPORT.

S. Haider¹, E. Luger¹, I. Grabovac¹, A. Kapan¹, K. Schindler¹, C. Lackinger¹, S. Titze², T.E. Dorner¹ (1. Vienna, Austria; 2. Graz, Austria)

Background: Frailty, as a geriatric syndrome, is associated with malnutrition and sarcopenia, and is linked to increased inflammatory parameters. It was demonstrated through cross-sectional studies that physical activity is inversely associated with chronic inflammatory parameters in older persons. However, the effects of physical training and nutritional interventions in frail and prefrail subjects have never been studied. **Methods:** We performed a randomized controlled trial to compare the effects of home visits with physical training and

nutritional support on inflammatory parameters to home visits with social support alone. Pre frail and frail persons according to the frailty instrument for primary care of the Survey of Health, Ageing and Retirement in Europe were included. These persons received home visits from lay volunteers twice a week for 12 weeks. Participants belonging to the physical training and nutritional intervention group (PTN, n = 38) performed two sets of six strength exercises in circuit form and received nutritional support. Participants belonging to the social support group (SoSu, n = 35) received visits only. TNF- α , IL-6, CRP, total leukocyte counts, handgrip strength, and physical performance (Short Physical Performance Battery) were assessed at baseline and after 12 weeks. Before the analyses were done, IL-6 and CRP were log-transformed to normalize the data. Paired t-tests were applied to analyze changes over time within groups. ANCOVA for repeated measurements were applied to analyze differences between groups. Additionally, the association between changes in handgrip strength, physical performance, and changes in inflammatory parameters were calculated with logistic regressions. **Results:** In the PTN group, IL-6 and CRP did not change. However, in the SoSu group, IL-6 increased significantly from a median value of 2.65 pg/l (min-max = 2.0-30.6) to 3.05 pg/l (min-max = 2.0-30.6). Additionally, in the SoSu group, CRP increased significantly from a median value of 0.2 mg/dl (min-max = 0.1-5.6) to 0.3 mg/l (min-max = 0.1-5.6). In both parameters a significant difference between groups was seen. Total leukocyte count and TNF- α did not change neither in the PTN nor in the SoSu group. Participants who were able to increase their physical performance (OR 8.80; 95% CI = 2.70-28.70) and handgrip strength (OR: 3.02; 95% CI = 1.09-8.34) had a higher chance to show constant or decreased IL-6 values than persons with constant or decreased values. **Conclusion:** Our results suggest that participating in a physical training and nutritional support program provided by lay volunteers can delay a further increase in inflammation parameters in older pre frail and frail adults.

OC17- THE IMPACT OF FRAILTY ON HEALTH SERVICES USE AMONG NON-INSTITUTIONALIZED QUEBEC SENIORS WITH FRACTURE: A POPULATION-BASED STUDY USING ADMINISTRATIVE DATABASES. V. Fillion^{1,2,3}, M.J. Sirois^{1,2,3}, P. Gamache⁴, S. Jean⁴ (1. *Centre d'Excellence sur le Vieillessement de Québec (CEVQ), Québec, Canada*; 2. *Centre de recherche du CHU de Québec, Québec, Canada*; 3. *The Canadian Emergency Team Initiative (CETI)*; 4. *Bureau d'information et d'études en santé des populations, Institut national de santé publique du Québec (INSPQ), Québec, Canada*)

Background: The number of frail elderly is likely to increase as the population ages. In addition, because frail elders are at risk of falls, hospitalization and disabilities, they are likely to require more health care and services. Currently, information on the identification of frail seniors mostly comes from cohort studies or clinical trials. Methodologies to reliably identify the «frail» at-risk cohort within secondary data, both at patient and population level, are a current research priority for public health authorities. **Objectives:** to attempt characterizing frailty of seniors using the elderly risk assessment index (ERA index) in health administrative database and to examine the impact of frailty on the use of medical services among non-institutionalized seniors with a minor fracture. **Methods:** Population-based cohort study build from the Quebec Integrated Chronic Disease Surveillance System (QICDSS). The sample includes 179 734 seniors \geq 65 years old, non-institutionalized in the year before the fracture. Their frailty status was measured using the ERA index. Multivariate Poisson analysis were used to examine the association between frailty level and use of emergency department (ED), hospital and general

practitioner (GP) services 1 year after the fracture, adjusting for confounding variables. **Results:** The study cohort includes 179,734 seniors \geq 65 years old (mean age 76.3 years, 74% women), non-institutionalized in the year before the fracture. According to ERA index, the proportions of seniors in the cohort considered as frail and non-frail were, respectively, 13% and 4.7%. In the year following the fracture, the mean number of ED visits and the mean number of visits to a GP increased rapidly with the frailty score. Our Poisson regression analyses show that, in the year following the fracture, the number of ED visits and the number of visits to a GP were significantly higher in frail elderly comparatively to non-frail seniors [adjusted relative risk of 2.95% (95% CI: 2.83-3.08) for ED visits and 1.24% (95% CI: 1.21-1.28) for visits to a GP]. **Conclusion:** This study suggests that it is could be possible to characterize seniors' frailty at a population level using health administrative databases. Furthermore, this study shows that non-institutionalized frail seniors require more health services after an incident minor fracture. Screening for frailty in seniors should be part of clinical management in order to identify those at high risk of needing more health services.

OC18- THE ASSOCIATION BETWEEN GUT MICROBIOTA COMPOSITION AND FRAILTY, MULTIMORBIDITY AND POLYPHARMACY IN HOSPITALIZED OLDER PATIENTS. PRELIMINARY RESULTS FROM A NEXT-GENERATION METAGENOMICS STUDY. A. Ticinesi¹, A. Nouvenne¹, C. Milani², L. Mancabelli², G. Lugli², F. Turrioni², S. Duranti², M. Mangifesta², A. Viappiani², C. Ferrario², M. Ventura², F. Lauretani¹, M. Maggio¹, T. Meschi¹ (1. *Department of Medicine and Surgery, University of Parma, Italy*; 2. *Department of Chemistry, Life Sciences and Environmental Sustainability, Probiogenomics Lab, University of Parma, Italy*)

Background: The human gut microbiota is generally composed of around 1014 bacteria and 1000-4000 different taxa that establish a mutual equilibrium with the host and among themselves. Its composition can nowadays be assessed with next-generation metagenomics techniques, such as 16S rRNA microbial gene amplification and profiling, that allow to draw a complete picture of the extremely complex gut microbial ecology. Metagenomics studies have thus demonstrated that gut microbiota is relatively stable across the adult life, with resilience to steady state after the cessation of perturbative events, such as acute illness or antibiotic treatments. The aging process has been recently associated with modifications in gut microbiota composition, namely reduction in biodiversity and lower representation of microbial taxa associated with health-promoting metabolic activities, such as short-chain fatty acid (SCFA) producers. These modifications are enhanced in those subjects living in nursing homes and may predispose to immune activation, chronic inflammation and even insulin resistance. Increased inter-individual variability and reduced microbiota resilience have also been demonstrated in studies carried out on healthy active oldest-old or centenarians. To date, very few studies have investigated the gut microbiota composition of hospitalized older individuals, and none has evaluated the possible association of gut microbiota with geriatric domains, especially frailty, multimorbidity and polypharmacy, in this setting. The aim of our study was thus to assess the association between gut microbiota composition, determined through next-generation 16S rRNA microbial profiling, and these domains in a group of hospitalized elderly patients. **Methods:** We enrolled 77 elderly patients (mean age 83 \pm 8, range 70-99) admitted for extra-intestinal acute illness to the Geriatric-Rehabilitation Department of Parma University Hospital, Northern Italy. A 5 g fecal sample was collected from each participant within 2 days from hospital admission,

while the patient was fed orally with a standardized hospital diet. The frailty status before admission was assessed according to the cumulative deficit model using the Rockwood Clinical Frailty Scale (RCFS). Multimorbidity was measured with the Cumulative Illness Rating Scale (CIRS) Comorbidity Score. Polypharmacy was assessed counting the number of systemic drugs chronically taken by each patient before admission. Fecal samples were analyzed at the Probiogenomics Lab of the University of Parma with non-cultural metagenomics techniques (16S rRNA microbial profiling). These techniques allowed to identify Operational Taxonomic Units (OTUs) based on 16S rRNA gene polymorphisms. The comparison of identified polymorphisms with known sequence databases allowed to assign each OTU to a known taxa. Alpha-diversity analysis based on the biodiversity index Chao1 (reflecting species richness) and average relative abundance of the detected taxa were determined for each sample. Beta correlation analysis was performed to test the association between each of the clinical (RCFS, CIRS and number of drugs) and microbiological variables (Chao1 index of biodiversity, relative abundance of taxa with an average relative representation of at least 1.5%). Moreover, the average Chao1 index was also compared between the top and the bottom tertile of RCFS, CIRS and number of drugs. **Results:** The studied population had a high burden of frailty (average RCFS 5±2), multimorbidity (median CIRS Comorbidity Score 12, IQR 7-16) and polypharmacy (average number of drugs 10±3). Antibiotic drugs were administered to 40 participants, but the treatment was initiated no more than 24 hours before fecal sample collection, and thus did not influence microbiota composition. Chao1 biodiversity index was not significantly correlated with RCFS (β 0.015, $p=0.899$) and CIRS (β -0.073, $p=0.570$), but was negatively correlated with the number of drugs (β -0.278, $p=0.018$). Subjects in the top tertile for drug consumption (≥ 11 drugs) had an average Chao1 index significantly lower than subjects in the bottom tertile (≤ 7 drugs) ($p=0.03$). The number of drugs was negatively correlated with the relative abundance of 13 taxa, including *Anaerostipes* (β -0.18, $p=0.03$), *Coprococcus* (β -0.26, $p<0.001$), *Pseudobutyrvibrio* (β -0.27, $p<0.001$), *Thalassospira* (β -0.21, $p=0.02$) and *Holdemania* (β -0.22, $p=0.02$), and positively correlated with the relative abundance of *Abiotrophia* (β 0.24, $p=0.01$) and *Candidatus arthromitus* (β 0.20, $p=0.04$). Similarly, the RCFS score was positively correlated with *Anaerofustis* (β 0.21, $p=0.04$) and *Peptococcus* (β 0.22, $p=0.02$) and negatively correlated with the SCFA-producer *Pseudobutyrvibrio* (β -0.23, $p=0.001$). CIRS Comorbidity Score was positively correlated with the relative abundance of 5 taxa, including *Bacteroides* (β 0.21, $p=0.01$), and negatively correlated with 7 taxa, including *Thalassospira* (β -0.21, $p=0.02$). **Conclusion:** In older hospitalized patients, polypharmacy may be significantly correlated with gut microbiota dysbiosis, while multimorbidity and frailty may be associated with more subtle alterations in the relative abundance of a limited number of taxa. SCFA producers, like *Pseudobutyrvibrio*, may be underrepresented in the gut microbiota of frail elderly taking polypharmacy. Since short-chain fatty acids are known anti-inflammatory and metabolic mediators, the role of gut microbiota in frailty should be better investigated, also in an outpatient setting.

OC19- EFFECTIVENESS OF AN INTERVENTION TO PREVENT FRAILTY IN PRE-FRAIL COMMUNITY-DWELLING ELDERLY SUBJECTS CONSULTING IN PRIMARY CARE. A RANDOMIZED CONTROLLED TRIAL. X. Sist¹, M. Serra-Prat^{1,2}, E. Palomera¹, J. Vico¹, M. Papiol¹, R. Domenich¹, L. Jurado¹, M.D. Bernabeu-Tamayo¹ (1. Barcelona, Spain; 2. Madrid, Spain)

Background: Frailty is a significant public health problem because of its impact on the functional capacity of the individual, as well as its high prevalence, such as the high consumption of resources that can lead to health and social care. Evidence on the effectiveness of interventions to prevent frailty is scarce. **Objective:** To assess the effect of an intervention based on a nutritional and physical activity program in preventing frailty progression in pre-frail elderly subjects. **Study design:** A randomized, open label, controlled trial with 2 parallel arms. **Population:** community-dwelling prefrail elderly subjects (≥ 70 years) consulting in primary care. **Intervention:** Nutritional assessment (and derivation to a Nutritional Unit for usual care in the event of nutritional risk) and a physical activity program including aerobic exercise and a set of mixed strengthening, balance and coordination exercises to be done at home at least 4 times/week. Control group: Patients receiving the usual care. Main outcome measures: Prevalence of frailty (Fried criteria), functional capacity (Barthel index), falls and nutritional status (Short-Form Mini Nutritional Assessment) on follow-up at 12 months. **Results:** The prevalence of frailty in the elderly of the community 70 years or more has been estimated at 31% and the prevalence of pre-frailty by 49%. At followup, 172 people who participated in the study, 4.9% of the intervention group and 15.3% of the control group had evolved to frailty, for a crude OR of 0.29 (95% CI: 0.08-1.08; $p=.052$) and an adjusted (by age, gender and number of co-morbidities) OR of 0.19 (95% CI: 0.04-0.95; $p=.044$). Study intervention improved outdoors walking hour per day (0.97 vs 0.73; $p=.019$) but not muscle strength, gait speed or other functional indicators. Among patients in the intervention group, 47.5% were considered good adherers and none of these evolved to frailty. **Conclusions:** An intervention focused on physical exercise and maintaining good nutritional status is effective in preventing frailty in community-dwelling pre-frail elderly individuals. The baseline characteristics associated with poor adherence to the intervention of study are social risk, the isolation, depression and reduced physical activity required.

OC20- AGREEMENT BETWEEN PHYSICIANS' AND SURROGATES' JUDGMENT OF PRE-HOSPITAL FRAILTY IN CRITICALLY ILL ADULTS. A.A. Hope, M. Munoz, M. Ng Gong (New York, USA)

Introduction: Pre-hospital frailty has been an understudied factor that may impact prognosis for recovery in older survivors of intensive care unit (ICU). Much of the literature on frailty assessment in the ICU setting has used a judgment based approach to quantify pre-hospital frailty. Agreement between physicians' and surrogates' judgment of the patient's pre-hospital frailty has not been explored but is relevant to shared decision making in the ICU. **Objectives:** To describe agreement between surrogates and ICU physician experts in quantifying pre-hospital frailty in critically ill adults and to compare the validity of surrogates' with physicians' judgment. **Methods:** We conducted an observational cohort study of older adults (age ≥ 50) admitted for non-elective medical/surgical critical illness. On admission to the ICU, we administered questionnaires to patients/surrogates asking about demographics, activities of daily living, instrumental activities of daily living, frailty markers. We asked

patients' surrogates and ICU physician experts (blinded to surrogates' frailty judgment) to quantify pre-hospital frailty using the Clinical Frailty Scale (range is 1-9: 1-3 is fit; 4-vulnerable; 5-9 frail). We used correlation coefficients and McNemar's test to describe agreement between surrogates'/physicians' scores and chi-squared/ logistic regression to describe predictive validity of surrogate's/physicians' estimates using hospital mortality and length-of-stay. **Results:** In a sample of 151 patients (median age (interquartile range, (IQR) 66 (57-73]), we found a significant correlation between surrogates/physician CFS scores (ρ 0.698, $p < 0.0001$). Of the 59 patients rated frail by physicians: surrogates rated 39 frail (66.1%); of the 46 patients rated vulnerable, surrogates agreed on 17 (37.0%), mostly rating such patients as fit (56.5%); of the 46 patients rated fit by physicians, surrogates agreed on 39 (84.8%). Patients rated frail whether by physicians or surrogates, were significantly older, more likely to be admitted from a nursing home, had more co-morbidities and more pre-hospital disability (p -values < 0.05). Of 56 discordances between surrogates' and physicians' judgment: in 46 (82.1%) the surrogates' estimates were more optimistic than the physician. Physicians' frailty estimates were associated with hospital mortality (39.0% of frail patients died in hospital versus 21.7% in non-frail, p -value 0.022) and with longer hospital lengths of stay (median day (IQR) 20 (12-32) for frail versus 14.5 (9-26), p -value < 0.001) while surrogate ratings were not significantly associated with hospital mortality or LOS (p -value > 0.2). **Conclusions:** Among critically ill adults, we found modest agreement between surrogates and physicians in their judgment of pre-hospital frailty using CFS, with surrogates showing more optimism but less predictive validity for short-term outcomes. Understanding factors related to this discordance may inform and improve communication between physicians and surrogates in the ICU setting.

OC21- DEFICIT ACCUMULATION IN OLDER ADULTS: OLDER MEN WITH LOWER INCOME MAY EXPERIENCE FASTER DECLINE IN HEALTH STATUS - RESULTS FROM THE KORA-AGE STUDY. A.-J. Stephan^{1,2}, R. Strobl^{1,2}, R. Holle³, C. Meisinger⁴, H. Schulz^{5,6}, K.-H. Ladwig^{4,7}, B. Thorand⁴, A. Peters⁴, E. Grill^{1,2,8} (1. Institute for Medical Information Processing, Biometrics and Epidemiology, Ludwig-Maximilians-Universität München, Munich, Germany; 2. German Center for Vertigo and Balance Disorders, Ludwig-Maximilians-Universität München, Munich, Germany; 3. Institute of Health Economics and Health Care Management, Helmholtz Zentrum München, German Research Center for Environmental Health (GmbH), Neuherberg, Germany; 4. Institute of Epidemiology II, Helmholtz Zentrum München, German Research Center for Environmental Health (GmbH), Neuherberg, Germany; 5. Institute of Epidemiology I, Helmholtz Zentrum München, Neuherberg, Germany; 6. Comprehensive Pneumology Center Munich (CPC-M), Member of the German Center for Lung Research, Munich, Germany; 7. Department for Psychosomatic Medicine and Psychotherapy, Klinikum Rechts der Isar, Technische Universität München, Munich, Germany; 8. Munich Center of Health Sciences, Ludwig-Maximilians-Universität München, Munich, Germany)

Background: Deficit accumulation (DA) can be seen as an indicator for the extent to which the body of an ageing individual has lost the capacity to adequately respond to external stressors. Although aging typically results in a successive accumulation of physiological deficits, considerable variability in deficit accumulation patterns has been observed between individuals, ranging from abrupt and gradual decline to stability and improvements. Therefore, we assumed that individual socio-demographic, socio-economic and lifestyle

characteristics may influence the resulting DA pattern. The objectives of this study were to identify the prevalence of different DA patterns over three years and their determinants in a population aged 65 years and older. **Method:** Data originates from the 2009 baseline assessment and the 2012 follow-up of the KORA (Cooperative Health Research in the Region of Augsburg)-Age study from Southern Germany. A Deficit Accumulation Index (DAI) was constructed from 30 health deficits, including chronic diseases, measures of functioning and signs and symptoms. Definitions of DA patterns were based on published DA states for non-frail ($DAI \leq 0.08$), pre-frail ($0.08 < DAI < 0.25$), frail ($DAI \geq 0.25$) health states, and death as an absorbing state. Stability was subsequently defined as having remained in the same DA state at follow-up as compared to baseline. Improvement was defined as having changed from a DA state to any better DA state. Gradual decline was defined as having changed from one DA state to the next worse state (including from frail to death). Abrupt decline was defined as having deteriorated at follow-up skipping at least one DA state as compared to baseline. The effect of income, education, age, sex, marital status, physical activity (PA), smoking, alcohol consumption, and body mass index (BMI) on DA patterns was analyzed using multinomial regression models. **Results:** Complete information on DA patterns (including a DAI value at baseline and either a DAI value or information about death at follow-up) was available for 920 participants (mean age at baseline 76 years, range 65 to 90 years, 52% female). Over three years, the most frequently observed DA patterns were gradual decline ($n=279$, 30.3%) and stability ($n=539$, 58.6%). Abrupt decline was observed in $n=55$ (6.0%) and improvement in $n=47$ (5.1%) cases. The adjusted odds ratios for gradual ($OR=2.77$, $CI [1.43; 5.37]$) and abrupt decline ($OR=9.09$, $CI [2.49; 33.20]$) as compared to stability were significantly higher for the oldest age group (≥ 85 years) as compared to the youngest age group (65-69 years). In addition, the adjusted odds ratios for abrupt decline as compared to stability were 7.86 ($CI [2.75; 22.50]$) for men as compared to women and 2.55 ($CI [1.20; 5.44]$) for participants living below as compared to above the poverty level. Adjusted odds ratios did not significantly differ between improvement and stability patterns with regard to any of the examined factors. **Conclusion:** In sum, our analysis indicates that being male and poor may increase the odds for experiencing abrupt decline. Thus, monitoring for timely detection of abrupt decline may be crucial especially in these vulnerable population sub-groups.

OC22- ARE ALL OLDER ADULTS WITH ELEVATED BLOOD GLUCOSE AT RISK OF FRAILITY? - RESULTS FROM BEIJING LONGITUDINAL STUDY OF AGING II (BLSA-II). J.K. Chhetri^{2,5}, Z. Zheng^{1,2,4}, X. Xu³, C. Ma², P. Chan^{1,2,3,4} (1. Department of Neurobiology, Xuanwu Hospital of Capital Medical University, Beijing, China; 2. Department of Geriatrics, Xuanwu Hospital of Capital Medical University, Beijing, China; 3. Department of Neurology, Beijing Institute of Geriatrics, Xuanwu Hospital of Capital Medical University, Beijing, China; 4. Parkinson's Disease Center of Beijing Institute for Brain Disorders, Key Laboratory on Neurodegenerative Disease of Ministry of Education, and Beijing Key Laboratory for Parkinson's Disease, Beijing, China; 5. Gerontopole, Institute on Aging, Toulouse University Hospital, Toulouse, France)

Background: Various factors including cardio-metabolic disorders are found to be correlated with frailty. With the increase in age, older adults are likely to have elevated blood glucose level. In this study we intend to estimate the prevalence and incidence of frailty in the pre-diabetic and diabetic community dwelling elderly population and assess the associated risk factors for frailty. **Methods:** At baseline total of 10,039 subjects with a mean age of 70.51(\pm 7.82) were included, 7,314 older adults were followed up at 12 months. A

Frailty index (FI) with 32 items was developed using Rockwood's cumulative deficits method. Frailty index ≥ 0.25 was used as cut-off criteria for the diagnosis of frailty. Diagnosis of pre-diabetes and diabetes was set according to the World Health Organization (WHO) criteria for fasting plasma glucose (FPG) level. Chi-square tests were performed to compare percentages by 3 major groups (non-diabetes, pre-diabetes, diabetes) and ANOVA and student's t-tests was used to compare means of group for continuous variables. Multiple logistic regression models were performed to estimate the risk factors for frailty in non-diabetic, pre-diabetic and diabetic elderly populations using baseline and longitudinal data. Backward elimination variable selection method was used to identify the risk factors in elevated blood glucose (pre-diabetic, diabetic) and normal blood glucose frail older adults. **Results:** Diabetic population had a much higher 19.32% prevalence of frailty and 12.32% incidence of frailty, compared to that of non-diabetic older adults (prevalence of 11.92% and incidence of 7.04%), pre-diabetics had somewhat similar prevalence of 11.43% and slightly higher incidence of 8.73% for frailty as non-diabetic older adults. Urban living, being female, increase in age, multi co-morbidity, polypharmacy, abnormal BMI (both underweight and overweight), having low physical activity and doing less household work were associated with high prevalence and incidence for frailty for overall community dwelling older adults. Moreover, mostly the trend of frailty was lowest in non-diabetic, slightly higher in pre-diabetic and highest in diabetic older adults. Subjects with in need of taking anti-diabetic medicine had higher prevalence and incidence of frailty. Diabetics were at 1.7 folds risk of being frail compared to non-diabetic population both for prevalence (un adjusted OR(1.7 (95%CI=1.56-2.00, $P < .0001$)) and incident (unadjusted RR(1.7, 95%CI=1.47-2.08, $p < 0.001$)) respectively. Being pre-diabetic was not statistically significant for the risk of frailty. Elevated blood glucose and normal blood glucose frail population shared some common risk factors at baseline, including urban living, less than 6-hour sleep per day, having comorbidity, polypharmacy. Whereas, being married, more hours of outdoor activity and helping with house work regularly were protective for frailty for both elevated and normal blood glucose frail subjects. Being female, older age statistically increased the prevalence of frailty only in non-diabetes population. The common risk factors for frailty incidence in both populations (elevated and normal blood glucose) were age and comorbidity, the common protective factor was receiving regular medical consultation. Two risk factors including urban-living, higher waist circumference and two protective factors including being male, doing house work regularly were only among subjects with elevated blood sugar. For the non-diabetic subjects polypharmacy was a risk factor of frailty and awareness of their blood glucose status was protective against frailty. **Conclusion:** This study confirms that diabetes is an independent serious chronic condition to increase the risk of frailty in community dwelling older adults. Frail people with elevated blood glucose share common risk factors with non-diabetic persons, but also demonstrate several special risk factors. Therefore, to effectively delay or avoid frailty, older adults should be advised for taking proper control of blood glucose level and avoiding the associated risk factors and implementing the protective factors in primary-care setting.

OC23- FRAILTY ASSESSMENT IMPROVES PROGNOSTIC PERFORMANCE OF EXISTING TOOLS FOR ACUTE CORONARY SYNDROME AND HEART FAILURE IN OLDER PATIENTS. A. Anand^{1,2}, S. Cudmore³, K. Boyd⁴, S. Murray⁴, J. Stephen⁵, C. Weir⁶, A. MacLulich², S. Shenkin², N. Mills^{1,3}, M. Denvir^{1,3} (1. British Heart Foundation Centre for Cardiovascular Science, University of Edinburgh, Scotland; 2. Geriatric Medicine Research Group, University of Edinburgh, Scotland; 3. Edinburgh Heart Centre, Royal Infirmary of Edinburgh, Scotland; 4. Primary Palliative Care Research Group, Usher Institute for Population Health Sciences and Informatics, University of Edinburgh, Scotland; 5. Edinburgh Clinical Trials Unit, University of Edinburgh, Scotland; 6. Edinburgh Health Services Research Unit, Usher Institute for Population Health Sciences and Informatics, University of Edinburgh, Scotland)

Background: The Global Registry of Acute Coronary Events (GRACE) and Enhanced Feedback for Effective Cardiac Treatment (EFFECT) scores are widely adopted clinical tools for predicting the risk of poor outcomes after acute coronary syndromes and heart failure respectively. However, in older patients, frailty as a marker of reduced physiological reserve may better express individual patient risk. We examined whether a simple structured frailty tool adds prognostic information in patients with acute coronary syndromes or heart failure. **Methods:** Subjects were included following an unscheduled hospital admission for acute coronary syndrome or heart failure as part of screening for a Phase II clinical trial of advanced care planning for cardiovascular patients (NCT: 02302014). Patients were assessed for frailty using the Rockwood Clinical Frailty Scale (CFS) alongside estimated 1-year mortality risk calculated from the GRACE and EFFECT tools depending on the presenting condition (acute coronary syndrome or heart failure respectively). The CFS was scored with guidance notes between 1 and 9 points (higher score indicating greater frailty) by a member of the patient's clinical care team independent of the research group and without specific training in frailty assessment. Comorbidity was quantified by the Charlson index and pre-morbid performance status assessed using World Health Organisation and Karnofsky scales. Follow-up for mortality and readmission was completed to 1 year after initial hospitalisation in all cases. All tools were assessed for prognostic performance (discrimination and concordance with observed 1 year events) using Cox regression modelling, Royston and Sauerbrei R2 and Harnell's c-statistics. **Results:** A total of 359 patients were included (mean age 79 years) of which 235 (66%) had suspected or proven acute coronary syndrome and 124 (34%) presented with heart failure. Frailty, defined by CFS score ≥ 5 was present in 102 individuals (28%), with a further 61 (17%) classified as vulnerable (CFS score 4). At 1 year follow-up, 178 patients (49%) had experienced a hospital readmission episode and 84 (23%) had died. Frailty was more common in those who died (60% frail vs 19% of those who survived, $p < 0.001$). Across the whole population, GRACE and EFFECT tools exhibited good predictive power for mortality (c-statistic 0.71, R2 33%, $p < 0.001$). Addition of CFS scores significantly improved GRACE/EFFECT prediction (combined c-statistic 0.79, R2 49%, $p < 0.001$ for improved model performance). Charlson and performance status also improved GRACE/EFFECT modelling, but to a lesser degree and did not add further once frailty had been included. GRACE/EFFECT demonstrated moderate predictive power for patient readmission (c-statistic 0.59, R2 9%, $p < 0.001$) which was once more best improved by addition of frailty (c-statistic 0.64, R2 16%, $p < 0.001$ for improved model performance). **Conclusion:** A simple structured assessment of frailty performed without specific rater training identifies patients at high risk of poor outcomes after hospitalisation with cardiac disease.

Addition of frailty assessment may improve calibration of GRACE and EFFECT scores by including information not captured by these tools.

OC24- HOURLY ACTIVITY PATTERNS OF FRAIL, PRE-FRAIL, AND NON-FRAIL U.S. ELDERS IN NSHAP: VARIATION BY GENDER. M. Huisinigh-Scheetz¹, K. Wroblewski², M. Kocherginsky³, S. Birch², W. Dale¹, L. Waite⁴, P. Schumm² (1. University of Chicago Medicine, Department of Medicine, Section of Geriatrics and Palliative Medicine, USA; 2. University of Chicago Medicine, Department of Public Health Sciences, USA; 3. Northwestern University, Department of Preventive Medicine, USA; 4. University of Chicago, Department of Sociology & NORC, USA)

Background: The advent and broad scale adoption of activity monitors has opened the possibility of using daytime activity patterns as health indicators, particularly among frail older adults for whom maintaining mobility is essential for independent living. The objective of this analysis was to relate frailty status to hourly daytime activity patterns as measured by wrist accelerometry among a nationally-representative sample of older adults and to explore how gender and age influenced this relationship. **Methods:** The National Social Life, Health and Aging Project (NSHAP) is a longitudinal U.S. population-based survey that collected extensive information on physical, cognitive, and social health. A nationally-representative sample of 3,005 community-dwelling older adults (ages 57- 86) was identified and recruited for W1 (2005-2006). These participants and their partners (n=3377) were re-interviewed in W2 (2010-2011). A random subset of W1 respondents also participated in a 72-hour wrist accelerometer sub-study in W2, and had complete frailty data (n=449). Physical activity was summarized using mean counts per minute (CPM) calculated for each hour of the day. Hours with <60 minutes of recording, days with <10 hours of recording, and Sundays were excluded. An adapted, 5-point phenotypic frailty scale in which participants received a point for having a slow gait, a slow chair stand time, exhaustion, 5-year weight loss, and low self-reported physical activity was created (range 0-5). We used mixed effects linear regression to examine the effect of frailty on hourly CPM, accounting for the within-subject correlation between hourly measurements. Models were adjusted for age, gender, race, and hour of day. Interactions between frailty and gender or age was assessed, and separate models were then fitted by gender. **Results:** In the entire sample, frailty was significantly related to hourly CPM ($\beta = -0.04$, $p < 0.001$) after adjusting for covariates; however, there was a significant interaction between frailty and gender ($\beta = -0.04$, $p = 0.04$) but not age ($\beta = 0.0001$, $p = 0.90$). Gender-specific models revealed that frailty status was more significantly related to hourly CPM among women ($\beta = -0.05$, $p < 0.001$) than among men ($\beta = -0.02$, $p = 0.048$). Each additional frailty point was associated with a ~11% decrease in hourly activity among women and ~4.5% among men, comparable to the effect of an age increase of 6 years and 5 years in women and men, respectively. Slow gait ($\beta = -0.10$, $p = 0.01$), slow chair stands ($\beta = -0.10$, $p = 0.005$), and low self-reported physical activity ($\beta = -0.10$, $p = 0.006$) were associated with reduced hourly CPM among women while only low self-reported physical activity ($\beta = -0.09$, $p = 0.001$) was associated with reduced hourly CPM among men. **Conclusion:** Frailty is associated with reduced objectively-assessed activity across all awake hours of the day, regardless of age, and more so among women than men. These findings suggest activity monitors may be able to detect frailty in the community.

OC25- ASSOCIATION OF CARDIOVASCULAR AND NEUROPSYCHIATRIC MULTIMORBIDITY WITH MOBILITY LIMITATION AND DISABILITY IN OLDER ADULTS OVER 6 YEARS: A POPULATION-BASED STUDY. D.L. Vetrano^{1,2}, D. Rizzuto¹, A. Calderón-Larrañaga^{1,3}, G. Onder², A.-K. Welmer¹, R. Bernabei², A. Marengoni⁴, L. Fratiglioni¹ (1. Aging Research Center, NVS, Karolinska Institutet and Stockholm University, Sweden; 2. Dept of Geriatrics, Neurosciences and Orthopedics, Catholic University of the Sacred Heart, Italy; 3. EpiChron Research Group, Aragon Health Sciences Institute, Spain; 4. Department of Clinical and Experimental Sciences, University of Brescia, Italy)

Background: Cardiovascular (CV) and neuropsychiatric (NP) diseases are highly prevalent in older adults and frequently co-occur. The impact of their combination on mobility limitation and disability is however not known. We aimed to examine the longitudinal association between CV and NP multimorbidity and mobility limitation and disability in older adults. **Methods:** Population-based study involving 3273 60+ year-old people from the Swedish National Study of Aging and Care in Kungsholmen (SNAC-K), observed up to 6 years. Seven different combinations of CV and NP diseases were obtained depending on the presence of 0, 1 or 2+ CV and NP diseases. The impact of such disease groups on walking speed (WS; >1m/s, <1m/s, unable) and disability (number of impaired Activities of Daily Living, ADLs) was tested through mixed ordinal regression models, considering both exposure and covariates as time-changing measures. **Results:** In our sample, (mean age 74 years; 64% females), the presence of 2+ NP diseases had the strongest association with impairment in both WS (OR 4.8; 95%CI 3.3-7.1) and ADLs (OR 7.9; 95%CI 3.7-16.9), as compared with people free from CV and NP diseases. CV diseases were associated only with an impairment in WS (OR 1.5; 95%CI 1.1-1.9 for ICV disease; OR 2.1; 95%CI 1.5-3.0 for 2+ CV diseases). The interaction between CV and NP diseases was more evident for ADLs than WS impairment. **Conclusions:** Cardiovascular and neuro-psychiatric multimorbidity present different specificity and magnitude of association with mobility impairment and disability.

OC26- THE ASSOCIATION BETWEEN LIFESTYLE AND OVERALL HEALTH, USING THE FRAILTY INDEX: THE ROTTERDAM STUDY A CROSS SECTIONAL STUDY AMONG MIDDLE-AGED AND ELDERLY INDIVIDUALS. S. Brinkman¹, T. Voortman¹, J. Kiefte-de Jong^{1,2}, F. van Rooij¹, F. Rivadeneira^{1,3}, O. Franco¹, J. Schoufour¹ (1. Department of Epidemiology, Erasmus MC, University Medical Center, Rotterdam, the Netherlands; 2. Leiden University College, The Hague, the Netherlands; 3. Department of Internal Medicine, Erasmus MC, 3000 CA Rotterdam, the Netherlands)

Background: One way to study health and the ageing process is via the concept of frailty. Frailty can be considered a state of increased vulnerability to adverse health outcomes, caused by an age-related decline in multiple physiological body systems. One operationalization of frailty is the frailty index. This method is based on the accumulation of a wide-range of health problems, including symptoms, signs, diseases, functional impairments and laboratory abnormalities, and can be interpreted as a proxy for overall health. Although the predictive value of frailty for age-related poor health is well established, research on effective prevention strategies is still in its infancy. Therefore we aim to evaluate the association between four individual lifestyle factors (alcohol intake, smoking, dietary quality and physical activity) and their combined effect on overall health, measured with a frailty index. **Methods:** We used cross-sectional data from 11,539

participants of the Rotterdam Study, a population-based cohort study among men and women aged 45 years and over. A frailty index based on the accumulation of 45 deficits was used. These deficits were related to functional status (n=13), health conditions (n=12), cognition (n=6), diseases (n=6), nutritional status (n=4) and mood (n=4). A frailty index score was calculated by the total number of deficits present divided by the total number of deficits measured multiplied by 100, resulting in a score between 0 and 100 with increasing frailty. As lifestyle factors, we examined (A) dietary quality as adherence to the Dutch dietary guidelines, including high intake of fruit, vegetables, legumes and low intake of salt and red meat (in tertiles), (B) physical activity in METh/week (tertiles), (C) alcohol intake as low (0-1 glasses per day), moderate (2-3 glasses per day), or harmful intake (more than 4 glasses per day), and (D) smoking as never, ever, or current. A combined lifestyle score was calculated as the sum of the four lifestyle factors (range 0-8). The associations between each lifestyle factor, the combined lifestyle score and frailty was evaluated using multivariable linear regression models, adjusting for age, gender, socio-economic factors and other lifestyle factors. **Results:** Results are provided in the table. Briefly, we observed that a high dietary quality (p-for trend < 0.001), high physical activity (p-for trend <0.001), and not smoking (p-for trend <0.001) was associated with lower frailty index scores. Participants with a low alcohol intake were on average more frail than participants with a harmful alcohol intake ($\beta = 0.80$, 95%CI = 0.08, 0.97). The median lifestyle score was 4.0 (IQR = 3.0). Participants had on average a 0.62 (95% CI = -0.71, -0.53) lower frailty index score per one-unit increment of the combined lifestyle score. **Discussion:** To our knowledge, this is the first study that examined the association between individual and combined lifestyle factors and overall health, by using the frailty index. Results of the present population-based study showed that those who had higher levels of physical activity, higher dietary quality, and did not smoke had lower frailty index scores. Our results could partly be explained by reversed causation and future longitudinal studies taking into account changes in frailty status over time are required to state stronger conclusions regarding the effect of lifestyle on frailty.

Table

Association between individual and combined lifestyle factors and the frailty index

		Model 1	Model 2	Model 3
		β (95% CI)	β (95% CI)	β (95% CI)
Dietary quality	T1 (lowest)	= reference	= reference	= reference
	T2	-0.59 (-0.97, -1.14)	-0.39 (-0.75, -0.32)	-0.28 (-0.63, 0.08)
	T3 (highest)	-1.63 (-2.11, -1.40)	-1.03 (-1.49, -0.57)	-0.88 (-1.35, -0.42)
	P for trend	<0.001	<0.001	<0.001
Physical activity	T1 (lowest)	= reference	= reference	= reference
	T2	-4.04 (-4.43, -3.65)	-3.62 (-4.00, -3.24)	-3.57 (-3.96, -3.18)
	T3 (highest)	-5.59 (-5.98, -5.19)	-4.79 (-5.18, -4.40)	-4.70 (-5.10, -4.30)
	P for trend	<0.001	<0.001	<0.001
Alcohol intake	Harmful intake	= reference	= reference	= reference
	Moderate intake	-0.61 (-1.21, 0.00)	-0.44 (-1.01, 0.13)	-0.23 (-0.79, 0.32)
	Low intake	0.90 (0.43, 1.37)	0.80 (0.08, 0.97)	0.84 (0.39, 1.29)
	P for trend	<0.001	0.001	<0.001
Smoking status	Current	= reference	= reference	= reference
	Former	-1.11 (-1.50, -0.71)	-1.19 (-1.56, -0.81)	-0.82 (-1.19, -0.45)
	Never	-1.06 (-1.50, -0.62)	-1.17 (-1.58, -0.76)	-0.99 (-1.40, -0.59)
	P for trend	<0.001	<0.001	<0.001
Combined lifestyle score*		-0.73 (-0.83, -0.64)	-0.62 (-0.71, -0.53)	-

Model 1: model adjusted for cohort, age and sex; Model 2 additionally adjusted for: total energy intake, BMI, education, occupation, living situation and household income; Model 3 additionally adjusted for: other lifestyle factors; Abbreviations: β = beta, n= absolute number of participants, T = tertile, CI= confidence interval; Statistically significant associations (p<0.05) are presented in bold type; * The combined lifestyle score, sum of all four lifestyle factors, theoretical range 0-8, a higher score representing a healthier lifestyle

OC27- SARCOPENIA AND FRAILTY RISK IS NOT REDUCED IN PATIENTS ENTERING CONTEMPORARY HIVCARE.

G. Guaraldi, A. Malagoli, L. Maia, I. Franconi, S. Zona, M. Menozzi, A. Silva, C. Mussini, M. Cesari, J. Falutz (Department of Medical and Surgical Sciences for Children & Adults, Modena, Italy)

Background: HIV infected patients display a higher prevalence of sarcopenia and frailty when compared to the general population. This increased risk for accentuated ageing process has been in part related to HIV specific risk factors including low CD4 nadir and ART toxicities with particular regards to pre and early-ART regimens. We hypothesized that patients with an HIV exposure for less than 15 years and starting ART with second generation ART drugs, available since 2005, which identify contemporary care model for HIV, may have a reduced prevalence and risk for sarcopenia and frailty. The objective of the study was to compare prevalence and risk factors for sarcopenia and frailty in HIV patients who started antiretroviral therapy before or after 2005. **Method:** We performed a cross-sectional study including consecutive HIV patients aged >50 years having access in 2016 at the Modena HIV Metabolic Clinic. We divided our population in two groups: 1) Contemporary HIV care model: including patients with <15 years of HIV exposure and who started ART after 2005 (the date of third generation ART regimens). 2) Old HIV care mode: including all other patients on ART (exposed to first or second generation ART regimen). Outcome measures were: 1. Frailty: was measured with the frailty phenotype (Fried criteria >3 out of 5 phenotypic items) and a 37-item frailty index (cut off value for frailty was >0.38). 2. Sarcopenia: was defined in males as the ASMI <7.26 kg/m² (Muscle mass- Baumgarten criteria) or with hand grip assessment below the mean for sex and age (Muscle strength). **Results:** The table 1 describes demographic and clinical characteristics of patients entering “old” versus “contemporary” care model for HIV. **Conclusion:** In this large well characterized cohort HIV patients meeting criteria for contemporary HIV care model display similar prevalence and risk for frailty and sarcopenia with the only exception of a borderline reduction in frailty index in patients who started ARV after 2005. This observation suggests that drivers of high prevalence of sarcopenia and frailty will not be reduced in future generation of HIV ageing patients.

Table 1

	Total (433)	“Old” Care n=399 (92.15%)	“Contemporary” Care n=34 (7.85%)	p-value
Age	55.96 (4.84)	55.86 (4.81)	57.03 (5.12)	0.1
No physical activity	184 (42.69%)	170 (43.04%)	13 (38.24%)	
Moderate physical activity	215 (49.88%)	195 (49.37%)	19 (55.88%)	0.76
Intense physical activity	32 (7.42%)	30 (7.59%)	2 (5.88%)	
Male gender	321 (73.79%)	289 (72.43%)	30 (88.24%)	0.07
CD4 nadir	196 (79.75-300)	180 (72-293)	284 (217-352.5)	0
Current CD4 /MicroL	721 (518.5-922)	718 (518.5-922)	732.5 (545.25-932.25)	0.94
CD4 (%)	33.15 (8.55)	32.97 (8.49)	35.21 (9.32)	0.144
CD4/CD8 ratio	0.93 (0.46)	0.92 (0.46)	1.02 (0.49)	0.18
VL undetectable (<40c/mL)	434 (99.77%)	398 (99.75%)	34 (100%)	1
BMI	24.28 (3.43)	24.06 (3.32)	26.53 (3.55)	0

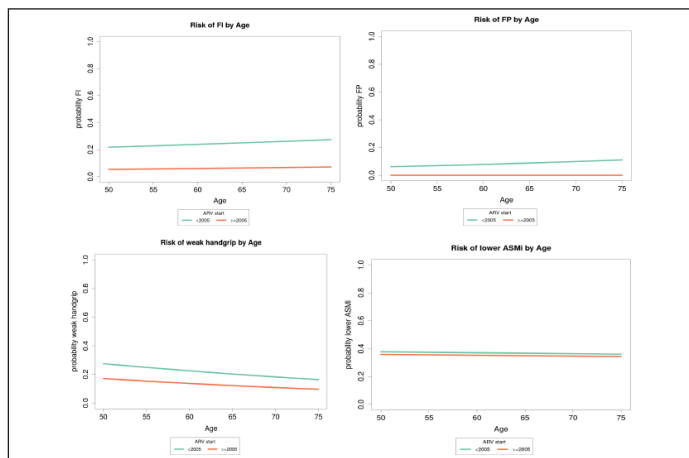
Table 2

Shows the impact of old vs contemporary care model for HIV in risk for frailty and sarcopenia after correction of age, gender, CD4 nadir.

	Frailty				Sarcopenia			
	Frailty Index		Frailty phenotype		Muscle mass		Muscle strength	
	OR	p-value	OR	p-value	OR	p-value	OR	p-value
Contemporary vs Old HIV care	0.29	0.05	0.26	0.07	1.5	0.33	0.44	0.15
Age	1.0	1	1	0.86	1	0.84	0.97	0.2
Female gender	1.2	0.48	1.12	0.67	0.88	0.59	1.68	0.06
CD4<200/microL	0.84	0.42	0.74	0.2	0.52	<0.01	1.10	0.68

Figure 1

Shows risk for frailty index, frailty phenotype low muscle mass and low muscle strength by age



OC28- A NOVEL FRAILTY INDEX IS ASSOCIATED WITH SARCOPENIA AND INDEPENDENTLY PREDICTS SURVIVAL IN ADVANCED OVARIAN CANCER.

A. Kumar, S.R. DeJong, M.E. McGree, A.L. Weaver, W.A. Cliby, C.L. Langstraat (Liège, Belgium)

Objectives: Frailty is defined as a clinical state in which an individual has an accumulation of deficits that makes persons more vulnerable to physiologic stressors and is associated with poor healthcare outcomes. We aim to evaluate a frailty index (FI) for its association with outcomes in advanced ovarian cancer (OC) patients undergoing primary debulking surgery (PDS). **Methods:** Patients undergoing PDS for stage IIIC/IV OC between 2003-2011 were included. The FI includes 30 items that are part of routine pre-visit questionnaires and medical history for all patients in the institution. FI per patient ranged from 0 to 1 and was calculated by summing across all the item scores and dividing by the total possible score based on nonmissing items. Frailty was defined as a FI ≥ 0.15 . Associations were assessed using logistic regression and Cox proportional hazards regression. **Results:** Of the 535 studied, 78% had stage IIIC disease and mean age was 64.3 (SD=11.3). Median FI was 0.08, and 131 patients (24%) were considered frail with FI ≥ 0.15 . FI was correlated with a measure of sarcopenia, mean skeletal muscle attenuation, as measured by computerized tomography ($r = -0.50, p < 0.001$) in the subset of patients with CT scans available. Overall survival for the entire cohort was 39.6 months (m). Overall survival was shorter in the frail versus the rest of the group (median OS 26.5 vs 44.9 m, $p < 0.001$). FI was independently associated with death (adjusted hazard ratio: 1.43, 95% CI: 1.14-1.81) after adjusted for known risk factors: age, ASA score, stage, histology, and residual disease. Compared to non-frail patients, frail patients were more likely to have an Accordion grade 3+ complication (28.2 vs. 18.8%; odds ratio (OR): 1.70, 95% CI: 1.08-2.68), more likely to die within 90 days of surgery (16.0 vs. 5.2%; OR: 3.48, 95% CI: 1.83-6.61) and less likely to start chemotherapy within 42 days of surgery (62.6 vs. 77.1%; OR: 0.50, 95% CI: 0.31-0.81). However, each of these associations was attenuated in separate multivariable analyses: adjusted OR: 1.57, 95% CI: 0.95-2.59; aOR: 1.89, 95% CI 0.89-4.00; and aOR: 0.64, 95% CI 0.37-1.10, respectively. **Conclusions:** These data represent novel data in the ovarian cancer surgical patient. Frailty is a common finding in patients with OC. The FI correlates with CT scan measurements of sarcopenia. Frailty as measured by a deficit index is associated with poorer OS and other surgical outcomes. Routine assessments of frailty

can be incorporated into patient counseling and decision-making for the OC patient. Investigations on etiology of frailty and interventions to improve frailty are needed in OC patients, particularly those getting surgery but also in those who will have delayed surgery and receive neoadjuvant chemotherapy.

OC29- LIFETIME DIET QUALITY AND PHYSICAL PERFORMANCE IN OLDER AGE: FINDINGS FROM A BRITISH BIRTH COHORT. S. Robinson^{1,2}, L. Westbury¹, R. Cooper³, D. Kuh³, K. Ward^{1,4}, H. Syddall¹, A.A. Sayer^{5,6}, C. Cooper^{1,2,7} (1. MRC Lifecourse Epidemiology Unit, University of Southampton, UK; 2. NIHR Nutrition Biomedical Research Centre, University of Southampton and University Hospital Southampton NHS Foundation Trust, Southampton, UK; 3. MRC Unit for Lifelong Health and Ageing at UCL, 33 Bedford Place, WC1B 5JU, London, UK; 4. MRC Elsie Widdowson Laboratory, Cambridge, UK; 5. Institute of Neuroscience, Newcastle University, Newcastle upon Tyne NE4 5PL, UK; 6. NIHR Newcastle Biomedical Research Centre, Newcastle University and Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne NE4 5PL, UK; 7. NIHR Musculoskeletal Biomedical Research Unit, University of Oxford, Nuffield Orthopaedic Centre, Windmill Road, Oxford, OX3 7LD, UK)

Background: There is huge variability in muscle mass and function across the population. As this is only partly explained by known determinants, such as gender and age, a focus of current interest is on the influence of modifiable lifestyle factors. An important lifestyle influence is nutrition. ‘Healthier’ dietary patterns, and higher intakes of a range of protective nutrients have been shown to be associated with higher muscle mass, strength and better measured physical performance. However, most of these studies have been carried out in older populations, and little is known about the role or importance of diet quality earlier in life – particularly whether it could prevent or delay losses in physical function. To develop understanding of the role of diet earlier in life, and to evaluate potential cumulative effects across the lifecourse, studies with longitudinal prospective dietary data are needed. Using dietary data collected from participants in a British birth cohort study, we examined diet quality across adulthood and its links to physical performance at age 60-64 years. **Methods:** The MRC National Survey of Health and Development (NSHD) is a longitudinal study based on a socially stratified sample of 5362 births occurring in one week in March 1946, across England, Wales and Scotland. In 2006-10, 2229 participants (78% of those invited) were followed up. Diet was assessed prospectively during the study: at ages 36, 43, 53 and 60-64 years using 5-day food diaries. The present analysis includes 927 participants who had completed diaries (at least 3 days) at every adult assessment. Dietary patterns were identified using principal component analysis (PCA) of consumption of 45 food groups. At each age, the first component described a ‘healthier’ pattern of foods, characterized by higher consumption of fruit and vegetables and wholegrain bread. A participant’s compliance with this dietary pattern is calculated using the PCA component coefficients and their reported consumption of each food group. In the present analysis, to enable comparison of scores at different ages on a common scale, the PCA coefficients defined at 60-64 years were used for all calculations. A higher score at each age indicated a diet of higher quality. An overall adult diet quality score was calculated (ADQ) based on a participant’s position in quarters of the distribution of diet quality scores at each age, with points assigned: 1 = lowest, 2 = second, 3 = third, 4 = highest. The points were summed across the four ages; ADQ for individual participants ranged from 4 (poorer diet quality at all ages) to 16 (higher diet quality at all ages). Physical performance was assessed

by trained nurses following standard protocols using three tests at age 60-64: chair rises, timed up-and-go (TUG) tests and standing balance. The time taken to perform 10 chair rises (rise from a sitting to a standing position and sit down) was used to derive chair rise speed as the number of repetitions per minute. The TUG test required the participant to rise from a chair, walk 3m at a normal pace, turn around, return to the chair and sit down; TUG speed was calculated by dividing 6 (distance in metres) by the time taken in seconds. Standing balance time was measured as the length of time a participant could stand on one leg with their eyes closed, up to a maximum of half a minute. Physical performance measures were standardized (sex-specific) to ensure effect sizes were comparable. Linear regression models were used to examine associations between diet quality scores at different ages and each physical performance measure at 60-64 years; these included gender-adjusted and fully-adjusted (accounting for gender, age at follow-up, height, weight-for-height residual, smoking history, leisure time physical activity) models. Conditional models were used to examine whether higher diet quality than expected at various ages in adulthood, given diet quality at earlier ages, was associated with differences in the physical performance measures at 60-64 years. **Results:** In the gender-adjusted analyses, higher diet quality scores at each age were associated with better measured performance in the three tests ($p < 0.01$). Most associations were robust to adjustment ($p < 0.05$). There were consistent positive associations between diet quality and physical performance in the cross-sectional associations at 60-64 years, and using the overall ADQ score. Diet quality scores were highly correlated in adulthood ($0.42 \leq r \leq 0.66$), indicating tracking of diet. However, in conditional models, higher diet quality at age 60-64 (than expected from scores at younger ages), was associated with faster chair rise speed and with longer standing balance time (both $P < 0.01$). There was no evidence of gender-diet interactions in any of the gender-adjusted analyses ($p > 0.05$ for all interaction terms). **Conclusions:** Higher diet quality across adulthood is associated with better physical performance in early older age. Current diet quality may be particularly important for physical performance, suggesting potential for improvements in diet in early older age.

OC30- ORALLY ADMINISTERED UROLITHIN A IS SAFE AND MODULATES MUSCLE AND MITOCHONDRIAL BIOMARKERS IN A RANDOMIZED, DOUBLE-BLIND, PLACEBO CONTROLLED PHASE 1 CLINICAL TRIAL IN ELDERLY. A. Singh¹, P.A. Andreux¹, W. Blanco-Bose¹, D. Ryu^{1,2}, P. Aebischer³, J. Auwerx², C. Rinsch¹ (1. *Amazentis SA, EPFL Innovation Park, Batiment C, Lausanne, Switzerland*; 2. *Laboratory for Integrative and Systems Physiology (School of Life Sciences, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*; 3. *Neurodegenerative studies laboratory (Brain Mind Institute, School of Life Sciences, Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland)*)

Background: Age associated muscle and physical decline that leads to frailty and sarcopenia has become a significant public health concern. This has fueled a growing interest to identify novel interventions that can mitigate the process of muscle aging. Urolithin A (UA), is a natural metabolite derived from ellagitannins, compounds found in pomegranates, nuts and berries. UA has been shown to improve mitochondrial function by stimulating mitophagy, resulting in enhanced exercise capacity that was observed in two separate models of age-related decline in muscle function (*Nature Medicine* 22, 879-888 (2016)). **Objective:** To investigate the safety of UA and its impact on biomarkers in a first-in-human Phase I clinical trial in elderly. **Methods:** A single center, multi-part (single and

4-week multiple ascending doses) Phase I, double-blind, randomized, placebo controlled study in 60 healthy elderly subjects was conducted (NCT02655393). All of the subjects were between 61 to 85 years of age and sedentary with a BMI range of 18-32 kg/m². The subjects modified their diet to exclude pomegranates, berries and nuts as well as dietary supplements for the duration of the study. Plasma samples and muscle biopsies from the vastus lateralis muscle were collected to investigate the effects of UA on the plasma metabolomics profile and the skeletal muscle transcriptome. **Results:** The primary endpoint of safety was successfully met as no serious or product related non-serious adverse effects were recorded. No clinically significant changes were observed in a battery of safety tests (vital signs, physical examination, ECG, serum biochemistry, haematology and urinalysis), indicating a favourable safety profile for UA in humans. The impact of UA on plasma and muscle biomarkers following a 4-week dosing were assessed, and this revealed that UA modulated both genes and metabolites linked to mitochondrial and muscle function. **Conclusion:** UA is well tolerated and has an attractive safety profile when orally administered in single and multiple doses to elderly. Importantly, UA is bioavailable in both human plasma and muscle and modulated biomarkers of muscle and mitochondrial function. Our results hold promise for the use of advanced dietary interventions involving UA to manage mitochondrial and muscle health during aging.

OC31- PARASPINOUS MUSCLE ATTENUATION ON COMPUTED TOMOGRAPHY (CT) IS ASSOCIATED WITH HEALTH-RELATED QUALITY OF LIFE IN THE NATIONAL LUNG SCREENING TRIAL. R.D. Boutin¹, S.B. Kritchevsky², T.C. Register³, B.L. Wise⁴, C.P. Bateni⁵, A. Bayoumi⁶, H. Chen⁷, C. Chiles⁸, L. Lenchik⁸ (1. *Department of Radiology, University of California, Davis School of Medicine, Sacramento, USA*; 2. *Department of Geriatric Medicine, Wake Forest School of Medicine, Winston-Salem, USA*; 3. *Department of Pathology and Comparative Medicine, Wake Forest School of Medicine, Winston-Salem, USA*; 4. *Departments of Orthopaedics and Internal Medicine, University of California, Davis School of Medicine, Sacramento, USA*; 5. *Department of Radiology, University of California, Davis School of Medicine, Sacramento, USA*; 6. *Department of Otolaryngology, University of California, Davis School of Medicine, Sacramento, USA*; 7. *Department of Public Health Sciences, Wake Forest School of Medicine, Winston-Salem, USA*; 8. *Department of Radiology, Wake Forest School of Medicine, Winston-Salem, USA*)

Background: With more than 82 million CT scans performed annually in the USA, there is increasing interest in secondary analysis of images to opportunistically evaluate for chronic disorders, including cardiovascular disease, osteoporosis, and sarcopenia. Opportunistic screening for sarcopenia could have a large positive impact on public health, without additional costs or radiation exposure. The purpose of the current study was to examine the association between CT-measured paraspinous muscle attenuation with Health-Related Quality of Life (HRQoL) in older participants in the CT arm of the National Lung Screening Trial (NLST). **Method:** Analysis of baseline chest CT scans from NLST participants, age 70-74 years, was performed. Using a clinical PACS workstation, left paraspinous muscle was segmented on a single-slice CT image at the level of T-12 vertebra and muscle attenuation (Hounsfield unit; HU) was recorded. A subset of participants had baseline HRQoL assessment using the short form-36 (SF-36) questionnaire and the EuroQol 5-Dimension (EQ-5D) questionnaire. From the SF-36, physical health component score (PCS) and mental health component score (MCS) were derived. From the EQ-5D, a composite EQ Index as well as self-reported mobility, self-care, and usual activities, pain/discomfort,

and anxiety/depression metrics were derived. The association between muscle attenuation and SF-36 was calculated using a multiple linear regression model. The association between muscle attenuation and EQ-5D outcomes was determined using a logistic regression model. **Results:** 114 participants (74 men, 40 women; mean age, 71.6 years; mean BMI 27.8) were analyzed. Mean paraspinous muscle attenuation was 37.8 HU (SD=10.3). Using SF-36, mean PCS was 46.1 (SD=9.0) and mean MCS was 53.2 (SD=8.7). Using EQ-5D, mean EQ Index was 0.82 (SD=0.13); limitations in mobility were reported in 36.8%, limitations in self-care in 3.5%, and limitation in usual activities in 26.3% of participants. CT-measured muscle attenuation was positively correlated with PCS ($p<0.0001$). The association remained significant after adjusting for age, sex, and BMI ($p=0.003$). Muscle attenuation was not associated with MCS, pain/discomfort, or anxiety/depression. Muscle attenuation was positively correlated with EQ Index ($p=0.03$), mobility (OR=0.51, $p=0.003$), self-care (OR=0.34, $p=0.007$), and usual activities (OR=0.59, $p=0.012$), but these associations did not maintain significance after adjusting for age, sex, and BMI. **Conclusion:** In older adults, increased paraspinous muscle attenuation was positively associated with improved health-related quality of life. Opportunistic measurement of muscle attenuation on CT exams may help improve the accuracy of existing health-related outcome prediction models in older adults. Acknowledgement: The study was funded by Wake Forest Clinical and Translational Science Institute and Pepper Older American Independence Center (P30-AG21332) and University of California, Davis Interdepartmental Seed Grant.

OC32- INTRAVENOUS DELIVERY OF ALLOGENEIC MESENCHYMAL STEM CELLS REDUCES THE CHRONIC INFLAMMATION IN AGING AND FRAILTY AND REVERSES IMMUNOSENESCENCE. A.M. Landin^{1,2}, A.S. Medina¹, A. Khan², A.A. Oliva¹, P.J. Goldschmidt-Clermont^{3,4}, J.M. Hare^{1,2,3,4} (1. Longeveron, LLC, Miami, FL, USA; 2 Interdisciplinary Stem Cell Institute, University of Miami Miller School of Medicine, Miami, FL, USA; 3 Department of Medicine, University of Miami Miller School of Medicine, Miami, FL, USA; 4 Division of Cardiology, University of Miami Miller School of Medicine, Miami, FL, USA)

Background: Our immune system is key in defending us from the daily challenges imposed by potentially deadly pathogens. However, in aging and frailty molecular and cellular defects along with chronic inflammation (inflammaging) which leads to an immunosenescent state. Allogeneic human bone marrow-derived mesenchymal stem cells (allo-hMSCs) have unique immunomodulatory and anti-inflammatory properties. Thus we have performed a Pilot Phase study administering allo-hMSCs by intravenous infusion in order to test the hypothesis that allo-hMSCs reduce the inflammaging (i.e.-Tumor necrosis factor-alpha (TNF- α)) process and result in a reversal of the immunosenescence phenotype (reduced switched memory B cells and CD4:CD8 ratio and increased exhausted B cells and Temra cells) in patients with aging frailty. **Methods:** Eligible subjects, were between the ages of 60 to 95 with symptoms of frailty as defined by the Canadian Study on Health & Aging. Enrolled subjects, were first randomized in a pilot phase that tested the dose effect of (20-, 100- and 200-million) allo-hMSCs. Twelve to 15 months following the phase, subjects received a second infusion with 100-million allo-hMSCs. Peripheral blood was drawn at baseline (BL), 6 and 12-15 months post 1st infusion and at 1, 3 and 6 months post 2nd infusion of allo-hMSCs. Peripheral blood mononuclear cells (PBMCs) were isolated and assessed for T cell activation makers, T effector memory re-expressing the naïve marker CD45RA (Temra), immune risk phenotype (CD4:CD8 ratio), switched memory B cells, exhausted

B cells, and percentage of B cells expressing intracellular (I.C.) TNF- α . Serum samples were analyzed to determine the recipients calculated panel reactive antibodies (cPRA) against the allo-donor and TNF- α at BL and 6 months after 1st and 2nd infusion. **Results:** Allo-hMSCs were well tolerated with only one patient that developed a moderate donor specific cPRA in the 20-million dose but there were no significant donor specific cPRA reactions in the 2nd infusion and no clinical signs of immune rejection. Serum TNF- α was significantly reduced at 6 months post 1st infusion in all patients. The immune risk phenotype was also significantly improved at 6 months post 1st infusion and was maintained throughout the study. T cell activation markers and Temra cells were suppressed after allo-hMSCs therapy. Furthermore, exhausted B cells were significantly decreased at 12-15 months post 1st infusion and continued to significantly decrease at 1, 3 and 6 months post 2nd infusion relative to BL. This decrease in exhausted B cells occurred concomitantly with a significant increase in switch memory B cells at 6 months post 1st infusion with a continued significant increase to healthy levels post 2nd infusion. In addition, the percentage of B cells expressing I.C. TNF- α decreased significantly at 6 months post 1st infusion and continued to decrease significantly post 2nd infusion. **Conclusion:** Intravenous infusion with Allo-hMSCs is safe and has the therapeutic potential to reverse the effects of aging frailty on the immune system. These novel findings indicate that MSCs are not only immunomodulatory but may also be key in revitalizing the immune system of aging frailty patients.

OC33- HEALTH OUTCOMES OF SARCOPENIA: A SYSTEMATIC REVIEW AND META-ANALYSIS. C. Beaudart¹, M. Zaaria², F. Pasleau³, J.-Y. Reginster¹, O. Bruyère¹ (1. Public Health, Epidemiology and Health Economics, University of Liège, Liège, Belgium; 2. Aix-Marseille University, School of Medicine, France; 3. Life Sciences Library, University of Liège, Liège, Belgium)

Objective: The purpose of this study was to perform a systematic review to assess the short-, middle- and long-term consequences of sarcopenia. **Methods:** Prospective studies assessing the consequences of sarcopenia were searched across different electronic databases (MEDLINE, EMBASE, Cochrane Database of Systematic Reviews, ACP Journal Club, DARE and AMED). Only studies that used the definition of the European Working Group on Sarcopenia in Older People to diagnose sarcopenia were included. Study selection and data extraction were performed by two independent reviewers. For outcomes reported by three or more studies, a meta-analysis was performed. The study results are expressed as odds ratios (OR) with 95% CI. **Results:** Of the 772 references identified through the database search, 17 were included in this systematic review. The number of participants in the included studies ranged from 99 to 6658, and the duration of follow-up varied from 3 months to 9.8 years. Eleven out of 12 studies assessed the impact of sarcopenia on mortality. The results showed a higher rate of mortality among sarcopenic subjects (pooled OR of 3.596 (95% CI 2.96-4.37)). The effect was higher in people aged 79 years or older compared with younger subjects ($p=0.02$). Sarcopenia is also associated with functional decline (pooled OR of 6 studies 3.03 (95% CI 1.80- 5.12)), a higher rate of falls (2/2 studies found a significant association) and a higher incidence of hospitalizations (1/1 study). The impact of sarcopenia on the incidence of fractures and the length of hospital stay was less clear (only 1/2 studies showed an association for both outcomes). **Conclusion:** Sarcopenia is associated with several harmful outcomes, making this geriatric syndrome a real public health burden.

OC34- DIETARY PROTEIN INTAKE AND INCIDENT SARCOPENIA IN OLDER ADULTS: THE HEALTH ABC STUDY. D.K. Houston¹, J.A. Tooze¹, M. Visser², F.A. Tylavsky, S. Rubin⁴, A.B. Newman⁵, T.B. Harris⁶, S.B. Kritchevsky¹ (1. Wake Forest School of Medicine, Winston Salem, NC, USA; 2. Vrije Universiteit, Amsterdam, The Netherlands; 3. University of Tennessee Health Science Center, Memphis, TN, USA; 4. University of California, San Francisco, CA, USA; 5. University of Pittsburgh, Pittsburgh, PA, USA; 6. National Institute on Aging, Bethesda, MD, USA)

Background: Low dietary protein intake has been hypothesized to contribute to sarcopenia, the age-related loss of muscle mass, strength, and physical performance. We examined the association between dietary protein intake and incident sarcopenia in community-dwelling older adults in the Health ABC study (n=2,101). **Methods:** The Health ABC study enrolled initially well-functioning, community-dwelling black and white men and women aged 70-79 years from the Pittsburgh, PA, and Memphis, TN, metropolitan areas. Dietary protein intake was calculated using an interviewer-administered food frequency questionnaire and categorized as <0.8 (the current Recommended Dietary Allowance), 0.8 - <1.0, and ≥1.0 g protein/kg actual body weight and <0.8, 0.8 - <1.0, and ≥1.0 g protein/kg adjusted body weight (where weight was set to that of a BMI of 27 kg/m² for height for participants with a BMI >27 kg/m²). Body composition was measured by dual-energy x-ray absorptiometry (DXA) and appendicular lean mass calculated as the sum of lean mass in the arms and legs. Grip strength was assessed using an isometric handgrip dynamometer and usual gait speed was assessed over a 20-m walk. Incident sarcopenia was defined as low appendicular lean mass adjusted for BMI (<0.789 in men, <0.512 in women) and low grip strength (<30 kg in men, <20 kg in women) and/or slow gait speed (<1.0 m/sec) at 2- and 4-year follow-up after excluding those with prevalent sarcopenia at baseline. The association between categories of dietary protein intake and incident sarcopenia over 4 years of follow-up was examined using proportional hazard regression models adjusted for demographics (age, sex, race, field site, education), behavioral characteristics (alcohol use, smoking status, physical activity), height, total energy intake, and chronic conditions (cognition, depression, diabetes, and cardiovascular disease). **Results:** The mean (SD) age of participants was 74.5 (2.8) years; 53% were female and 37% were black. The mean (SD) dietary protein intake was 0.90 (0.36) g protein/kg actual body weight and 0.95 (0.37) g protein/kg adjusted body weight, with 43% consuming <0.8 g protein/kg actual body weight and 38% consuming <0.8 g protein/kg adjusted body weight. Two hundred and thirty individuals developed sarcopenia over 4 years of follow-up for a cumulative incidence of sarcopenia of 18.5%. Individuals in the lower and middle dietary protein categories based on actual body weight were at greater risk of sarcopenia over 4 years of follow-up (HR (95% CI): 2.66 (1.75-4.04) and 1.61 (1.07-2.41) for <0.8 and 0.8 - <1.0 g protein/kg actual body weight, respectively) compared to those in the upper dietary protein category (≥1.0 g protein/kg actual body weight). When adjusted body weight was used, only those in the lower dietary protein category were at greater risk of sarcopenia (HR (95% CI): 1.59 (1.03-2.46) and 1.24 (0.84-1.84) for <0.8 and 0.8 - <1.0 g protein/kg adjusted body weight, respectively, compared to those in the upper dietary protein category (≥1.0 g protein/kg adjusted body weight)). **Conclusion:** Lower dietary protein intake was associated with increased risk of incident sarcopenia over 4 years of follow-up among community-dwelling older adults. Results were attenuated somewhat when protein intake was standardized to adjusted body weight. Dietary protein should be studied further as a modifiable risk factor for

sarcopenia. Acknowledgements: This work was supported in part by the Intramural Research Program of the National Institutes of Health, National Institute on Aging; NIA contracts N01-AG-6-2101, N01-AG-6-2103, and N01-AG-6-2106; NIA grants R01 AG028050 and R03 AG045492; NINR grant R01 NR012459; and the Wake Forest Claude D. Pepper Older Americans Independence Center (P30 AG021332).

OC35- HIGHER DIETARY INTAKES OF THE ANTI-OXIDANT VITAMINS C, E AND CAROTENE ARE ASSOCIATED WITH BETTER MEASURES OF SKELETAL MUSCLE MASS AND GRIP STRENGTH IN MEN AND WOMEN IN THE UK BIOBANK STUDY. A.A Welch¹, M. Hickson², J. Skinner¹ (1. Department of Population Health and Primary Care, Norwich Medical School, University of East Anglia, Norwich, UK; 2. School of Health Professions, Faculty of Health and Human Sciences, Plymouth University, Derriford Road, Plymouth, UK)

Background: Loss of skeletal muscle mass and function with age (sarcopenia) are risk factors for frailty and falls. Osteoporosis and falls are well established risk factors for the occurrence of fractures. There is growing evidence that skeletal muscle and bone health are intrinsically linked. With recent research finding that the loss of skeletal muscle mass or function, or sarcopenia, increase the risk of osteoporosis and fragility fractures [1, 2]. Therefore, studying the links between bone and skeletal muscle health is crucial. Currently no pharmacological treatments exist for sarcopenia, thus focussing on prevention before old age is important. Nutrients with anti-oxidant capacity, such as vitamin C, E and carotene, may impact on the mechanisms leading to sarcopenia and osteoporosis. For instance, via the attenuation of circulating inflammatory cytokines. However, comparatively little research has investigated the links between these vitamins and sarcopenic risk factors or osteoporosis, in men and women of an age at which prevention is possible [3,4]. We therefore, investigated the associations between intakes of vitamin C, E and carotene with bone and skeletal muscle outcomes in the UK Biobank Cohort. **Method:** We included 73,147 men and 81,960 women (aged 39-72 years) with complete dietary data and measurements for body composition with a sub-group of 35,627 men and 39,819 women with measures of bone mineral density (BMD) in our study. Hand grip strength was measured using a Jamar (J00105) Hydraulic Dynamometer (Layfayette Instruments, USA) and body composition by bioelectrical impedance (Tanita BC-418 MA, Tanita Europe, NL). Fat free mass (FFM) was calculated. To account for the increase associated with greater body weight FFM and appendicular lean mass (ALM) were divided by body mass index (BMI): FFM_BMI and ALM_BMI. Bone density (g/cm²) was measured using the Sahara Heel Ultrasound device (Hologic, USA). Intake of nutrients was calculated using the average of between 1 and 5 on-line 24-hour recalls [5]. Adjusted means for the bone and muscle outcomes were calculated according to quintile (Q) of vitamin intake, adjusted for confounders (Q percentage energy from protein, smoking status, age, physical activity, energy intake (EI), the ratio of EI to predicted energy expenditure, number of diary days, vitamin supplements and, in women, for HRT medication and the menopause). Additional adjustments for FFM and strength were cholesterol-lowering drugs, and for strength, height. BMD was additionally adjusted for BMI, dietary and supplemental calcium and vitamin D. Analysis was performed in STATA SE 14.0. To compare the results across the outcomes the between quintile differences of the adjusted means were calculated as a percentage of the value in Q1 ((Q5 minus Q1)/divided by Q1)). **Results:** We found positive

associations with grip strength, FFM_BMI and ALM_BMI and intakes of vitamin C, vitamin E and total carotene intakes in both men and women. For grip strength the percentage differences for vitamin C, E and carotene were significant (P trend <0.001) for all except vitamin E in men (P=0.085). These interquintile differences were 0.7%, 0.4% and 1.2% in men and 1.6%, 1.4% and 1.2% in women for vitamins C, E and carotene, respectively. For FFM_BMI and ALM_BMI the strongest associations were with vitamin E with differences of 2.9% for FFM_BMI in both men and women and for ALM_BMI of 2.5% in men and 2.9% in women (P trend <0.001). For vitamin C interquintile differences were the same in men and women: 1.8% for FFM_BMI and 1.6% for ALM_BMI (P trend <0.001). For carotene the equivalent findings for FFM_BMI were 1.5% in men and 1.6% in women and for ALM_BMI were 1.2% in men and 1.5% in women. No significant associations were found with heel BMD and carotene or vitamin E, or with vitamin C in women but in men, vitamin C was associated with an interquintile difference of 1.6% (P<0.001). **Conclusion:** Overall we found significant associations indicative of protective effects of vitamins C, E and carotene on grip strength and indices of skeletal muscle ranging from 0.4% to 2.9% in a UK population. These associations were found after accounting for the known factors that influence skeletal muscle outcomes, including age and protein intake. Given that skeletal muscle is lost at the rate of 1% per year after the age of 60 our findings may be of clinical significance. Further research to understand the effectiveness increasing intakes of these nutrients in intervention studies is required. This research has been conducted using the UK Biobank Resource and the High Performance Computing Cluster supported by the Research and Specialist Computing Support service at the University of East Anglia. References: [1] Gonnelli S et al. *Calcif Tiss Int* 2016 [2] Curtis E et al. *J Cell Physiol* 2016 [3] Robinson SM et al. *J Am Ger Soc* 2008 [4] Lauretani F et al. *J Gerontol. A Biol. Sci. Med. Sci.* 2008 [5] Galante J et al. *Br J Nutr* 2016

**OC36- “YUBI-WAKKA (FINGER-RING) TEST”:
DEVELOPMENT OF SIMPLE SELF-SCREENING METHOD
FOR SARCOPENIA AND ITS VALUABLE USEFULNESS.**
K. Iijima¹, T. Tanaka^{1,2}, K. Takahashi¹, M. Akishita², T. Tsuji¹
(1. *Institute of Gerontology, The University of Tokyo, Japan*;
2. *Department of Geriatric Medicine, The University of Tokyo, Japan*)

Background: To prevent frailty, it is very important to let the nation raise its preventive awareness from earlier stage. We developed simple self-screening method “Yubi-wakka (finger-ring) test” to assess sarcopenia as a representative phenotype of physical frailty even in the elderly. We aimed to examine the validity of this novel unique test as a practical self-screening method among community-dwelling elderly for identifying sarcopenia without use of high-technique instruments. **Method:** This “Yubi-wakka test” can evaluate the decline in muscle volume very simply. In concrete, this test means to assess whether or not the maximum circumference of ‘non-dominant calf’ is bigger than circumference of ‘own finger-ring’, which is formed by a thumb and a forefinger. We divided into three groups, ‘too big’, ‘just fit’ and ‘too small’ in comparison between calf and finger-ring circumference. A total of 1,904 randomly selected community-dwelling (not eligible for long-term care) elderly aged ≥65 years were followed annually for incident for sarcopenia, which is defined by the criteria of Asia Working Group for Sarcopenia, during 2 years. In addition, many anthropometric measures and covariates such as demographic characteristics were compared in three groups. **Results:** The group which the calf size is ‘too small’ compared to finger-ring size had significantly increased risk of sarcopenia new-onset (‘just fit’ vs ‘too big’, hazard ratio [HR]; 2.09, 95% confidence interval [CI]; 1.16-

3.77, and ‘too small’ vs ‘too big’, HR; 3.36, 95%CI; 1.77-6.36), in the adjusted model including covariates. After adjustment for age, the discriminative ability of the test for identifying those with both pre-sarcopenia and sarcopenia was significantly improved such that the area under the receiver operator characteristic curve (AUC) was 0.78 and 0.73 in men and women, respectively (both P<0.001). These findings were similar to those of sarcopenia only (AUC: 0.83 in men, 0.75 in women: both P<0.001). **Conclusion:** This novel self-screening “Yubi-wakka test” is very useful to evaluate whether community-dwelling elderly have the risk of sarcopenia very simply by themselves even in any conditions at home and/or in community gatherings. In addition, our new unique strategy might be able to let the nation raise their preventive awareness for sarcopenia from earlier stage.

**OC37- LONGITUDINAL ASSOCIATION OF COGNITIVE
FRAILTY WITH BADL DECLINE IN PATIENTS WITH
MCI.** T. Sakurai¹, T. Sugimoto¹, N. Saji¹, K. Toba¹, C.-K. Liang², L.-K. Chen² (1. *National Center for Geriatrics and Gerontology, Japan*; 2. *Kaohsiung Veterans General Hospital, Taiwan*)

Background: Cognitive Frailty (CF) was proposed to indicate concomitance of Mild Cognitive Impairment (MCI) and physical frailty. This study aimed to investigate the longitudinal association between CF and decline in IADL, BADL and cognitive function. **Method:** Overall, 207 MCI patients who visited National Center for Geriatrics and Gerontology in Obu city, Japan, and those who underwent CGA at the first and second visits from October 2010 to January 2015 were enrolled for study. To assess frailty, we have conducted CGA interview for subjects’ caregivers on the following 53 items: living function impairment (15 items), comorbid diseases (11 items), geriatric syndrome (27 items). Their answer “Yes” for each item was counted as one point, and “No” as zero point. Frailty index (FI; 0~1.0) was made by summing up these points and dividing by 53. Subjects with Pre-frailty (FI > 0.08) and Frailty (FI > 0.25) were grouped as CF. Subjects were evaluated by Lawton index and Barthel index at the first and second visit, and those who scored lower in more than one item at the second visit were assessed as having IADL and BADL decline. Additionally, subjects who scored more than three points lower on MMSE at the second visit were assessed as having cognitive decline. For statistical analysis, subjects were divided into two groups: subjects having a decline in IADL, BADL, and cognitive function, and subjects with no decline. The CGA score in each group at the first visit was compared by unpaired t-test and chi-square test. In multivariate analysis, having or not having a decline in IADL, BADL, and cognitive function was entered as objective variable, then we performed step-wise logistic regression analysis for the variables which had p < 0.2 to compare the two groups. **Results:** Among 207 subjects (62.3%) 129 patients were assessed as CF. The follow up period was 527.6 ± 279.2 days on average. Subjects who had a decline in IADL, BADL, and cognitive functions were 73 (35.2%), 24 (11.6%), and 69 (33.3%), respectively. Association was found only between CF and BADL decline (CF prevalence rate: having a decline vs. no decline = 87.5% vs. 59.0%, p = 0.007), but not with IADL decline (64.2% vs. 58.9%, p = 0.454) or with cognitive function decline (63.0% vs. 60.0%, p = 0.761). Association between CF and BADL decline showed significance after adjusting possible confounders (OR = 5.07, 95% CI = 1.31–19.59, p = 0.019). **Conclusion:** CF is a risk factor for BADL decline, and the finding indicates the significance of frailty evaluation and intervention in MCI patients in order to prevent ADL decline, which would lead to the prevention of the progression from MCI to dementia.

OC38- SARA-PK: A SINGLE AND MULTIPLE ASCENDING ORAL DOSES TO ASSESS THE SAFETY AND EVALUATE THE PHARMACOKINETICS OF BIO101 IN HEALTHY YOUNG AND OLDER VOLUNTEERS. W. Dioh¹, S. Del Signore¹, P. Dupont¹, P. Dilda¹, R. Lafont^{1,2}, S. Veillet¹ (1. *Biophytis, Parc Biocitech, Romainville, France*; 2. *Sorbonne Universités, UPMC Univ Paris 06, CNRS - Institut de Biologie Paris Seine (BIOSE), Paris, France*)

Background: Sarcopenia is characterized by the loss of muscle mass and function. It represents one of the main cause of physical frailty, a reversible condition that often leads to mobility disability and dependency in older patients. Sarcopenic obesity (SO), is an emerging condition affecting older obese individuals and is defined by fat mass increase associated to reduced muscle mass and performance. The drug candidate Sarconeos (BIO101) showed anabolic effects in rodent and human myocytes. It also compensated for the significant loss of running velocity as a consequence of aging in a rodent model. Sarconeos (BIO101) is designed to treat sarcopenia including sarcopenic obesity via the renin-angiotensin system, and specifically the Mas receptor whose natural ligand is the Angiotensin 1-7. Sarconeos (BIO101) has shown a very safe profile in rodents and non-rodents in toxicology and safety pharmacology assays with a No Adverse Effect Levels of 1500 mg/kg/day. The SARA program is composed of three main clinical studies: SARA-PK dedicated to evaluate safety and pharmacokinetics, SARA-OBS to validate the target population, and SARA-INT to investigate the efficacy of Sarconeos on sarcopenia. SARA-PK, the focus of this abstract, is a phase I study investigating the safety and pharmacokinetics of Sarconeos (BIO101) in young and elderly healthy volunteers. SARA program is hosted by a dedicated digital platform that integrates different source data: electronic CRF, DXA, physical activity recording device, biobank and electronic Patient Reported Outcomes. This global infrastructure is set up to allow secondary research. **Methods:** The Single Ascending Dose (SAD) is organized in a staggered design where Sarconeos (BIO101) was administered to 24 subjects from two age groups: 2 cohorts of young adults (i.e., 18 ≤ age ≤ 55 years) at escalating doses of 100 to 1400 mg, and one cohort of older adults (i.e., 65 ≤ age ≤ 85 years) at 1400 mg. In the Multiple Ascending Dose (MAD), 3 selected doses of Sarconeos (BIO101) at 350 mg QD; 350 mg BID and 450 mg BID were administered by oral route to 3 panels of 10 older adults (i.e., 65 ≤ age ≤ 85 years) over 14 days. As an exploratory objective, the pharmacodynamic effects of Sarconeos (BIO101) are also investigated by measuring variations of selected biomarkers. Such biomarkers include circulating Myostatin; PIIINP; IL-6; CKMM; CKMB and Hsp72. Renin and aldosterone, are also measured as key parameters of the Renin Angiotensin system. **Results:** Preliminary results showed no serious adverse events in placebo or treated volunteers during SAD and MAD. All adverse events were of mild or moderate intensity. No clinically vital signs modifications, no meaningful laboratory abnormalities and no alterations of ECG were observed at any tested dose. Additional data will be presented especially on pharmacokinetics and pharmacodynamics of Sarconeos BIO101. **Conclusions:** SARA-PK results confirmed the safe and well tolerated profile of Sarconeos (BIO101) consistent with the non-clinical results (NOAEL of 1500 mg/kg/day in non-rodents). Indeed, no serious adverse events were observed. The complete SARA-PK results including pharmacokinetics and pharmacodynamics will be presented. These results will allow to define the most appropriate oral doses, for SARA-INT the interventional Phase2 clinical trial, to evaluate the efficacy and safety of Sarconeos (BIO101) for the treatment of sarcopenia, including sarcopenic obesity.

OC39- CLINICAL CORRELATES AND PREVALENCE OF SARCOPENIA AND OSTEOSARCOPENIA IN A POPULATION BASED COHORT: RESULTS OF THE ROTTERDAM STUDY. K. Trajanoska^{1,2}, J.D. Schoufour¹, S.K.L. Darweesh¹, L. Lahousse^{1,3}, G. Brusselle^{1,3}, B. Stricker¹, C.M. Zillikens¹, A.G. Uitterlinden², A.M. Ikram^{1,4}, O.H. Franco¹, F. Rivadeneira^{1,2} (1. *Department of Epidemiology, ErasmusMC, Rotterdam, the Netherlands*; 2. *Department of Internal Medicine, ErasmusMC, Rotterdam, the Netherlands*; 3. *Department of Respiratory Medicine, Ghent University Hospital, Ghent University, Belgium*; 4. *Department of Neurology, Erasmus MC, Rotterdam, the Netherlands*)

Background: Osteosarcopenia is a relatively new term that describes the co-occurrence of sarcopenia and osteoporosis in the elderly population. Previous studies have examined sarcopenia and osteosarcopenia separately, but few have evaluated them as one single condition. The aim of this study was to investigate the prevalence of sarcopenia and osteosarcopenia in the general population and compare baseline demographic and clinical characteristics between groups. **Methods:** Our study included 5,908 participants age 45 years and older, from a population-based prospective cohort. Lean mass and femoral neck bone mineral density (FN-BMD) were assessed using dual energy X-ray absorptiometry (DXA) with iDXA total body fan-beam densitometer. Osteosarcopenia was defined as low FN-BMD (T-score of -1 and below) in a presence of sarcopenia. We used the European Working Group on Sarcopenia in Older People (EWGSOP) definition to classify sarcopenic and pre-sarcopenic participants. Pre-sarcopenia was defined as having only low lean mass while sarcopenia was defined based on the presence of low lean mass, plus either low muscle strength or low physical performance, applying different cut-off points based on sex, body mass index and height. Muscle strength was assessed using a hydraulic hand dynamometer and maximum grip strength was defined as the biggest value (kg) out of the three trials performed in the non-dominant hand. Physical performance was assessed using gait speed. **Results:** Population mean age was 69.2 years and 55.8% were female. Prevalence of presarcopenia, sarcopenia and osteosarcopenia was 4.2, 6.1, and 4.7%, respectively. Characteristics of the participants are summarized in Table 1. There was a marked increase in the prevalence of sarcopenia in men from the age of 70 and onwards reaching 22.8% after the age of 80. In women, the prevalence of sarcopenia was lower and reached 11.9% after 80 years of age. **Conclusion:** In this large cohort study the prevalence of sarcopenia, identified according to the EWGSOP definition, was 6.1%. Previously reported prevalence rate varied from 0.9% to 7.5% in European studies. This variation is likely explained by the used instruments to define sarcopenia, the study population or reference population and the age of the participants included. The joint presence of sarcopenia and osteosarcopenia appears to be independent of chronic diseases, but related to life-style factors and disabilities. Intervention strategies for osteoporosis should aim at improving both, bone and muscle health.

Table 1
Demographic and Clinical Characteristics of the participants

Characteristics	Normal	Pre-sarcopenia	Sarcopenia	Osteosarcopenia	p-value
Prevalence, n (%)	5297 (89.7)	251 (4.2)	360 (6.1)	266 (4.7)	
Age, years, (mean±SD)	68.7 (8.9)	71.3 (8.4)	75.3 (9.8)	74.8 (9.9)	p<0.001
Female, n (%)	3131 (59.8)	49 (19.5)	195 (54.0)	151 (56.8)	p<0.001
Height, cm	168.6 (9.5)	174.6 (9.2)	166.9 (9.2)	166.5 (8.7)	NS
BMI, kg/m ² , (mean±SD)	27.9 (4.1)	23.7 (2.2)	22.9 (3.0)	22.6 (3.0)	p<0.001
Current Smokers, Yes, n (%)	771 (14.7)	61 (24.3)	65 (18.1)	54 (20.4)	p<0.001
Hospitalisation, Yes, n (%)	203 (14.7)	19 (20.0)	39 (21.5)	24 (18.3)	0.03
Falls, Yes, n (%)	505 (25.9)	32 (24.4)	66 (30.7)	41 (25.8)	NS
History of non-vertebral fracture, n (%)	819 (15.5)	31 (12.4)	88 (24.4)	63 (23.7)	p<0.001
Coronary heart disease, n (%)	187 (3.6)	10 (4.0)	20 (5.6)	12 (4.6)	NS
Diabetes Mellitus, n (%)	477 (9.1)	12 (4.8)	33 (9.3)	18 (6.9)	0.06
COPD, n (%)	701 (13.5)	76 (31.1)	92 (27.1)	76 (28.7)	p<0.001
Stroke, n (%)	184 (3.4)	12 (4.8)	21 (5.8)	13 (4.9)	0.05
Neoplasm, n (%)	210 (3.9)	14 (5.5)	32 (8.6)	19 (14.6)	NS
Femoral neck BMD, g/m ² , (mean±SD)	0.91 (0.14)	0.89 (0.13)	0.82	0.78 (0.10)	p<0.001
DHD-index score, (mean±SD)	57.6 (9.8)	56.3 (10.1)	56.5	54.7 (10.9)	p<0.05
Disability index, n (%)					p<0.001
No disability	3871 (77.6)	197 (83.5)	199	163 (67.4)	
Mild disability	883 (17.7)	31 (13.1)	81 (25.6)	58 (24.0)	
Severe disability	233 (4.7)	8 (3.4)	36 (11.4)	21 (8.7)	
MMSE, n (%)					p<0.001
<26	403 (6.4)	39 (14.9)	54 (10.1)	39 (14.1)	
≥26	4883 (92.4)	212 (84.5)	306	227 (81.9)	
Depression, n (%)	405 (8.0)	16 (6.8)	34 (10.3)	27 (11.1)	NS

OC40- IS POOR PHYSICAL FUNCTION AND MUSCLE WEAKNESS IN SENIORS RELATED TO REDUCED LEVELS OF COMMON DRIVE OF MOTOR UNITS? B.C. Clark¹, S. Amano¹, D.W. Arnold², L.A. Clark¹ (1. Ohio Musculoskeletal and Neurological Institute, Ohio University, Athens, Ohio, USA; 2. Departments of Neurology, Physical Medicine and Rehabilitation, and Neuroscience at The Ohio State University, Columbus, Ohio, USA)

Background: Aging results in reduced physical function. The causes of physical limitations are multifaceted with both the nervous and muscular systems implicated. It is well known that motor units are controlled in unison rather than individually, indicating that they receive a common drive. Common drive originates in the central nervous system and is diminished by the proprioceptive feedback from muscle spindles and possibly Golgi tendon organs (De Luca, 2009). In 1999, Erim and colleagues reported that seniors exhibited less common drive in a hand muscle in comparison to young adults (i.e., reduced cross-correlation coefficient (CCC) of single motor units during brief, isometric contractions) (Erim et al., 1999). This raises the question of whether the natural aging process results in significant modifications to the arrangement of the motor neuron pool (e.g., decrease in common inputs, increase in unshared inputs, or a combination thereof). To date, this is the only study examining the effects of aging on common drive. Building on this finding, we sought to test the hypotheses that 1) low levels of common drive are associated with a number of phenotypes of poor health in seniors (i.e., sarcopenia, dynapenia, and increased fall risk) and 2) the association with physical performance are muscle group specific (i.e., lower common drive in leg muscle would be associated with poorer lower extremity performance). **Methods:** Twenty seniors participated in this pilot study (77-90 yrs; 82.3±4.7 years; 11 women and 9 men). Subjects performed an isometric, trapezoidal force-matching task (10-sec plateau) with the non-dominant leg extensors and elbow flexors at 50% of maximal strength. During the contractions, electromyographic signals were recorded from the vastus lateralis (VL) or the biceps brachii (BB) using a surface array sensor of 5 cylindrical pins. Four separate bipolar signals from the array were sampled and decomposed into motor unit action potential trains. Mean firing rate patterns were calculated for each motor unit, and all possible patterns were cross-correlated to measure common drive. To understand the physiological significance of common drive in aging, we sought to

compare our common drive index across different phenotypes and physical performance parameters. As such, subjects were classified by 1) age status (oldest old >86 years (n=7) and middle old (77-80 years (n=10)); 2) dynapenia status (based on clinically meaningful leg extensor weakness (n=9) (Manini et al., 2009); and 3) multiple fall risk status (based on time to complete the four square step test; n=4) (Dite and Temple, 2002). Additional outcome measures included time to complete five chair rises and the Purdue pegboard test. Due to the pilot nature of this experiment, we only present effect sizes (η^2) and Spearman rank correlation coefficients (ρ). **Results:** The oldest old exhibited moderate effect sizes for a reduced common drive relative to the middle old for the BB and VL (BB CCC=0.202±0.018 vs. 0.219±0.019; $\eta^2=0.13$; VL CCC=0.208±0.028 vs. 0.221±0.020; $\eta^2=0.08$). Dynapenic seniors exhibited a moderate effect size for a reduced common drive relative to non-dynapenic seniors for the VL (part of the muscle group involved in the classification of dynapenia) (CCC: 0.211±0.024 vs. 0.217±0.019; $\eta^2=0.12$), but not for the BB (CCC=0.214±0.017 vs. 0.218±0.024; $\eta^2=0.05$). Similarly, high fall risk seniors exhibited a moderate effect size for a reduced common drive relative to those with a lower fall risk for the VL (CCC: 0.199±0.022 vs. 0.221±0.020; $\eta^2=0.18$), but not for the BB (CCC=0.205±0.013 vs. 0.218±0.021; $\eta^2=0.06$). We observed moderate associations between VL common drive and chair rise time ($\rho=-0.40$) as well as the four square step test time ($\rho=-0.49$); however, associations with the BB were lower. Consistent with this muscle specificity observation, we observed a moderate association between BB common drive and Purdue pegboard time ($\rho=-0.54$), while the association with the VL was lower. **Conclusions:** These data suggest that poor physical function and muscle weakness in seniors may be due, in part, to reduced levels of common drive of motor units. **Acknowledgements:** This work was supported by the National Institute On Aging of the National Institutes of Health (R01AG044424 to BCC).

OC41- NUTRITIONAL SUPPLEMENTATION WITH B-HYDROXY-B-METHYL BUTYRATE IMPROVES RECOVERY AND REDUCES SARCOPENIA IN ELDERLY PATIENTS WITH HIP FRACTURE: A MULTICENTER RANDOMIZED CONTROLLED TRIAL. THE HIPERPROT-GER STUDY. V. Malafarina^{1,2}, C. Malafarina³, F. Uriz-Otano⁴, J.A. Martinez^{1,5,6,7}, M.A. Zulet^{1,5,6,7} (1. Department of Nutrition, Food Science and Physiology, School of Pharmacy, University of Navarra, Pamplona, Spain; 2. Department of Geriatrics, Complejo Hospitalario de Navarra, Pamplona, Spain; 3. Department of Radiology, Complejo Hospitalario de Navarra, Pamplona, Spain; 4. Department of Geriatrics, Hospital San Juan de Dios, Pamplona, Spain; 5. CIBERobn, Physiopathology of obesity and nutrition. Instituto de Salud Carlos III. Madrid, Spain; 6. Centre for Nutrition Research, Faculty of Pharmacy, University of Navarra, Pamplona, Spain; 7. Navarra Institute for Health Research (IdiSNA), Pamplona, Spain)

Objectives: Hip fractures are associated with more disability, more cost and mortality than all of the other osteoporotic fractures combined. The prevalence of sarcopenia in the elderly patients with hip fractures is up to 54%. (1) The aim is to evaluate the impact of oral nutritional supplementation on functional recovery and sarcopenia treating in hip fracture older adults. **Design:** Multicenter randomized open-label trial realized in 2 post-acute rehabilitation facilities. One hundred and seven patients, age ≥ 65 years, are included. **Intervention:** The participants in the intervention group (IG) (n=55) received hospital menu plus two bottles a day of Ensure Plus Advance (enriched with β -hydroxy- β -methylbutyrate, HMB). The participants

in the control group (CG) received the hospital menu only (n=52). **Measurements:** The protocol of this study was registered in clinical trials (identifier: NCT01404195, registered 22nd of July 2011) and both the selection criteria of patients and the study methodology used have already been described before.(2) In short we registered weight and height, and collect blood sample at admission and repeated the measurements at discharge. In geriatrics it is difficult to define the overall improvement, with a single index. For this reason an Overall Recovery Rate Index (ORRI) including muscle mass, muscle strength, gait speed, weight, total proteins, albumin, vitamin D, C reactive protein and Barthel index was designed (ranges from 0 points – functional loss to 9 points – maximum improvement in all aspects). **Results:** Weight ($p < .001$), the body mass index ($p < .001$), the concentration of proteins ($p = .029$) and vitamin D ($p = .003$) had increased at discharged in the IG vs the CG. Figure 1 (panel A) shows the prevalence of sarcopenia at admission and discharge in both groups based on the criteria proposed by Janssen(3). In the intervention group we can see a lower number of individuals with severe sarcopenia (from 43 at admission to 39% at discharge) while in the control group we can see an increase in the number of individuals with severe sarcopenia (from 28 at admission to 40% at discharge) (figure 1 panel A). To diagnose prevalence of sarcopenia at discharge we used the criteria proposed by the EWGSOP. Figure 1 (panel B) shows the diagnosis of sarcopenia in both groups at discharge based on EWGSOP(4) criteria. It shows that in both groups almost half of the population has severe sarcopenia (45%) while 10 individuals in the intervention group and only 4 in the control group had normal values of hand grip strength, gait speed and muscle mass. Among the entire population, 21 individuals did not have sarcopenia, 3 had pre-sarcopenia, 16 mild sarcopenia and 46 severe sarcopenia (Figure 2). Total recovery based on ORRI was significantly better in the IG versus the CG ($p = .025$). **Conclusions:** Nutritional supplementation enriched in HMB improves both the overall functional recovery and the nutritional status while reducing the prevalence of sarcopenia in elderly patients who suffer from a hip fracture. (1) Malafarina V, et al. Sarcopenia in the elderly: diagnosis, physiopathology and treatment, *Maturitas* 2012;71:109-114. (2) Malafarina V, et al. Study protocol: High-protein nutritional intervention based on beta-hydroxy-beta-methylbutyrate, vitamin D and calcium on obese and lean aged patients with hip fractures and sarcopenia. The HIPERPROT-GER study, *Maturitas* 2013; 76(2):123-128. (3) Janssen I, et al. Estimation of skeletal muscle mass by bioelectrical impedance analysis, *J Appl Physiol* (1985) 2000;89:465-471. (4) Cruz-Jentoft AJ, et al. Sarcopenia: European consensus on definition and diagnosis: Report of the European Working Group on Sarcopenia in Older People, *Age Ageing* 2010;39:412-423..

Figure 1

Panel A: sarcopenia percentage at admission (A) and discharge (D) in the intervention group (IG) and control group (CG) using the criteria proposed by Janssen. Normal Skeletal Muscle Index (SMI) (stripes), moderate sarcopenia (gray), and severe sarcopenia (dots). Panel B: Classification for sarcopenia at discharge using the EWGSOP criteria in the intervention group (IG) (grey) and the control group (CG) (black)

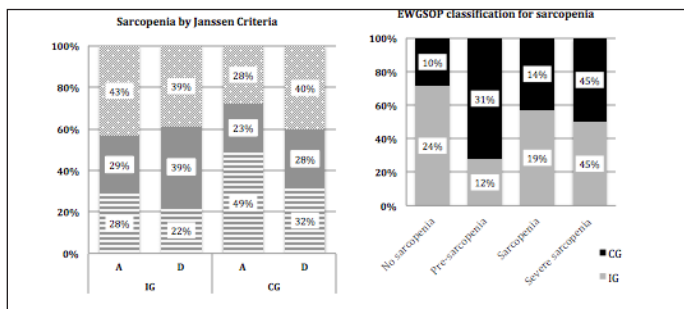
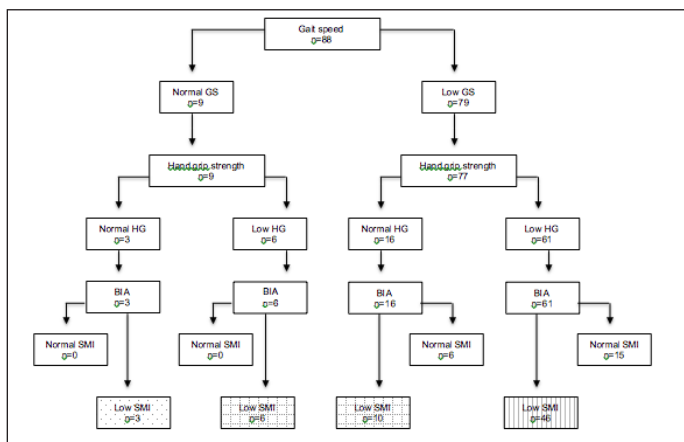


Figure 2

Classification tree for sarcopenia using the European Working Group on Sarcopenia in Older People (EWGSOP). Presarcopenia (dots), mild sarcopenia (squares) and severe sarcopenia (stripes). GS: Gait Speed; HG: Hand Grip Strength; SMI: Skeletal Muscle Index (Kg/m2)



OC42- DE-REPRESSION OF CYCLIN-DEPENDENT KINASE INHIBITOR 2A IN AGEING HUMAN SKELETAL MUSCLE WITH ATROPHY AND REGROWTH IN VIVO. U. Frandsen¹, P. Aagaard¹, T. Prokhorova¹, A.N. Jørgensen¹, L. Jensen¹, L.G. Hvid¹, P. Schjerling², M. Kjaer², C. Suetta³ (1. Institute of Sports Science and Clinical Biomechanics, SDU Muscle Research Cluster (SMRC), University of Southern Denmark, Denmark; 2. Institute of Sports Medicine and Center of Healthy Aging, Faculty of Health, University of Copenhagen, Bispebjerg Hospital, Denmark; 3. Department of Clinical Physiology, Nuclear Medicine & PET, Rigshospitalet, University of Copenhagen, Denmark)

Background: We have previously demonstrated that ageing is associated with diminished muscle re-growth and attenuated satellite cell (SC) expansion early after immobility-induced atrophy in human skeletal muscle (Suetta et al. 2013). Thus, supporting the proposition that SC are susceptible to aging and senescence. Cellular senescence is associated with deregulation of the cyclin-dependent kinase inhibitor 2A (p16INK4A) and induction or de-repression of p16INK4A expression cause senescence of a variety of cell types in culture and in experimental in vivo models including geriatric muscle

in vivo (Sousa-Victor et al. 2014). However, little is known about the expression and regulation of p16INK4A in human skeletal muscle under regenerative pressure in vivo. Here we present unpublished data from studies investigating the effect of ageing and disease on satellite cell cycle regulation in relation to p16INK4A and p38 MAPK expression in human skeletal muscle undergoing atrophy and regrowth induced by short-term immobility and subsequent reloading as well as in response to resistance exercise training. **Method:** Myofiber atrophy was induced by application of a knee-brace for a period of 4 days in young (Y, ~20 yrs, n=9) and aged (O, ~70 yrs, n=9) male adults. Muscle regrowth after atrophy was induced by 3 days of re-ambulation supplemented by 2 sessions of supervised unilateral resistance training for the disused leg 3 days after brace removal. Muscle biopsies (VL) were obtained pre and at 1d, 2d and 4d of immobility and after additional 6 days of re-mobilization (10d). mRNA and/or protein expression levels of CDKN2A/p16INK4A, TP27, TP53, p38/p-p38 MAPK, MyoD, MCM-2 and PCNA were determined by qRT-PCR and Western blotting, respectively. Muscle SC expression of pax7, MyoD, MCM-2, p16INK4A, TP27, EZH2 and p38/pp38 MAPK were determined by immunohistochemical analysis. Data analysis was also performed on a limited biopsies obtained from patients with neuromuscular diseases (ALS, sIBM) before and after 12 wks of resistance training. **Result:** CDKN2A mRNA was up-regulated in O and down-regulated in Y at 4d and remained up-regulated at 10d in O compared to pre (p<0.05). p16INK4A protein was lower at 1d, 2d and 4d in Y compared to pre and higher in O at 1d and 2d compared to pre (p<0.05). PCNA protein was higher in Y (5.5-fold) and unchanged (blunted) in O at 10d compared to pre (p<0.05). Pax7 positive SC expressed in % of total myonuclei was similar in Y and O at pre (Y: 4.8%, O: 4.0 %) and increased at 10d in Y (8.5%) while remained unchanged in O (4.8%), (p<0.05). Preliminary data indicate impaired p38 MAPK signaling and selective EZH2 expression in old and diseased human skeletal muscle satellite cells under regenerative pressure. **Conclusion:** p16INK4A were selectively de-repressed during immobility in O compared with Y subjects, suggesting that cellular senescence and SC cycle arrest could be implicated in the attenuated regenerative response observed in O compared to Y with re-ambulation. References: Suetta, C, Frandsen, U, Mackey, AL, Jensen, L, Hvid, LG, Bayer, ML, Petersson, S, Schröder, HD, Andersen, JL, Aagaard, P, Schjerling, P & Kjaer, M 2013, 'Ageing is associated with diminished muscle re-growth and myogenic precursor cell expansion early after immobility-induced atrophy in human skeletal muscle' The Journal of physiology, vol 591, no. Pt 15, pp. 3789-804. DOI: 10.1113/jphysiol.2013.257121. Sousa-Victor, P., Perdiguero, E. and Muñoz-Cánoves, P. (2014b). Geroconversion of aged muscle stem cells under regenerative pressure. Cell Cycle 13, 3183-3190. doi:10.4161/15384101.2014.965072

OC43- COMBINED EXERCISE TRAINING IS MORE EFFECTIVE THAN TIME-MATCHED AEROBIC OR RESISTANCE EXERCISE TRAINING FOR IMPROVING PHYSICAL FUNCTION IN OLDER ADULTS.

J. Timmons^{1,2}, D. Minnock¹, M. Hone³, K.E. Cogan¹, J.C. Murphy³, B. Egan^{1,3} (1. Institute for Sport & Health, School of Public Health, Physiotherapy and Sports Science, University College Dublin, Belfield, Dublin 4, Ireland; 2. Medfit Proactive Healthcare, Blackrock, Co. Dublin, Ireland; 3. School of Health and Human Performance, Dublin City University, Glasnevin, Dublin 9, Ireland)

Background: A lack of exercise is associated with elevated risk of lifestyle-related chronic diseases such as type 2 diabetes, obesity, and cardiovascular disease, in addition to the etiology of the loss of muscle mass and function in sarcopenia. Regular exercise can delay

the onset of many of these conditions, or can be used for therapeutic means when a clinical condition manifests. However, much remains to be elucidated about exercise prescription in the elderly. For instance, mode-specific exercise effects i.e. aerobic versus resistance versus combined exercise, are not well-studied in older adults. In insulin resistance and type 2 diabetes of middle-age, a combination of aerobic and resistance exercise is more efficacious than either mode alone (1, 2), but a resistance exercise component is essential if an increase in lean body mass (LBM) is to be achieved (1). To date, the combined exercise groups in such designs have performed more total work than either mode alone, so whether the observed effect is due to the volume of exercise or the combination per se is unresolved, and not explored in adults >65 years of age. Therefore, the present study employed a 12 week intervention of supervised aerobic versus resistance versus combined exercise training, with groups time-matched, to investigate the independent and combined effects of exercise modes on LBM, physical and cognitive function in older (>65 y) men and women. **Method:** Participants [(n=84; m/f 44/40, age (69.26 ± 3.53), height (169.27cm ± 8.73cm), Body Mass (76.16kg ± 15.08kg), BMI (26.42 ± 3.82), Body Fat (33.51% ± 6.97%), LBM (48.36kg ± 9.52kg)] were divided into four groups: control (CON, n=21), aerobic (AER; n=21), resistance (RES; n=21), and combined (CEX; n=21). Each training group performed three supervised exercise training sessions per week for 12 weeks. AER comprised of 24 min of aerobic exercise training (6 x 4 min at 80%-85% of age-predicted HRmax). RES comprised of 24 min of resistance exercise training (6 exercises x 1 min each x 4 sets). CEX comprised of 12 min of resistance exercise training (6 exercises x 1 min each x 2 sets) and 12 min of aerobic exercise training per session (3 x 4 min at 80%-85% of predicted HRmax). CON were advised to continue with their current physical activity levels, and all groups were asked to maintain their current dietary habits. Pre- (week 0), mid- (week 6) and post-intervention (week 12) assessments were performed including body composition (DXA), handgrip strength, Timed Up and Go Test (TUGT), Short Physical Performance Battery (SPPB), submaximal aerobic capacity (Chester step test), Montreal Cognitive Assessment Test (MoCA), Stair Climbing Test (SCT) for lower limb power, and upper and lower limb strength tests [one repetition maximum (1RM) chest press and leg press]. Fasting blood samples were also taken to assess markers of metabolic health (total cholesterol, HDL-C, LDL-C, triglycerides, CRP, complement C3, glucose, insulin, HOMA-IR). **Results:** Adherence averaged 87% across the groups throughout the 12 week intervention. No change in LBM or blood based markers of metabolic health were observed in any group at any time point. Lower limb strength was improved in all three training groups. Differential effects of training mode were observed for improvements in grip strength (RES and CEX only), sit-to-stand (RES and CEX only), TUGT (AER and CEX only), upper limb strength (RES and CEX only), gait speed (AER and CEX only), aerobic capacity (AER and CEX only), cognitive function (AER and CEX only) and reduction in total body fat (CEX and AER only). Only CEX resulted in a decrease in trunk fat and improvement in leg power. **Conclusion:** The experimental design of a time-matched training intervention was taken to ensure that the total training volume of exercise performed between aerobic (AER), resistance (RES) and combined (CEX) was similar, thereby enabling the assessment of effects of each exercise modality independently. LBM was not increased in any training group, which may be due to the lack of a nutrition co-intervention, or that the cohort recruited did not have a defined deficit in LBM prior to the start of the study. Differential effects of training mode were observed depending on the parameter under investigation, but the overall pattern suggests efficacy of CEX over either AER and RES alone, when training is time-matched, for many of parameters measured. These findings highlight the importance

of older adults participating in exercise regimens that incorporate both aerobic and resistance training components, and suggest a synergistic benefit from combined exercise training. We anticipate extraction of these mode-response relationships for key training variables to inform practitioners how to effectively design optimal training programmes for older adults. The CEX training model will form the basis for future work exploring the efficacy of nutrition co-intervention to address deficits in LBM i.e. pre-sarcopenic and sarcopenic elderly. Acknowledgement: Mr Timmons is funded by an Irish Research Council Employment-based Postgraduate Fellowship. References: 1. Davidson LE, et al. (2009) Arch Intern Med. 169(2):122-31; 2. Sigal RJ, et al. (2007) Ann Intern Med. 147(6):357-69

OC44- COGNITIVE IMPAIRMENT AND PHYSICAL FRAILTY IN OLDER ADULTS: IMPACT ON 11-YEAR SURVIVAL. G. Grande^{1,2}, D. Rizzuto¹, D.L. Vetrano^{1,3}, A.K. Welmer¹, B. Caracciolo¹, C. Mariani², L. Fratiglioni^{1,4} (1. Aging Research Center (ARC), Department of Neurobiology, Care Sciences and Society, Karolinska Institutet and Stockholm University, Stockholm, Sweden; 2. Center for Research and Treatment on Cognitive Dysfunctions, Biomedical and Clinical Sciences Department, "Luigi Sacco" Hospital, University of Milan, Italy; 3. Department of Geriatrics, Neurosciences and Orthopedics, Catholic University of Rome, Italy; 4. Stockholm Gerontology Research Center, Stockholm, Sweden)

Introduction: The presence of both physical frailty and cognitive impairment has been recently proposed as a distinctive entity. We investigated the effect of physical frailty and cognitive impairment on survival among older adults. **Methods:** Study participants included 2251 dementia-free people aged 60+ years enrolled in the Swedish National study on Aging and Care in Kungsholmen, Stockholm. Physical frailty was defined according to Fried's phenotype, including weight loss, weakness, exhaustion, slowness and low physical activity. Cognitive Impairment Non Dementia (CIND) was defined on the basis of an extensive neuropsychological battery. We investigated the impact on survival of isolated CIND and physical frailty, and of the combination of these two conditions. The association was assessed in terms of mortality rate, population attributable fraction, and differences in survival time. **Results:** Participants with both cognitive impairment and physical frailty had the worse prognosis especially in the short-time follow-up. Those people after 3 years had four times higher mortality rate (HR: 4.1; 95%CI: 2.1 – 8.1) and 4.5 years shorter lifespan in comparison to frailty free participants. While the effect of isolated physical frailty or CIND emerged on the long run. Overall, 21% of death at 3, 15% at 6 and 16% at 9 years of follow-up could be related to the presence of either isolated CIND, or isolated physical frailty or the combination of CIND and physical frailty. **Conclusion:** Subjects with both physical frailty and cognitive impairment represent a special frail and complex population that deserves ad hoc assessments and care.

OC45- HABITUAL DIETARY EXPOSURE OF RESVERATROL AND FRAILTY SYNDROME IN OLDER AGE: THE INCHIANTI STUDY. M. Rabassa¹, R. Zamora-Ros², M. Urpi-Sarda¹, S. Bandinelli³, L. Ferrucci⁴, A. Cherubini⁵, C. Andres-Lacueva¹ (1. Biomarkers and Nutrimetabolomics Laboratory, Department of Nutrition, Food Sciences and Gastronomy, Faculty of Pharmacy and Food Sciences, University of Barcelona, Spain; 2. Unit of Nutrition and Cancer, Cancer Epidemiology Research Programme, Catalan Institute of Oncology, Bellvitge Biomedical Research Institute (IDIBELL), Barcelona, Spain; 3. Geriatric Unit, Azienda Sanitaria Firenze, Florence, Italy; 4. Clinical Research Branch, National Institute on Aging, NIH, Baltimore, Maryland, United States; 5. Geriatrics and Emergency Care, Italian National Research Centre on Aging (INRCA), Ancona, Italy)

Backgrounds: Resveratrol, a polyphenol found in grapes, red wine and other food sources, may play a protective role against the frailty syndrome (FS) because of its antioxidant and anti-inflammatory properties. **Objective:** We studied the association between the habitual dietary exposure of resveratrol and the risk of FS and each of its five criteria at the 3-, 6-, and 9-y follow-up in older adults from the InCHIANTI [Invecchiare in Chianti (Aging in Chianti)] study. **Method:** We conducted a longitudinal analysis with the use of data from 769 participants aged ≥ 65 y from the InCHIANTI study. Total dietary resveratrol (TDR) intake was estimated at baseline with the use of a validated food-frequency questionnaire (FFQ), which was developed to assess participants' usual food intakes over the previous year, and an ad hoc resveratrol database. Total urinary resveratrol (TUR) was analyzed at baseline with the use of liquid chromatography-tandem mass spectrometry with a previous solid-phase extraction. The combination of both measures (TDR+TUR) was computed with the use of the Howe's method. FS was assessed at baseline and at 3-, 6-, and 9-y of follow-up and was defined as the presence of ≥ 3 of the following 5 criteria: shrinking, exhaustion, sedentariness, slowness, and weakness. **Results:** In multinomial logistic regression models adjusted for baseline FS and potential confounders, TDR+TUR levels were inversely associated with FS risk over 3-y of follow-up (OR for comparison of extreme tertiles: 0.11; 95% CI: 0.03, 0.45; P-trend = 0.002) but not over 6- and 9-y of follow-up, although the results were in the same direction. These results did not differ when analyses were further adjusted for inflammatory markers. **Conclusion:** In older community-dwelling adults, a higher habitual dietary exposure to resveratrol was associated with lower risk of developing FS during the first 3 y of follow-up but not after longer follow-up periods. In addition, our data did not suggest that inflammation mediated the protective effects of resveratrol against FS.

OC46- MITOCHONDRIAL DYSFUNCTION AS A DRIVER FOR AGE RELATED MUSCLE DECLINE AND FRAILTY SYNDROME: A CLINICAL STUDY COMPARING ACTIVE VERSUS PRE-FRAIL ELDERLY. M.P.J. van Diemen¹, P. Andreux², D. Ryu², M.R. Heezen¹, C. Rinsch², G.J. Groeneweld¹, A. Singh² (1. Center for Human Drug Research, Zernikedreef 8, 2333 CL Leiden, The Netherlands; 2. Amazentis SA, EPFL Innovation Park, Batiment C, CH-1015 Lausanne, Switzerland)

Background: Pre-frailty and frailty comprise an age related syndrome that has a multifactorial cause, principal among them being a decline in muscle strength and a progressive lack of mobility with aging. The goal of the current clinical study was to investigate the role of mitochondrial dysfunction in driving the frailty phenotype in elderly individuals and to validate in vivo methodologies, both non-invasive such as magnetic resonance and optical spectroscopy

and more routinely conducted invasive tools i.e. muscle biopsies for assessing mitochondrial function in two groups of elderly that were age and physical activity matched. **Methods:** The study was conducted as a single center, observational, case-control, method development clinical study (NCT02472340). We compared elderly (>60 years of age) that were classified either as active and athletic or pre-frail and sedentary based on standard muscle function testing and physical activity questionnaires. Pre-frailty was defined as fulfilling at least one to two out of the following criteria: low muscle mass (i.e. skeletal muscle mass index (SMI) assessed by Bio-impedance Analysis (BIA)), low muscle strength (handgrip strength, assessed by the Jamar dynamometer) and/or low physical performance (gait speed, assessed by the 4-meter walk test). Mitochondrial function was measured in vivo by non-invasive technique of phosphorous Magnetic Resonance Spectroscopy (31P-MRS) to determine the phosphocreatine (PCr) recovery time in the right calf muscle after in-scanner exercise. Muscle biopsies were collected from the vastus lateralis muscle of the right leg using a 4.5mm Bergström muscle biopsy needle. They were processed for the quantification of mitochondrial respiratory complexes proteins using ELISA. **Results:** We enrolled 22 elderly (n = 11 pre-frail and n = 11 active). PCr recovery time over both visits was found to be 72.3% longer in pre-frail elderly than in active elderly (95%CI, 3.718 - 18.853; p=0.0064), indicating a lower mitochondrial function. Compared to active elderly, pre-frail elderly had a 59.5% lower ratio of mitochondrial DNA to nuclear DNA (95%CI, -78.7% to -23.2%; p=0.0112), significantly lower electron transport chain complex abundances (complex I: -0.056 mg/mL Hela lysate (95%CI, -0.089 to -0.022, p=0.0039), complex IV: -0.146 ug BHM lysate (95%CI, -0.243 to -0.048; p=0.0075) and complex V: -0.159 mg/mL HepG2 lysate (95%CI, -0.253 to -0.066, p=0.0036) and significantly lower electron transport chain complex activity (complex II: -2.806 mcg BHM lysate (95%CI, -4.395 to -1.217, p=0.0028) and complex IV: -0.132 mcg BHM lysate (95%CI, -0.216 to -0.048, p=0.0061). **Conclusion:** We report that pre-frail elderly individuals presented with a significant decline in mitochondrial function as shown by decreases in mitochondrial complex abundance and activity in muscle tissue and impaired mitochondrial bioenergetics in skeletal muscle via magnetic resonance spectroscopy. Our results provide a rationale for developing interventions targeting improvements in mitochondrial function to reverse or delay age related muscle decline leading to mobility syndromes such as frailty and sarcopenia.

OC47- QUANTIFICATION OF INTRAMUSCULAR ADIPOSE TISSUE IN SARCOPENIA USING MAGNETIC RESONANCE IMAGING DIXON METHODS. A. Grimm^{1,2}, H. Meyer², M. Nittka², E. Raithel², O. Chaudry¹, A. Friedberger¹, M. Uder³, W. Kemmler¹, H.H. Quick^{1,4,5}, K. Engelke¹ (1. Institute of Medical Physics, University Erlangen-Nuremberg, Erlangen, Germany; 2. Siemens Healthcare GmbH, Diagnostic Imaging, Magnetic Resonance, Product Definition & Innovation, Erlangen, Germany; 3. Institute of Radiology, University Hospital Erlangen, Erlangen, Germany; 4. Erwin L. Hahn Institute for Magnetic Resonance Imaging, University Duisburg-Essen, Essen, Germany; 5. High Field and Hybrid MR Imaging, University Hospital Essen, Essen, Germany)

Background: Structural muscle composition is a crucial factor contributing to muscle function. In sarcopenia, muscle mass declines at a slower rate than strength, implying that factors other than muscle mass also contribute to strength. A direct effect of intramuscular adipose tissue (IMAT) on muscular strength and power has been shown. The purpose of our study was to evaluate precision (reproducibility) of magnetic resonance imaging and spectroscopy methods potentially suitable for quantifying IMAT and its distribution within

the muscle. **Method:** Two groups of subjects (56, sarcopenic males, 80 ± 5 yrs and 23 physically well-trained young males, 28 ± 4 yrs) were examined at the thigh (18-channel body array surface coil) using a 3T MR system (MAGNETOM Skyrafit, Siemens, Erlangen, Germany). The protocol included a standard T1w TSE sequence and for fat quantification, a high-speed T2-corrected multi-echo H1 spectroscopy at the musculus semitendinosus (Figure 1) and three versions of a GRE VIBE quantitative Dixon (q-Dixon) sequence: 2pt Dixon prototype, 6pt Dixon, and 6pt Dixon prototype. In q-Dixon sequences, proton density fat and water fractions (PDFF and PDWF) were calculated as parametric maps. T1-bias was corrected by using a low flip angle of 6°, and in both 6pt q-Dixon sequences T2*-decay was considered as a degree of freedom and eliminated in the parameter extraction. In spectroscopy, T2-correction was performed by extrapolating fat and water integrals for TE = 0 ms using an exponential fit of the signal peaks acquired at five successive TEs. A long TR of 3000 ms was chosen to avoid a T1-bias. To estimate reproducibility and compare the results among the three q-Dixon sequences and spectroscopy, the spectroscopy VOI (volume of interest) was manually positioned in the parametric q-Dixon maps (Figure 1) and a correlation analysis was performed. **Results:** Figure 1 shows exemplary images for one randomly chosen subject per group. T1w TSE sequence result in high-resolution, high-contrast images, which can be used for fascia segmentation and separation of intramuscular fat. Parametric PDFF and PDWF maps obtained from q-Dixon sequences (Figure 1) can be used for IMAT quantification and, potentially, for the structural analysis of IMAT distribution. Correlations are shown in Figure 2. The poor correlation of fat fraction between the 2pt Dixon and 6pt q-Dixon sequence can probably be explained by non-optimal TR, a T1-bias, and a T2*-decay and non-opposed- and non-in-phase echo times. Correlations between 6pt q-Dixon sequences and spectroscopy were high, but an offset was measured. This is probably due to the fact that accuracy and precision of spectroscopy were validated in liver tissue, while an overestimation of PDFF in low-fat tissue is known. Standard and advanced 6pt q-Dixon prototype sequences gave identical fat fraction results but the standard sequence failed in 31% of all subjects because of a global fat-water swap occurred with the standard 6pt q-Dixon, which was avoided in the advanced prototype sequence. For the 6pt Dixon sequences correlations did not differ for the old and young males, however, this was not the case for the correlation between the 2pt and 6pt Dixon sequences. **Conclusion:** Standard T1w TSE sequences provide excellent contrast and are sequences of choice to measure muscle and IMAT area or volume. Unlike spectroscopy, imaging provide a more representative analysis of muscle composition but quantitative imaging of fat fraction of the thigh remains challenging and appropriate sequences have to be chosen carefully. The development of the advanced 6pt Dixon prototype sequences has considerably reduced the number of cases in which imaging failed with the earlier 6pt Dixon sequences. 2pt Dixon sequences should be used cautiously because inhomogeneous biases affecting fat quantification may occur. Therefore, if available, 6pt q-Dixon sequences should be used to quantify IMAT.

Figure 1

Exemplary results of a well-trained subject (32 years) (a - c) and a patient with sarcopenia (82 years) (d - f), both male, of T1w TSE (a, d) and advanced 6pt q-Dixon PDFF (b, e) and PDWF (c, f). The blue squares mark the VOI evaluated in spectroscopy

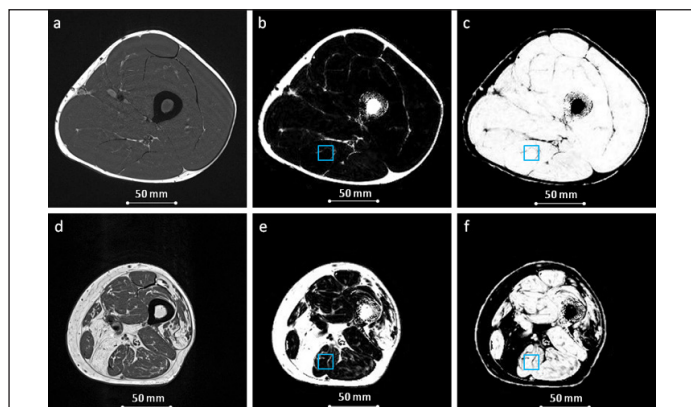
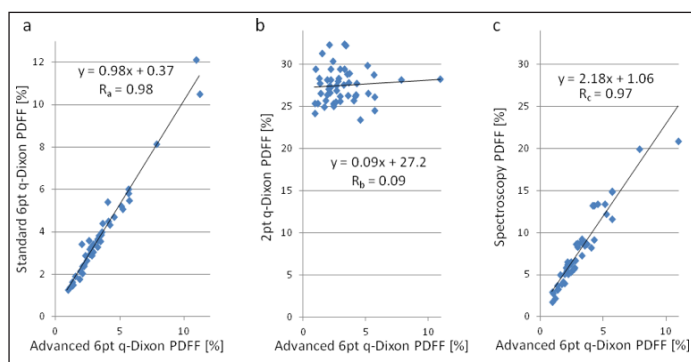


Figure 2

Correlations of PDFFs in the sarcopenia group between (a) standard 6pt q-Dixon, (b) 2pt q-Dixon and (c) spectroscopy and advanced 6pt q-Dixon prototype. Corresponding correlation coefficients in the young normal group were $R_a = 0.99$, $R_b = 0.42$, and $R_c = 0.93$



OC48- INCREMENTAL PROGNOSTIC VALUE OF MUSCLE MASS IN OLDER ADULTS UNDERGOING TRANSCATHETER AORTIC VALVE REPLACEMENT.

S. Mamane¹, L. Mullie¹, J. Webb², S. Lauck², N. Piazza³, G. Martucci³, D. Kim⁴, J. Popma⁴, M. Labinaz⁵, M. Peterson⁶, A. Rassi⁷, A. Trnkus⁹, J. Morais³, J. Afilalo^{8,9}, FRAILTY-AVR investigators (1. Division of General Internal Medicine, McGill University, Montreal, Canada; 2. St-Paul's Hospital, Vancouver, Canada; 3. McGill University Health Centre, Montreal, Canada; 4. Beth Israel Deaconess Medical Center, Boston, USA; 5. Ottawa Heart Institute, Ottawa, Canada; 6. St-Michael's Hospital, Toronto, Canada; 7. Massachusetts General Hospital, Boston, USA; 8. Division of Cardiology, Jewish General Hospital, McGill University, Montreal, Canada; 9. Division of Epidemiology, Jewish General Hospital, Montreal, Canada)

Background: Aortic stenosis (AS) is the most common valvular heart disease in the developed world, and transcatheter aortic valve replacement (TAVR) has emerged as a proven treatment option for frail older adults who were previously considered ineligible to undergo surgical AVR. Given the advanced age and multiple chronic conditions in this patient population, evaluation of frailty is a critical

task for risk prediction and patient selection. Sarcopenia is a core component of frailty, defined as a decline in skeletal muscle mass and function. Measuring sarcopenia pre-operatively is an attractive risk stratification tool as muscle mass can be objectively measured and potentially treated. However, existing tools to measure muscle mass are highly specialized and difficultly accessible, or rely on inaccurate surrogates such as self-reported weight loss. In patients undergoing TAVR, pre-operative low muscle mass as measured by cross-sectional psoas muscle area (PMA) on clinical CT scans has been shown to predict adverse outcomes, although initial studies were retrospective in nature and had important limitations. Accordingly, we sought to determine the predictive value of low muscle mass as measured by PMA, and to determine whether this was incremental to lower-extremity muscle performance as measured by the short physical performance battery (SPPB). **Methods:** FRAILTY-AVR was a prospective international multicentre cohort study that recruited older adults undergoing aortic valve replacement and evaluated the prognostic role of frailty. We conducted a pre-planned analysis of this study to determine the incremental value of PMA on routine pre-TAVR CT scans. Patients ≥ 70 years old with severe AS who underwent TAVR and who had a retrievable abdomino-pelvic CT scan in DICOM format were included. Using Osirix MD software (version 7.0, Switzerland), the axial pre-procedural CT scan series of images were opened in a multiplanar reconstruction view to identify the slice at the top of the L4 vertebrae in the sagittal plane. This axial slice was opened in the CoreSlicer.com web-based software (version 1.0, Canada), where PMA was measured using the density threshold brush tool. For this analysis, the outcome measures were all-cause mortality at 6-months, post-procedural length of stay (LOS), and change in habitual physical activity level at 6-months compared to baseline as measured by the Paffenbarger questionnaire. Covariates of interest were age, sex, measured height and weight, body surface area, predicted risk of mortality and LOS, and lower-extremity muscle performance as measured by the SPPB; the SPPB consists of 5-meter gait speed, timed chair rises, and timed standing balance, with each scored 0-4 for a composite score of 0-12. Continuous variables were summarized as medians with their interquartile range. Multivariable regression models were used to determine the effect of PMA on outcome measures after adjusting for covariates. Analyses were performed with the STATA software (version 14, USA). **Results:** The study cohort consisted of 300 patients after excluding 22 patients due to CT datasets that truncated or excluded the L4 region. The median age at the time of TAVR was 84 (IQR, 80, 88) years and the proportion of females was 45%. The median STS predicted risk of mortality was 5.6% (IQR, 3.8, 8.2) with an observed risk of mortality of 5% at 30 days and 12% at 6 months. The median PMA was 20.7 (11.5, 34.8) cm² in men and 15.0 (8.7, 28.5) cm² in females. The median SPPB score was 6.0 (4.0, 8.5). The median post-operative LOS was 5 (IQR, 3, 8) days. The median baseline and 6-month Paffenbarger activity indices were 1559.5 (442, 3585.3) kcal/week and 1573 (492, 3581) kcal/week, respectively. In adjusted models, larger PMA was associated with greater improvements in physical activity at 6 months (beta +127.4 kcal/week per 1cm² of PMA, 95% CI 44.6 to 210.3, $p=0.003$); an effect that was incremental and independent to SPPB. Larger PMA was also associated with shorter LOS in-hospital (beta -0.5 days per 1cm² of PMA, 95% CI -0.8 to -0.2, $p=0.002$). PMA was not associated with 6-month mortality (OR 0.95, 95% CI 0.86 to 1.05, $p=0.32$, although SPPB was (OR 0.85, 95% CI 0.76 to 0.97, $p=0.01$). Sensitivity analyses with PMA as sex-stratified tertiles yielded similar results, with the lowest PMA tertile having reduced physical activity at 6 months (beta -1029.7 kcal/week, 95% CI -1829.3 to -230.2, $p=0.012$) and longer LOS (beta 4.5 days, 95% CI 1.5 to 7.4, $p=0.003$). **Conclusion:** While previous studies have

suggested an association between PMA and morbidity after TAVR, our study is the first to do so prospectively and to be able to adjust for critical confounders such as SPPB and to report the effect on patient-centered outcomes. Low PMA was independently predictive of poor recovery of physical activity at 6 months and longer LOS. Our findings suggest that the pre-TAVR evaluation of frailty should dually include complementary measures of muscle mass and function, and that low muscle mass may be a therapeutic target to optimize outcomes in older adults undergoing TAVR.

OC49- FRAILITY STATUS PREDICTS POOR OUTCOMES IN OLDER ADULTS UNDERGOING SCREENING COLONOSCOPY. N. Toosizadeh^{1,2,3}, S. Taleban^{2,4}, Y. Mei², T. Rabkin Golden², M. Miramontes², C. Zaldizar², J. Mohler^{1,2,3} (1. Division of Geriatrics, COM, General Internal Medicine and Palliative Medicine, University of Arizona, Tucson, AZ, USA; 2. Arizona Center on Aging, COM, University of Arizona, Tucson, AZ, USA; 3. Department of Bioengineering, COE, University of Arizona, Tucson, AZ, USA; 4. Division of Gastroenterology & Hepatology, COM, University of Arizona, Tucson, AZ, USA)

Background: Colorectal cancer is a leading cause of cancer-related death, with increasing incidence with age. Colonoscopy is widely endorsed as the preferred colorectal cancer screening method beginning at age 50, and age is a known independent risk factor for poor outcomes in elders undergoing colonoscopy. A recent meta-analysis of patients 65+ years reported a pooled cumulative adverse event incidence rate of 26 per 1000 colonoscopies. Americans are living longer and controversy exists regarding when to discontinue screening colonoscopies, ranging from no recommendation, to age 75. In order to make more informed decisions it is important to understand the balance of risks and benefits of undergoing colonoscopy at older ages. Better risk stratification to account for the heterogeneity of aging, (rather than using chronological age itself) would assist with clinical decision-making regarding this issue. Frailty, the increased vulnerability resulting from aging-associated decline in reserve and function across multiple physiologic systems, has been demonstrated as predictive of poor surgical outcomes, and is now recommended in all surgical patients over age 65 by the American College of Surgeons' National Surgical Quality Improvement Program (NSQUIP); and is widely used for the purpose of risk stratification. The objective of this descriptive study was to assess the associations between frailty status and colonoscopy outcomes in aging adults undergoing screening colonoscopy. **Method:** Aging adult participants (age 50 years and above) undergoing screening colonoscopy in an integrated quaternary academic medical center were consented, and screened for frailty status prior to their procedure using an objective upper-extremity frailty (UEF) method. The UEF method has been validated previously for predicting pre-frailty and frailty using the Fried index. Briefly, for UEF assessments each participant performed a 20-second trial of elbow flexion, within which they repetitively flexed and extended their dominant elbow to full flexion and extension as quickly as possible in the seated position. UEF uses wearable motion sensors to measure forearm and upper-arm motion. Based on upper-extremity motion, frailty features were extracted including: slowness (speed of elbow flexion), weakness (strength of upper-extremity muscles in performing fast movements), exhaustion (muscle fatigue), and flexibility (upper-extremity range of motion). A Charlson comorbidity score was measured for each participant. A systematic post-procedure chart review was performed to explore the relationship between frailty (frail/pre-frail versus non-frail) and peri-operative complications including: desaturation (SpO₂<90%), bradycardia (heart rate<40), tachycardia (heart rate>100), hypotension (systolic blood

pressure<90), hypertension (systolic blood pressure>180), change in cardiac rhythm, myocardial infarction, colonic perforation, rectal hemorrhage during and after procedure; and recorded adverse events by nursing, difficulty to arouse, reversal medication need to arouse, persistent abdominal cramping, pain, or bloating, pain medication use, requirement for imaging for abdominal pain after the procedure. ANOVA models were used to determine the associations between frailty (and comorbidity score) and number of complications while adjusting for age, gender, and body mass index (BMI). **Results:** Fifty-one older adults undergoing screening colonoscopy were recruited in this pilot study, among which 19 (37%) were non-frail and 32 (63%) were pre-frail/frail; 28 (55%) were male. Mean age and BMI for non-frail participants were 59±7 years and 25.39±2.32 kg/m², respectively. Corresponding values were 65±10 years and 30.28±5.64 kg/m² for pre-frail/frail individuals. Overall, 34 adverse outcomes were observed during the colonoscopy procedure and eight cases were observed after the procedure. The most frequent complications were tachycardia (seven cases) and hypotension (eight cases) during the procedure, and hypotension after the procedure (three cases). When adjusted for age, gender, and BMI, the number of adverse outcomes after the procedure was significantly different between non-frail and pre-frail/frail groups (p=0.02); pre-frail/frail individuals had 0.22±0.42 cases of adverse outcomes after colonoscopy compared to 0.05±0.23 cases among non-frails. Although results were not significantly different (p>0.06), higher numbers of total adverse outcomes (129%) and adverse outcomes during the procedure (152%) were observed among pre-frail/frail compared to the non-frail group. Significant association was observed between comorbidity score and only the number of adverse outcomes after the procedure (p=0.04, adjusted for age, gender, and BMI). When both comorbidity and frailty scores were added as predictors (in addition to age, gender, and BMI), only frailty score was significantly associated with the number of adverse outcomes after the procedure (p=0.03). In ANOVA models with age, gender, and BMI and independent variables, no significant association was observed between age and number of adverse health outcomes either during, or after, the procedure (p>0.10). **Conclusion:** When compared to age and Charlson comorbidity score, the UEF frailty evaluation better predicts adverse outcomes during and after colonoscopy. Frailty status may help inform the risk/benefit of screening colonoscopy. These findings will help to inform clinical decision making in referring elders to screening, and also in informing choice of anesthesia. Further, they should be considered in screening recommendations for older adults. These results reflect a small sample size, and should be replicated in a larger cohort.

OC50- MUSCLE WEAKNESS AND PHYSICAL DISABILITY IN OLDER AMERICANS: LONGITUDINAL RESULTS FROM THE HEALTH AND RETIREMENT STUDY. K. Duchowny¹, M. Peterson², P. Clarke^{1,3} (1. Department of Epidemiology, University of Michigan School of Public Health, Ann Arbor, MI, USA; 2. Department of Physical Medicine and Rehabilitation, University of Michigan, Ann Arbor, MI, USA; 3. Institute for Social Research, University of Michigan, Ann Arbor, MI, USA)

Background: Muscle weakness, as determined by handgrip dynamometry, is a robust indicator of disability, chronic disease and mortality. While we recently proposed sex/race-specific cutpoints for clinical muscle weakness in a diverse, nationally representative sample of older Americans, the extent to which these cutpoints predict subsequent physical disability remains unknown. Therefore, we examined whether sub-group specific muscle weakness cutpoints predict physical disability status in a nationally representative of Americans aged 65+. **Methods:** We used data from the 2006-

2010 Health and Retirement Study. Fully-adjusted, weighted multinomial logistic regression models were used to quantify the odds of experiencing the onset, progression or persistence of disability in activities of daily living (ADL) among weak versus non-weak individuals over a 2-year period. **Results:** In this nationally representative sample (n= 8,725), 44% of individuals were classified as weak at baseline. At follow-up, 55% remained independent with no change in their ADL status, 11% had an onset of disability and 4% progressed in their disability status. The odds of experiencing an onset of ADL disability was 54% higher among weak individuals compared those who were not weak at baseline (OR= 1.54, 95% CI= 1.54, 1.5, p<.0001); the odds of experiencing a progression in physical disability status was 2.16 times higher among those who were weak at baseline compared to non-weak individuals (OR= 2.16, 95% CI= 2.15, 2.16, p<.000). **Conclusions:** Using cut-points derived from a nationally representative sample of older Americans, we have shown for the first time that weakness is associated with greater odds of experiencing physical disability in later life. Results underscore the importance of using population-specific cutpoints to identify individuals at greatest risk for adverse health outcomes.

OC51- MEDITERRANEAN DIET AND RISK OF FRAILTY SYNDROME AMONG WOMEN WITH TYPE 2 DIABETES.

E. Lopez-Garcia¹, K. Hagan^{2,3}, T.T. Fung^{4,5}, F. Grodstein^{2,3}, F.B. Hu^{3,4,6}, F. Rodríguez-Artalejo¹ (1. Department of Preventive Medicine and Public Health, School of Medicine, Universidad Autónoma de Madrid-IdiPaz; and CIBERESP (CIBER of Epidemiology and Public Health), Madrid, Spain; 2. Channing Division of Network Medicine, Department of Medicine, Brigham & Women's Hospital and Harvard Medical School, Boston, MA, USA; 3. Department of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, MA, USA; 4. Department of Nutrition, Harvard T.H. Chan School of Public Health, Boston, MA, USA; 5. Programs in Nutrition, Simmons College, Boston, MA, USA; 6. Division of Preventive Medicine, Department of Medicine, Brigham & Women's Hospital and Harvard Medical School, Boston, MA, USA)

Background: Patients with type 2 diabetes are at higher risk of the frailty syndrome. Also there is emerging evidence that the Mediterranean diet may prevent frailty in the general population. Thus, it is of interest to assess whether a Mediterranean-style diet pattern can reduce the risk of frailty among older adults with diabetes. **Methods:** Prospective cohort with 8,455 women with type 2 diabetes selected from the Nurses' Health Study. Adherence to the Alternate Mediterranean diet (aMED) score was first measured in 1990 and then repeatedly every 4 years until 2006. Frailty occurrence was ascertained up to 2008, and was defined as having at least three of the following five criteria from the FRAIL scale: fatigue, low resistance, low aerobic capacity, having ≥ 5 illnesses and weight loss $\geq 5\%$. **Results:** During follow-up, we identified 497 cases of incident frailty. In multivariable models adjusted for lifestyle and medication use, the relative risk (95% confidence interval) of frailty was 1 for the lowest quartile of the aMED score, 0.90 (0.71-1.13) for the second quartile, 0.72 (0.55-0.94) for the third quartile, and 0.54 (0.41-0.72) for the highest quartile; p for trend<0.001. A 2-point (about 1 standard deviation) increase in the aMED score was associated with a 27% lower risk of frailty. The largest reduction in the risk of frailty was observed for a higher consumption of vegetables, fruits and fish, as well as for alcohol intake. **Conclusions:** A Mediterranean-style diet pattern was associated with reduced risk of frailty syndrome in old women with type 2 diabetes.

OC52- SINGLE FIBER JITTER LEVEL REFLECTS DECLINE IN MOTOR FUNCTION WITH AGING.

T. Chung^{1,3}, J. Walston², A. Hoke³ (1. Department of Physical Medicine and Rehabilitation, Johns Hopkins University, Baltimore, USA; 2. Geriatric Medicine Division, Department of Medicine, Johns Hopkins University, Baltimore, USA; 3. Neuromuscular Division, Department of Neurology, Johns Hopkins University, Baltimore, USA)

Background: Age-associated skeletal muscle weakness is a major contributing factor to an increased late life mortality and morbidity, but its electrophysiological aspects are poorly characterized. Previously, we showed that in aged mice there was evidence of dying-back axonal degeneration of motor neurons and denervation of neuromuscular junctions (NMJ). Given this, we compared two electrophysiological measures, single fiber jitter and compound motor action potential (CMAP) in mice of different age groups, and correlated them with various physical performance measures. Consistent with our previous histological data, single fiber jitter, a measure of NMJ transmission, correlated significantly with many physical performance characteristics, while CMAP did not. Our results shows that decline in age-associated skeletal muscle strength is reflected in impaired NMJ transmission. **Method:** Male C57BL/6J mice were divided into two age groups: young (3-5 months old) and old (20-24 months old). Grip strength of forelimbs and all limbs, traveling activity, standing activity, and treadmill exercise tests were carried out to evaluate various aspects of physical strength. Two electrophysiological measures were used: compound motor action potential (CMAP) and single fiber electromyography (EMG) jitter. The various physical performance measures were correlated with CMAP and single fiber EMG jitter levels, and Pearson correlation statistics was used for statistical analysis. **Results:** Various physical performance tests show decline in muscle function with aging: Consistent with our prior study results, we found significant decline in grip strength of both forelimb and all limbs. We also measured walking and standing activities of mice in cage, and found that standing activities are significantly reduced in aged mice. While walking activity was reduced in the old mice group, it didn't reach the statistical significance. Lastly, we measured a number of shocks (NOS) on a treadmill; mice were placed on a treadmill machine for 30 minutes, and as described above, the higher number of shocks correlated with poor gait function and reduced cardiovascular capacity. NOS is significantly higher in the old mice group. Jitter level, but not CMAP, correlates negatively with grip strength: We performed two electrophysiological measures, single fiber EMG jitter and CMAP, and correlate these measures with various physical performance results to see if any of the electrophysiological measures reflect the decline in physical performance with aging. Interestingly, as can be seen in figure 3, there is a strong, negative correlation between single fiber EMG jitter level and the grip strength of both forelimbs and all limbs (forelimb grip: Pearson correlation $r=-0.5953$, $p=0.0007$; all limb grip: Pearson correlation, $r=-0.7769$, $p<0.0001$). However, CMAP does not correlate with any of grip strength measures (forelimb grip $p=0.5310$; all limbs $p=0.1746$, both Pearson correlation). Jitter level, but not CMAP, correlates with behavioral performance test results. We also investigated correlation between the electrophysiological measures, single fiber EMG jitter and CMAP, and other physical performance tests that evaluates age-related frailty in mice. Interestingly, there is a significant, negative correlation between jitter level and standing activity (Pearson correlation, $r=-0.6169$, $p=0.0188$), while CMAP does not ($p=0.6266$). Jitter levels didn't correlate with walking or NOS; CMAP didn't correlate with any of the above measures. **Conclusion:** Single fiber EMG jitter level correlates with the decline in muscle strength with aging, reflecting age-related decline in NMJ functions.

OC53- PREDICTORS OF DISCREPANCY IN FRAILTY IDENTIFICATION BETWEEN THE TWO MOST COMMONLY USED FRAILTY ASSESSMENT TOOLS?

Q.-L.Xue^{1,2}, J.D. Walston^{1,2}, J. Tian^{3,2}, K. Bandeen-Roche^{3,2}
(1. Division of Geriatric Medicine and Gerontology, Department of Medicine, Johns Hopkins University, Baltimore, MD, USA; 2. Center on Aging and Health, Johns Hopkins Medical Institutions, Baltimore, MD, USA; 3. Department of Biostatistics, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD, USA)

Background: Frailty has been theoretically defined as a clinically recognizable state of increased vulnerability. This vulnerability is believed to result from aging-associated decline in reserve and function across multiple physiologic systems such that the ability to cope with everyday or acute stressors is compromised. In the absence of a gold standard, the two most commonly cited instruments for frailty assessment in a geriatric population are: the Physical Frailty Phenotype (PFP) and the Frailty Index (FI). Although a number of epidemiological studies have been conducted to compare the two instruments, the comparisons so far have almost exclusively focused on predictive validity. However, there has been very little research to explicate the differences among the older adults the two instruments identify as frail. We believe that there is potential risk to advocating the use of the different frailty assessment tools without a better understanding of the degree of distinction in the identification of vulnerable older adults, as well as the heterogeneity of older adults identified as frail by either instrument. Using existing data from the Cardiovascular Health Study (CHS), this project is designed to evaluate the discordance in frailty classification between the FI and the PFP and identify factors discriminating those with discordant frailty classification from each other and from those for whom the assessments agree. **Methods:** The CHS is a prospective observational study of men and women aged 65 and older who were randomly selected from Medicare eligibility lists in four US communities. Of the 5201 study participants from the original cohort, after excluding subjects with a history of Parkinson's disease or stroke, Mini-Mental State Exam score less than 18, and those who were taking Sinemet, Aricept, or antidepressant, 4755 with available data on the PFP and the FI at baseline (i.e., Year 2) were used in the current analysis. The PFP was measured by the 5-criteria CHS PFP: (i) weakness (by grip strength), (ii) slowness (by usual-pace 15-foot walking speed), (iii) low physical activity (by total energy expenditure in kcal per week), (iv) weight loss (by self-reported unintentional weight loss of more than 10% in the past year), and (v) exhaustion (by self-report). Subjects meeting ≥ 3 criteria are classified as frail. The FI was calculated as the proportion of deficits in an a priori selected set of 48 measures similar to those used by Kulminski et al. (2008) and subjects were classified as frail if $FI > 0.35$. First, we compared the demographic and health characteristics between the groups with concordant vs discordant frailty classification. Next, within the subset with discordant classification ($n=534$), we implemented the Classification And Regression Tree (CART) analysis to identify characteristics that best distinguish those who were deemed frail by the PFP but not the FI from those who were frail by the FI but not the PFP. Ten-fold cross-validation was used for CART model selection; and different metrics for measuring node purity were used to assess model robustness. **Results:** The prevalence of frailty was 6.5% ($n=307$) by the PFP and 7.8% ($n=369$) by the FI. The Cohen's kappa coefficient was 0.15 (95% confidence interval = 0.11-0.19). Of the 605 who were classified as frail by either instrument, only 12% ($n=71$) were in agreement; whereas 39% ($n=236$) were classified as frailty by PFP but not FI; and 49% ($n=298$) were classified as frailty by FI but not PFP. Compared to those deemed frail by both, those with discordant frailty status

were significantly younger, more highly educated, less likely to be a female, widowed, and had higher income, less burden of disease, mobility limitation, and ALD/IADL difficulty, and fewer depressive symptoms. Age and disease burden were the two strongest predictors of the pattern of discordance. Specifically, people over the age of 72 were more likely to be classified as frail by the PFP; and regardless of age, people with greater disease burden were more likely to be classified as frail by the FI. In addition, mobility limitation and greater BMI were also associated with being frail by the FI. **Conclusion:** While the overall prevalence of frailty was similar between the PFP and the FI, there was substantial discordance in individual-level classification. The fact that such discordance preferentially affected the subset of potentially vulnerable older adults who are less likely to be captured by traditional risk factors such as disability and multimorbidity is intriguing. This is particularly true in the case of the PFP. By focusing on the factors explaining the discordant frailty classification, the results from this study help facilitate a discourse about the precise meaning of the word "frailty," which has varied widely from syndromic manifestations of underlying physiologic vulnerability captured by the PFP to the broad and multifactorial deficits including impairment, disability and comorbidity measured by the FI.

OC54- THE IMPACT OF DIETARY PROTEIN OR AMINO ACID SUPPLEMENTATION ON MUSCLE MASS AND STRENGTH IN ELDERLY PEOPLE: INDIVIDUAL PARTICIPANT DATA AND META-ANALYSIS OF RCT'S.

M. Tieland¹, R. Franssen^{1,2}, C. Dullemeijer¹, C. van Dronkelaar³, H.K. Kim⁴, T. Ispoglou⁵, K. Zhu⁶, R.L. Prince⁶, L.J.C. van Loon², L.C.P.G.M. de Groot¹ (1. Division of Human Nutrition, Wageningen University, Wageningen, the Netherlands; 2. NUTRIM School for Nutrition, Toxicology and Metabolism, Maastricht University Medical Centre+, Maastricht, the Netherlands; 3. Department of Nutrition & Dietetics, School of Sports and Nutrition, Amsterdam University of Applied Sciences, Amsterdam, The Netherlands; 4. Research Team for Promoting Independence of the Elderly, Tokyo Metropolitan Institute of Gerontology, Tokyo, Japan; 5. Carnegie Faculty, School of Sport, Leeds Beckett University, Leeds, UK; 6. School of Medicine and Pharmacology, University of Western Australia, Perth, Australia)

Background: Increasing protein or amino acid intake has been promoted as a promising strategy to increase muscle mass and strength in elderly people, however, long-term intervention studies show inconsistent findings. Therefore, we aim to determine the impact of protein or amino acid supplementation compared to placebo on muscle mass and strength in older adults by combining the results from published trials in a meta-analysis and pooled individual participant data analysis. **Methods:** We searched Medline and Cochrane databases and performed a meta-analysis on eight available trials on the effect of protein or amino acid supplementation on muscle mass and strength in older adults. Furthermore, we pooled individual data of six of these randomized double-blind placebo-controlled trials. The main outcomes were change in lean body mass and change in muscle strength for both the meta-analysis and the pooled analysis. **Results:** The meta-analysis of eight studies ($n=557$) showed no significant positive effects of protein or amino acid supplementation on lean body mass (mean difference: 0.014 kg; 95% CI -0.152; 0.18), leg press strength (mean difference: 2.26 kg; 95% CI -0.56; 5.08), leg extension strength (mean difference: 0.75 kg; 95% CI: -1.96, 3.47) or handgrip strength (mean difference: -0.002 kg; 95% CI -0.182; 0.179). Likewise, the pooled analysis showed no significant difference between protein and placebo treatment on lean body mass ($n=412$; $p=0.78$), leg press strength ($n=121$; $p=0.50$), leg extension strength

(n=121: p=0.16) and handgrip strength (n=318: p=0.37). **Conclusions:** There is currently no evidence to suggest that protein or amino acid supplementation without concomitant nutritional or exercise interventions increases muscle mass or strength in predominantly healthy elderly people.

OC55- INFLUENCE OF BEEF PROTEIN INTAKE AND HAND GRIP STRENGTH ON MUSCLE STRENGTH AND CROSS SECTIONAL AREA IN MIDDLE AGED-WOMEN.
S.N. Stastny, C.J. Kotarsky, K.J. Hackney, R. Iverson (North Dakota State University, Fargo, ND, USA)

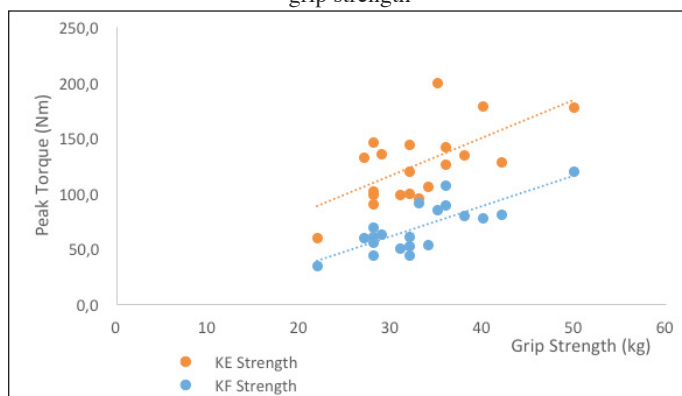
Background: In the US, sarcopenia affects 30% of individuals over age 60 and half those over age 80. Although strategies to prevent muscle and strength loss cannot exclusively target one issue, there is a strong theoretical link between dietary protein and muscle mass (Paddon-Jones, 2009). The Recommended Dietary Allowance (RDA) for protein in the United States is 0.8 g per kg per day. Evidence shows the RDA is not enough for maintenance of muscle while aging. Suggestions for a level of 1.0-1.5 g/kg/d may improve muscle maintenance and health with aging. Amount of protein is important, but type is also of critical importance. Providing leucine-containing protein is central for protein synthetic machinery. Animal-based lean protein foods contain all the essential amino acids required for growth and development of muscles. Lean beef is a key source of amino acids because it is higher in protein density than other animal-based protein sources, such as cheese. The aim of this study is to evaluate the association between dietary protein intake and muscle strength and cross sectional area (CSA) in middle-aged women. The data presented is preliminary, with only 19 of 50 subjects completed. **Method:** After obtaining university IRB approval and subject informed consent, 19 healthy women (54.1±4.7 years) were recruited to complete the study in the Human Performance Lab on campus. Exclusions include smoking, aversion to beef, working night shift, and medications or medical conditions that might undermine muscle health. After completing food diary training, participant muscle CSA was tested with the rectus femoris (RCSA) using panoramic ultrasound; strength was tested with Biodex dynamometer expressed as knee extensor peak torque (KEPT) and knee flexor peak torque (KFPT); hand grip strength (HGS) and 30 second sit and stand (SS) test. Protein intake was measured with the University of Arizona Food Frequency Questionnaire (AFFQ). Stepwise regression was used to predict the dependent variables of KFPT, KEPT, and RCSA from three independent variables: 1) HGS, 2) daily protein intake, and (3) SS test results. **Results:** A linear regression model was created to predict KFPT, KEPT, and RCSA from HGS. A significant regression equation was found for KFPT (F(1,17)=26.432, p=0.000), with a R2 of 0.609, KEPT (F(1,17)=10.852, p=0.004), with a R2 of 0.390, and RCSA (F(1,17)=4.662, p = 0.045), with a R2 of 0.215. Subjects' predicted KFPT and KEPT is equal to -21.531+2.707 (HGS) Nm and 13.337+3.378 (HGS) Nm, respectfully, when HGS is measured in kilograms. Subjects' KFPT and KEPT increased 2.707 and 3.378 for each kilogram of HGS. Subjects' predicted RCSA is equal to 1.279+0.176 (HGS) cm2 when HGS is measured in kilograms. Subjects' RCSA increased 0.176 HGS for each kilogram of HGS. Descriptive statistics can be found in Table1. Preliminary results (n=19) show relative high protein intake compared to same demographic in the United States. Overall protein intake was 1.14±0.64 g/kg based on self-reported estimated intake for the previous 90 days. Probably due to low n, mean total protein intake was not identified as having any significant influence in predicting the dependent variables. Top sources of leucine for this analysis are listed in Table 2. **Conclusion:** HGS was a significant predictor of

KEPT, KFPT, and RCSA in middle-aged women. The coefficient of determination indicates that 60% of KFPT, 39% of KEPT, and 21% of RCSA is predicted by HGS. Although not a significant predictor of strength or CSA, subjects did consume more protein than the RDA (1.14 g/kg). Additionally, lean beef supplied more leucine than any other reported food. Future analysis with all 50 subjects, with deeper leucine analysis, may reveal protein as a significant predictor. Funded by the Beef Checkoff

Table 1
Descriptive Statistics for 19 women in beef muscle health study

	N	Minimum	Maximum	Mean	Std. Deviation
Rectus Femoris Cross Sectional Area (RCSA)	19	2.91	11.48	7.0525	2.42223
Knee Extensor Peak Torque (KEPT)	19	59.20	199.40	124.4579	34.64737
Knee Flexor Peak Torque (KFPT)	19	33.90	119.80	67.5263	22.21853
Hand Grip Strength (HGS)	19	22.00	50.00	32.8947	6.40221
30 second Sit and Stand Test (SS)	19	10.00	25.00	18.1053	3.63463
Total Protein from AFFQ	19	24.78	153.23	76.6158	37.14637

Figure 1
Correlation between knee extensor and flexor peak torque and hand grip strength



KFPT: p=0.000, R2=0.609; KEPT: p=0.004, R2=0.390; RCSA: p=0.045, R2=0.215

Table 2
Descriptive Statistics for 19 women in beef muscle health study

Food source	Amount (grams) per day leucine
Lean beef	0.345
Yogurt	0.289
Skim milk	0.289
Cheese	0.261
Eggs	0.261
Poultry	0.252

OC56-AUTOMATED ASSESSMENT OF MUSCLE ATTENUATION AND CROSS-SECTIONAL AREA USING COMPUTED TOMOGRAPHY (CT): DEVELOPMENT AND INITIAL VALIDATION OF A NEW TOOL FOR LARGE SCALE IMAGE ANALYTICS. L. Lenchik¹, R.D. Boutin², R.T. Barnard³, B.L. Wise⁴, S.B. Kritchevsky⁵, C. Chiles¹, A.A. Weaver⁶, J.D. Stitzel⁶ (1. Department of Radiology, Wake Forest School of Medicine, Winston-Salem, USA; 2. Department of Radiology, University of California, Davis School of Medicine, Sacramento, USA; 3. Division of Public Health Sciences, Wake Forest School of Medicine, Winston-Salem, USA; 4. Departments of Orthopaedics and Internal Medicine, University of California, Davis School of Medicine, Sacramento, USA; 5. Department of Internal Medicine, Wake Forest School of Medicine, Winston-Salem, USA; 6. Department of Biomedical Engineering, Wake Forest School of Medicine, Winston-Salem, USA)

Background: Advances in large scale medical image analytics promise to have a significant impact on frailty research. Current CT image analysis of muscle requires time-consuming manual segmentation of regions of interest, which makes application to large datasets unrealistic. The purpose of this study is to develop an Automated Muscle Analysis Tool (AMAT) for measuring paraspinous muscle attenuation and cross-sectional area and to validate it against manual muscle measurements. Ultimately, AMAT can be used as part of an end-to-end automated pipeline for sarcopenia research using large CT datasets. **Method:** We retrospectively evaluated 2342 chest CT scans from the CT arm of the National Lung Screening Trial (NLST). At the level of T12 vertebra, the left paraspinous muscle was segmented using manual methods. The same CT exams were used to develop the AMAT. AMAT is a two-stage procedure consisting of a three-dimensional (3D) stage to identify the T12 vertebra and a two-dimensional (2D) stage to segment the paraspinous muscle from surrounding tissue. Both stages involve four main steps: 1) pre-processing, 2) template construction, 3) region of interest (ROI) labeling, and 4) warping, using two open-source medical image analysis tools, ANTs (Advanced Normalization Tools) and FMRIB Software Library (FSL). Pre-processing involves windowing, denoising, scan bed removal, padding, and, in the 3D stage, segmentation of bone from surrounding tissue. NLST-specific group template is constructed from the pre-processed images using multivariate template construction script. The averaged image from the final iteration is the anatomical, unlabeled group template. The ROI labeling step uses joint label fusion script to construct a label image for the group template. In the 3D stage the label image consists of only the T12 vertebra; in the 2D stage, the label additionally “masks” identifying the muscle ROI. The final step is to register the group template to each subject’s CT in the NLST dataset. The deformations obtained by registering the group template to the subjects are applied to the label image. In the 3D stage, this results in localization of the T12 vertebra for each subject, which allows identification of the correct 2D slice to extract. In the 2D stage, the labels are treated as masks and applied to the subject’s original, un-processed anatomical image, resulting in new images containing only the paraspinous muscle. We performed initial validation of AMAT using 25 chest CT exams which were manually segmented by five different readers. Interclass correlation between readers was determined. The accuracy of AMAT for 3D stage and 2D stage was determined separately. For 3D stage, three methods were used for choosing the CT slice at the level of T12: 1) CT slice with the center of gravity of voxels characterized as T12, containing all voxels with non-zero probability of being T12, 2) CT slice containing the voxel with the highest probability of being T12, and 3) CT slice two-thirds

of the caudal to cranial distance of the ROI used for the center of gravity (ROI-based distance method). For each method, the accuracy error was based on the number of slices between the location chosen by AMAT compared to the location chosen by the manual readers. The accuracy error for 2D stage was determined by comparing muscle cross-sectional area derived by AMAT to the mean values derived from manual segmentation. **Results:** AMAT development followed an iterative process where each step was continually improved based on previous trials. For preprocessing, five procedures, applied in sequence, helped improve performance: 1) windowing, 2) denoising, 3) removal of the scanner bed, 4) extraction of bone tissue, and 5) padding. For template construction, using ANTs to register and warp the original input images to the refined group template and repeating the cycle for multiple iterations resulted in improved sample alignment, a more consistent template, and ultimately improved performance. Continued effort was made to improve parameterized scripts for each procedure. For manual segmentation, interclass correlation between readers was 0.8 for muscle cross-sectional area and 0.78 for muscle attenuation. For AMAT, the accuracy error for 3D stage was 7% using the center of gravity method, 4% using the highest probability method, and 8% using the ROI-based distance method. The accuracy error of AMAT for 2D stage was 13%. **Conclusion:** Preliminary results on AMAT development are encouraging. Although current accuracy errors are high, these will continue to decrease with iterative correction of deficient procedures. Once fully validated, AMAT could have an impact on sarcopenia and frailty research by allowing for automated large-scale analytics of muscle metrics on CT exams and could be adapted to assess other muscle groups on CT exams of other regions including the abdomen, pelvis, and extremities. **Acknowledgement:** The study was funded by Wake Forest Clinical and Translational Science Institute and University of California, Davis Interdepartmental Seed Grant.

POSTER

P1- EXTRAMAMMARY PAGET’S DISEASE: A TOUGH CHALLENGE FOR GERIATRICIANS. A.A. Zulfikar¹, A. El Adli² (1. Department of Internal Medicine and Geriatrics, University Hospital of Rouen, Rouen, France; 2. Department of Emergency Unit, University Hospital of Reims, Reims, France)

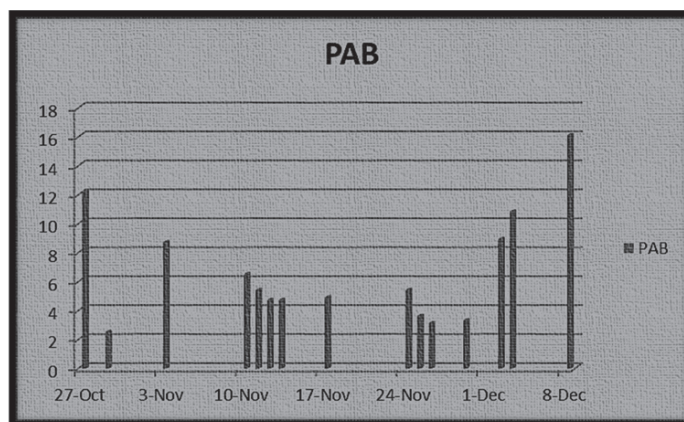
Background: Extramammary Paget’s disease (EMPD) is a rare intraepithelial adenocarcinoma. It mostly affects women in their seventies. EMPD develops principally in the apocrine genital, anal, and axillary zones. The relationship between EMPD and associated neoplasia is not well understood. It remains relatively unknown by geriatricians; its identification in the elderly remains paramount, and represents a real challenge from a therapeutic and prognosis aspect. **Methods:** We thus conducted a retrospective study at the University Hospital of Reims over a period of 20 years (1994-2014) with a collection of patients affected by extramammary Paget’s disease (positive histology) within the Dermatology, Gynecology, and Geriatric Medicine units. **Results:** 9 patients were included of which 7 are female (78%). The median age of onset is 78 years with ages ranging from 60-91. The diagnosis time ranged from a few months to 5 years prior to diagnosis. Vulvar localization remains by far the most common localization (78%). EMPD usually appears in the form of an erythematous patch evolving in a chronic manner, pretty well-defined, more or less infiltrated, with whitish areas, often ulcerated in the vulvar areas. Pruritus is the most frequent complaint followed by a burning sensation. In our study, 6 patients (67%), all females,

had pruritus (vulvar); 2 (22%) patients felt pain from the lesions. Looking for lymphadenopathy was positive for 3 patients (33%) with predominant localization to the inguinal area. 2 patients (3) had recurrences. No patient had visceral metastases. Surgery (be it partial or total) was the technique most used to treat patients suffering from EMPD, in the initial phase, as in the case of recurrences. The surgery was used in 8 patients in our study (89%) and 16 times in total. A single patient had an infectious complication by way of abscess as it relates to the vulvectomy scar in the postoperative follow-up. The CO2 laser was used for 3 patients (33%), the same applies for the medical treatment (Imiquimod). Radiotherapy was only used for a single patient. Finally, we note, for 3 patients, the combined use of 2 therapies. No patient was treated by photodynamic therapy technique. For surgery, because of the retrospective nature of the study, the details on the margins of resection remain incomplete due to the antiquity of some of the files. Finally, in our study, 5 patients (55%) showed a recurrence of EMPD, the majority (4/5) of whom had more than one recurrence. Thus, 3 patients had up to 3 recurrences. The average time of the occurrence of a recurrence of EMPD in our study is estimated to be 2.6 years. No deaths have been identified in our study. Extramammary Paget's disease remains a complex pathology from a pathophysiological perspective, rare, occurring more often in older persons, subject to relapses, making quality of life quite mediocre, but whose prognosis remains correlated to the degree of the invasiveness. It mostly affects elderly subjects with a median age of 74 upon diagnosis for invasive forms and 72 years for the non-invasive forms. Surgery remains the treatment of choice, requiring modulation as a result of the comorbidities in the elderly and risk of mutilation, which is not negligible. Thus, we distinguish standard surgery with Mohs micrographic surgery. For standard surgery, a wide excision with a lateral margin of 2 cm is normally proposed. Mohs micrographic surgery reduces the recurrence rate from 33% to 23% for extramammary Paget's disease. Radiation therapy is an alternative to surgery in case of the patient's refusal or contraindications to surgery, with very little toxicity (dominated mainly by the radioepidermitis). It is used exclusively in the context of invasive EMPD, with doses of more than 60 Gy and margins of 2 to 5 cm around injuries. Other techniques are being studied (photodynamic therapy, Imiquimod), but their use remains limited. In the event of discovery of EMPD, searching for associated neoplasia must be systematic. **Conclusion:** The key is the extended monitoring of our elderly subjects.

P2- DEMYSTIFYING THE ANABOLIC RESISTANCE IN THE CRITICALLY ILL PATIENT. E. Pellazgu (*Atlantic Health System, Morristown, USA*)

Background: Most patient who are critically ill, loose muscles as a result of an inability to maintain rates of protein synthesis above those of protein breakdown. In addition, age and immobility also influence the ability of muscle mass to be sustained. The aging process also causes a progressive insulin resistance which reduces mTor activity. As a result, some patients will not respond to nutritional support, despite the provision of energy and amino acids. Rennie (2009) has termed this condition «anabolic resistance» - an inability of muscle to maintain its protein mass. In the intensive care unit (ICU), increased respiratory muscle weakness, prolonging mechanical ventilation time, decubitus ulcers and an increase in morbidity and mortality can be observed. The purpose of this abstract is to highlight key issues observed in a patient with severe protein calorie malnutrition who presented with signs of anabolic resistance, and the adjustment of therapy to overcome it, in a case study format. **Methods:** Volpi et al, (AJCN, 2003) has proposed that the elderly are more sensitive to meal leucine content and meal distribution. She maintains that anabolic

resistance can be overcome by providing 3 interrupted protein-rich meals, each containing at least 3 gms of leucine. We sought to test this hypothesis in an elderly critically ill patient with anabolic resistance. The metabolic changes and impact on muscle mass are shared through the review of a 66 year old female with a history of heart disease and diabetes mellitus, history of pulmonary hypertension, renal disease, atrial fibrillation and requiring ventilator support following a tricuspid valve repair and mitral valve replacement. She required ventilator support, tracheostomy, chest tube, permanent pacemaker, CVVH and nutrition support postoperatively. Her pre-albumin level failed to respond to continuous parenteral nutrition and enteral feedings despite high levels of protein and calorie intake and correction of her micronutrient deficiencies (thiamin, ascorbate). When the pre-albumin reached a nadir of 3.1, her tube feedings (Glucerna 1.2 at 60 ml/hr.; 1775 kcal, 80 gm protein) were changed to allow for three times a day interruptions of 3 hours each, for a total of 9 hours off-feedings. **Results:** There was no change in the calorie or protein content provided. The pre-albumin (PAB) responded after 7 days rising to 8.9, 10.8 (10 days) and 16.1 (14 days). This case is used as an exemplar to highlight the importance of maintaining supplemental feedings while caring for critically ill patients. **Conclusions:** The case study provides an opportunity to review the physiology, nursing and medical implications of anabolic syndrome. This case study also demonstrates the value of administering three interrupted protein rich meals, each containing at least 3 gms of leucine, as a potential benefit in the ICU setting. Technical and operational hurdles are acknowledged. This single case study raises the awareness of anabolic syndrome, emphasizes interdisciplinary care, and provides a foundation for further research and experience in this area. References: Rennie, M.J (October, 2009) Anabolic Resistance in critically ill patients. Volpi E, Kobayashi H, Sheffield-Moore M, Mittendorfer B, Wolfe RR. Essential amino acids are primarily responsible for the amino acid stimulation of muscle protein anabolism in healthy elderly adults. American Journal of Clinical Nutrition. 2003; 78:250-258



P3- SOCIAL ACTIVITIES ARE ASSOCIATED WITH COGNITIVE FRAILTY IN OLDER KOREANS. D. Kim¹, H. Arai², S. Kim³ (*1. Geriatric clinic, Keimyung University Dongsan Medical Center, Daegu, Korea; 2. National Center for Geriatrics and Gerontology, Obu, Aichi, Japan; 3. Daegu Catholic University, Daegu, Korea*)

Backgrounds: Social activity seems to be important for the prevention of cognitive impairment and frailty. The objective of this study was to investigate whether social activities are associated with the development of cognitive impairment in Korean older people. **Methods:** We analyzed data from the Korean National Longitudinal

Study on Aging(KLoSA). A total of 2,495 Korean community-dwelling subjects(1,163 men and 1,332 women) between 65 and 79 years at the first wave of the KLoSA were used for analysis. Cognitive function was assessed by the Mini-Mental State Examination(MMSE) in 2006 and 2012. Multiple logistic regression analysis was performed by adjusting covariates such as age, sex, education, employment, Center for Epidemiological Studies-Depression (CESD-10) and instrumental activities of daily living(IADL) scores, and weight loss. **Results:** Among the participants, 951 subjects (38.1%) exhibited cognitive decline. Compared to those who participated in a large number of group social activities, multivariate-adjusted ORs (95% CIs) of cognitive decline in those who participated in a moderate and small number of group activities were 1.18(0.93-1.48) and 1.80(1.16-1.90), respectively. Among six types of group social activities, two types(social club/café and alumni) showed a significant correlation with less cognitive decline; adjusted ORs (95% CIs) of the group with a small number of activities were 1.31(1.09-1.56) and 1.46(1.10-1.93), respectively, compared with the group with a large number of activities. Personal social activities and the other four types of activities (religious, political, leisure and volunteer) did not affect the outcome. **Conclusions:** Two social group activities (social club/café and alumni) were significantly associated with less cognitive decline in older Koreans. Social activity characters seems to influence the cognitive frailty.

P4- APPLICATION OF A COMPREHENSIVE GERIATRIC ASSESSMENT DEMONSTRATES HIGH PREVALENCE OF AGE-ASSOCIATED IMPAIRMENTS IN OLDER ADULTS REFERRED TO THE CATHETERIZATION LABORATORY. J.A. Brenes-Salazar¹, A. Kanwar³, M. Gharacholou¹, D.J. Crusan², R.J. Lennon², G. Sandhu¹, R. Gulati¹, M. Singh¹ (1. Department of Medicine, Division of Cardiovascular Diseases, Mayo Clinic Rochester MN, USA; 2. Department of Biostatistics, Mayo Clinic Rochester MN, USA; 3. Department of Medicine, Iowa University, Iowa City IA, USA)

Introduction: Cardiovascular disease disproportionately affects older adults, and these patients represent an increasing subset of the population referred for right and left heart catheterization. Despite their robust prognostic significance, age-associated impairments are seldom evaluated in routine cardiovascular practice, and their prevalence in this population is largely unknown. **Hypothesis:** we hypothesized that the application of a Comprehensive Geriatric Assessment would identify age-associated impairments in a significant proportion of older adults with suspected/proven cardiovascular disease. **Materials and Methods:** from August 2014 to May 2015, 401 adults over 55 years of age who were referred for a right/and or left heart catheterization at the Mayo Clinic in Rochester, Minnesota were consecutively evaluated, using a modified Comprehensive Geriatric Assessment (CGA) tool. Timed Up and Go (TUG) and Functional Reach tests were selected as screening physical parameters of frailty phenotype. **Results:** Mean age of participants was 71.4 years. 64.3% of them were male. Self-reported health was fair or poor in 31.9% of individuals. Significant unintentional weight loss, urinary, fecal incontinence, and falls were documented in 18.7%, 19.2%, 4.7% and 20.7% of the cases respectively. Mean duration of the TUG test was 15.6 seconds and mean functional reach was 33.3 cm. Orthostatic hypotension was elicited in 16% of patients. When the results were stratified by age, patients over the age of 65 (n=301) were significantly less likely to report fair or poor health (29.9% vs 38%, p= 0.033), but more likely to suffer from urinary incontinence (22.9% vs 8%, p= 0.0045) and falls (23.3% vs 13%, p= 0.022). No significant differences were noted in terms of independence

with activities of daily living. Individuals over 65 years of age had significantly increased duration of the TUG test (16.4 vs 13.3 seconds, p <0.0001), shorter functional reach (32 vs 37.4 cm, p =0.0063) and increased propensity to orthostatic hypotension (19.9% vs 4%, p= 0.0005). **Conclusions:** Age-associated impairments are common in older adults referred to the Catheterization Laboratory. These appear to be more prominent in individuals over the age of 65. Application of a Comprehensive Geriatric Assessment is a simple, inexpensive and feasible strategy to identify such deficits.

P5- FRAILTY IN 65 PLUS PEOPLE: A CROSS-SECTIONAL STUDY FROM ANTALYA, TURKEY. N. Oğuz¹, H. Yaman¹ (1. Akdeniz University, Faculty of Medicine, Department of Family Medicine, Antalya, Turkey)

Background: Frailty is a frequently encountered geriatric syndrome in elderly people. In this study, the frequency of frailty in 65 plus patients and the relation of sociodemographic and health determinants on frailty has been evaluated. **Method:** This study was performed between June 2015 and December 2015. People 65 and over, who gave written consent, participated. A questionnaire (sociodemographics, health level, disease, drugs etc.) was applied face-to-face and physical tests (4-meter walking test, grip strength test) and physical examination were performed. The Fried Phenotype method has been used to determine frailty in participants. The level of frailty was classified as “normal”, “pre-frail”, and “frail”. Level of significance was set at alpha=0.05. **Results:** Three hundred eighty participants had an average age of 71,6 (SD=5,25; min= 65; max= 91). Almost half were women (%47; n=179) and men (%53; n=201). Most graduated from primary school (35%; n=133), belonged to middle income group (61%; n=230), and had two and more chronic conditions (83,9%; n=319). Most frequent stated conditions were hypertension (60,1%; n=228), hyperlipidemia (35,7%; n=136), and diabetes mellitus (27,8%; n=106). Almost one third of participants (27,6%; n=105) utilized continuously five and more drugs. According to the Fried criteria “frailty” was determined in 30% (n=114), “pre-frailty” in 53 % (n=201), and “normal-no frailty” in 17% (n=65). Women were more frail (37%; n=66 vs. 17%; n=48). In our sample women, advanced age, living alone, lower income level, being retired from more sedentary professions (i.e. civil servant, administrator etc.), having more chronic conditions, and utilization more drugs had higher frailty frequency (p<0,05). “Physical activity level” was the most (62,8%; n=239); “weak grip strength” the second most (48,4%; n=184); and “low walking speed” the third most (41%; n=156) frequently observed lowest criteria among Fried subdomains. **Conclusions:** Frailty is a frequently observed condition, which might be prevented and managed in family practice. Family physician could easily recognize this syndrome and coordinate the care of affected people. The promotion of physical activity might be an important target to prevent frailty of risk groups. Key words: Frailty, Women, Physical Activity, Grip Strength, Family Practice, Primary Care, Prevention, Health Promotion

P6- INFLUENCE OF FUNCTIONAL CAPACITY ON FRAILITY TRANSITION IN COMMUNITY-DWELLING ELDERLY: A LONGITUDINAL STUDY. S. Lanziotti Azevedo da Silva¹, J. Ude Viana², Á. Campos Cavalcanti Maciel³, M. Guimarães Assis⁴, L. Souza Máximo Pereira⁵, J.M. Domingues Dias⁵, R. Corrêa Dias⁵ (1. Adjunct professor, Federal University of Alfenas, Alfenas, MG, Brazil; 2. Physical Therapist, PhD in Rehabilitation Science Program of Federal University of Minas Gerais, Belo Horizonte, MG, Brazil; 3. Associate professor, Federal University of Rio Grande do Norte, Natal, RN, Brazil; 4. Full professor, Federal University of Minas Gerais, Belo Horizonte, MG, Brazil; 5. Associate professor, Federal University of Minas Gerais, Belo Horizonte, MG, Brazil)

Background: Frailty and functional capacity are interrelated issues in the elderly. They can transit over time and may affect each other determining the health status of that population. It is known that frail elderly are more prone to have reduced functional capacity, and that pre frail ones have higher chances of reversing their frailty and functional status. This way, the objectives of this study were to evaluate changes on functional capacity for Basic, Instrumental and Advanced Activities of Daily Living and the influence of functional capacity and its changes during 13 months of follow up across transitions between frailty levels. **Methods:** this is a longitudinal study with 200 community-dwelling elderly, randomly selected in a big city of Minas Gerais state, Brazil. They were assessed twice, at home, for functional capacity and frailty along an interval of 13 months between assessments. The sample size was defined by sample calculation. It was characterized by age, gender, marital status, years of schooling, living place, comorbidities and number of medications in use. Functional capacity was evaluated by validated instruments that assessed Basics Activities of Daily Living (BADL) and Instrumental Activities of Daily Living (IADL); Advanced Activities of Daily Living (AADL) were assessed by a semi-structured questionnaire. Changes on the scores of BADL, IADL and AADL were estimated through mean and standard deviation values on the first and second evaluations as well as the difference between them (second evaluation – first evaluation, delta value - Δ). Frailty was assessed using Frailty Phenotype with five items: weight loss, exhaustion, muscle strength, gait slowness and level of physical activity. Subjects who scored at least on three items were considered frail, 1 or 2 items pre frail and none non frail. Sample characterization was accomplished through means and percentages. Data were analyzed by binary logistic regression controlled for gender, age and occurrence of falls, preceded by univariate analysis with CI of 95%. The project was approved by the Ethics Committee of the university where it was conducted. **Results:** the total sample of the present study (n=200) was composed mostly by women (68%) and married subjects (55,5%). The mean age was 73.71 (± 6.06). Mean schooling was 6.8 (± 5.5) years and hypertension was the most frequent self related pathology (55.5%). At baseline (n=200) 13.5% of the elderly were considered frail, 55.5% pre frail and 31% non frail. On the second evaluation, 13 months after the first one (n=200), 14% were frail, 50.5% pre frail and 35.5% non frail. In relation to frailty transition, 80 subjects (40%) transited between frailty levels after 13 months. The pattern of transition was as follow: 20.5% (41) improved their frailty status, while 19.5% (39) worsened. When compared the initial and final (after 13 months follow up) functional capacity values, they were different for BADL (p=0.000) and IADL (p=0.000). When the variation (delta) was compared between the groups that improved and worsened their frailty status after 13 months, the differences were significant for BADL (p=0.021) and IADL (p=0.031). Higher dependence for BADL (OR=1.150, IC95% 1.090-4.556, p=0.02) and IADL (OR=0.825, IC95% 0.963-1.209, p=0.03) at

baseline represents more chances of worsening frailty. In relation to the reduction on functional capacity, the elderly who became more dependent for BADL (OR= 0. 297, IC95% 0.098-0.925; p<0.05) and for IADL (OR=1.405; IC95% 0.998- 1.977; p<0.05) had more chances to worsen frailty profile in 13 months. There was no variation for AADL (p=0.075) after 13 months, and also no difference between frailty groups in relation to this variable (p=0.288). **Conclusion:** to know the relation between functional capacity and frailty, and how changes on these variables can influence each other are important to develop knowledge about elderly 's healthy. The preservation of functional capacity in the elderly allows to improve frailty status and this way, helps to avoid adverse health events and allows to maintain autonomy and independence.

P7- FRAILITY AND THE DOWNWARD SPIRAL OF ENERGY: A DOUBLY LABELED WATER STUDY. A. de Carvalho Bastone¹, E. Ferrioli², K. Pfrimer², K. Simone de Souza Vasconcelos³, B. de Souza Moreira³, J.M. Domingues Dias³, R. Côrrea Dias³ (1. Department of Physical Therapy, UFVJM, Brazil; 2. Department of Internal Medicine, School of Medicine of Ribeirão Preto, USP, Brazil; 3. Postgraduate Program in Rehabilitation Sciences, UFMG, Brazil)

Background: Frailty has been described as a biological syndrome of decreased reserve and resistance to stressors, resulting from cumulative declines across multiple physiologic systems, particularly the immune, endocrine, musculoskeletal and nervous systems. This altered network leads to a state of high vulnerability to adverse health outcomes, such as diseases, mobility issues, falls, hospitalization, and mortality. There are conflicting ideas on the criteria defining frailty. The physiological changes that result in frailty are complex and up to now it has been extremely difficult to characterize them due to the frequent coexistence of acute and chronic illness. The Frailty Phenotype, based on the Cardiovascular Health Study, is composed by five criteria: unintentional weight loss, self-reported exhaustion, weakness, slow walking speed, and low level of physical activity. It was based on a reasoning framework that combined the elements of the “body composition” and “mobility domains” of the frailty syndrome into a pathophysiologic pathway in which sarcopenia diminishes resting metabolic rate, and by limiting mobility reduces the physical activity level, resulting in a lower total energy expenditure. The aim of this study was to compare the resting metabolic rate (RMR), the physical activity energy expenditure (PAEE), and the total energy expenditure (TEE) of frail and nonfrail older adults. **Method:** A cross-sectional observational study was conducted with frail and nonfrail older adults. A sample of 28 participants of both sexes was randomly selected and recruited from a list of older adults from two primary care units in the city of Diamantina, state of Minas Gerais, Brazil. The inclusion criteria were as follows: individuals aged 65 years or older, living in the community and able to walk with or without assistive devices. The exclusion criteria were prefrailty, cognitive impairment, Parkinson's disease and stroke sequel. After initial assessment to confirm eligibility for the study and to sign the informed consent, they were classified according to the Frailty Phenotype in frail (3 or more criteria present), prefrail (1or 2 criteria present) and nonfrail (0 criteria present). Participants classified as nonfrail and frail were paired considering age and sex, and were randomly selected to continue the study. RMR was measured by indirect calorimetry, using a COSMED K4 portable metabolic measurement system, after a 12-h overnight fast. The participants remained with a mask, during 40 min, in a supine position. RMR was calculated according to the modified Weir equation using data from the last 20–30 min of the measurement period and expressed as kcal/day. To calculate TEE, the multipoint doubly labeled water (DLW)

method was used. First, baseline urine samples of all participants were collected after 10 hours of fasting. Then, each participant received, orally, a dose of DLW. The DLW was composed of 0.12 g heavy water (99.8% excess atoms)/kilogram of body water and 2g H₂ 18O (10% excess atoms)/kilogram of body water. Subsequently, urine samples (the second urine of the day) of each participant were collected on the first, second, third, seventh, 12th, 13th, and 14th days after the baseline collection. Analyses were performed by mass spectrometry isotope ratios (ANCA 20-20, Europe Scientific) for carbon and (ANCA 20-22, Sercon) for deuterium at the Mass Spectrometry Laboratory of the School of Medicine of Ribeirão Preto, which is accredited by the International Atomic Energy Agency. The PAEE was calculated by the equation PAEE (kcal/day) = (0.90 X TEE) – RMR. This approach assumes that the thermic effect of feeding is 10% in the older adults. **Results:** This study included 26 older adults (66 to 86 years). One matched pair of frail and nonfrail males was excluded from the analysis due to inconsistent results of one nonfrail man on the TEE measurement, remaining 13 matched pairs. There was no significant difference between the frail and nonfrail groups regarding age, number of chronic diseases and body mass index. However, the frail group took more medications and had a lower score in the Mini-Mental Status Examination than the nonfrail group. The frail group showed significantly lower TEE (1889.97 ± 513.58 vs 2492.22 ± 512.66 kcal/day, p = 0.0003) and PAEE (346.95 ± 372.78 vs 796.22 ± 436.59 kcal/day, p = 0.0011) compared to the nonfrail group. Nevertheless, RMR did not differ between the groups (1354.02 ± 374.50 vs 1446.78 ± 451.49 kcal/day, p = 0.3815). **Conclusion:** Our results showed that frailty is not associated with low resting metabolic rate, as hypothesized by the frailty model, and that low energy expenditure in physical activity is a main component of frailty, determining also low total energy expenditure, irrespective of the number of chronic diseases. These results emphasize the importance of studies designed to investigate the benefits of exercise programs in the prevention and treatment of frailty.

P8- INFLUENCE OF FRAILTY ON PAIN, DISABILITY AND QUALITY OF LIFE IN OLDER ADULTS WITH ACUTE LOW BACK PAIN: RESULTS FROM THE BACK COMPLAINTS IN THE ELDERLY (BACE)-BRAZIL STUDY. A. Aparecida Oliveira Leopoldino¹, A. de Carvalho Bastone², R. Zunzarren Megale^{1,3}, J. Bergamaschine Mata Diz⁴, B. de Souza Moreira⁴, D. Carvalho Felício⁵, L. Souza Máximo Pereira⁴, R. Corrêa Dias⁴, M. Loureiro Ferreira^{1,3} (1. Institute of Bone and Joint Research, The Kolling Institute, USyd, Australia; 2. Department of Physical Therapy, UFVJM, Brazil; 3. The George Institute for Global Health, USyd, Australia; 4. Postgraduate Program in Rehabilitation Sciences, UFMG, Brazil; 5. Department of Physical Therapy, UFJF, Brazil)

Background and objective: The ageing process itself is responsible for many physiological changes such as decreased muscle strength, and changes in motor coordination and balance. Moreover, ageing is associated with progressive decline in physiological reserves, making older adults more vulnerable to degenerative musculoskeletal conditions and increasing the risk of frailty. Clinically, frailty represents a state of high vulnerability and increased risk of physical and functional decline, falls, hospitalization and death. Physical frailty can be identified by the presence of a specific phenotype that comprises age-related declines in lean body mass, strength, endurance, walking performance, and physical activity level. As their ability to deal with stressors is decreased, frail older adults are more likely to experience adverse health outcomes. Low back pain (LBP) is a common condition among older adults and is associated with

impairments in both physical and psychosocial domains, imposing changes that can cause disability, depressive symptoms, sleep disorders and decreased quality of life. The burden of LBP among frail older adults is likely to be even more significant, as physical frailty can be associated with cognitive changes, sarcopenia, depression and social vulnerability, all of which might contribute to worsening of LBP-related clinical outcomes. Therefore, the aim of this study was to investigate whether frailty is associated with pain intensity, disability, and quality of life in older adults with acute non-specific LBP. **Method:** A cross-sectional analysis was conducted with older adults (≥ 55 years) seeking health care for acute non-specific LBP. Non-specific LBP was defined as pain, muscle tension, or stiffness localized below the costal margin and above the inferior gluteal folds, without clinical specific cause. A new acute episode was defined as one occurring within 6 weeks or less of the enrollment period, which was preceded by at least a 6-month pain-free period. Participants were excluded if they had cognitive impairment, severe medical disease or visual, motor or hearing loss that would prevent them from being assessed during data collection. Participants were classified as nonfrail, prefrail, or frail, using the frailty phenotype. Pain intensity was assessed with Numeric Rating Scale (NRS), disability with Roland Morris Disability Questionnaire (RMDQ) and quality of life with SF-36, considering the scores of the physical domain (PD) and the mental domain (MD). Linear regression models were used to determine unadjusted coefficients for the association between frailty phenotype (independent variable) and NRS, RMDQ, PD and MD scores (dependent variables). Three models of multivariate linear regression were used: a) Model 1: adjusted for sociodemographic data (age, sex, marital status, education level and income); b) Model 2: adjusted for clinical data (body mass index, depressive symptoms and comorbidities) and c) Final model: adjusted for all covariates that presented a p-value less than 0.2 in the previous statistical models. **Results:** This study included 602 older adults (67.6 ± 7.0 years). The majority was women (84.9%), not married (55.8%), and had low education (62.7%). Using the frailty phenotype, 21.3% of the sample was identified as nonfrail, 59.2% as prefrail and 19.5% as frail. In the unadjusted models, the prefrail and frail groups had significantly higher pain intensity and disability levels and worse quality of life (physical and mental domains) compared to the nonfrail group. After adjusting for demographic and clinical data, frailty remained independently associated with disability and quality of life (physical domain). **Conclusion:** Independent associations were observed between frailty and disability and poor quality of life in older adults with acute LBP. These results might be due to a previous condition of higher disability and poorer quality of life in frail older adults when comparing to nonfrail or prefrail individuals or because the burden of acute LBP is stronger among frail older adults. Longitudinal studies are needed to elucidate this issue.

P9- COMPARISON OF SARCOPENIA PREVALENCE BY ASSESSING MUSCLE MASS ALONE AND MUSCLE MASS PLUS MUSCLE STRENGTH AND/OR PHYSICAL PERFORMANCE: META-ANALYSIS OF BRAZILIAN STUDIES. J. Bergamaschine Mata Diz¹, B. de Souza Moreira¹, A. Aparecida Oliveira Leopoldino¹, A. de Carvalho Bastone², N. Henschke³, L. Souza Máximo Pereira¹, V. Cunha Oliveira² (1. Postgraduate Program in Rehabilitation Sciences, UFMG, Brazil; 2. Physical Therapy Department, UFVJM, Brazil; 3. Institute of Public Health, University of Heidelberg, UHEI, Germany)

Background: In a time where the world's population is aging at an unprecedented rate, one of the most important challenges in the healthcare field is to slow the decline of muscle mass and function.

In this regard, sarcopenia is an intrinsic manifestation of the aging process, which might have severe implications on the functionality of older persons. This condition is a main component of frailty syndrome, and has been strongly associated with poor health outcomes, such as disability, morbidity and mortality. Over the past few years, several criteria for the diagnosis of sarcopenia have been proposed based on different assessment strategies involving muscle mass with or without physical function measures. However, the choice of a certain strategy is an ongoing challenge, since often collides with validation, reliability and spending issues. To date, there is no consensus on the diagnosis of sarcopenia, thus prevalence estimates show substantial variation. Previous qualitative reviews have reported prevalence estimates ranging between 8–40% in those aged 60 years and older; 5–13% in the age group 60–70 years; and 11–50% in those aged 80 years and older. In this study, we compared the prevalence estimates of sarcopenia between the Baumgartner's criteria to assess muscle mass alone and the European Working Group on Sarcopenia in Older People (EWGSOP) recommendation to assess muscle mass plus muscle strength and/or physical performance in older Brazilians aged 60 years and older. **Method:** Systematic review and meta-analysis of Brazilian studies. The review searched the following databases from the earliest record to November 2015: MEDLINE, AMED, CINAHL, EMBASE, LILACS and SciELO, without language restriction. Additionally, hand-searching was carried out in relevant journals and reference lists of eligible studies. The search strategy used descriptors related to "prevalence", "epidemiology", "sarcopenia", "older people," and their appropriate variations. Studies investigating the prevalence of sarcopenia in older Brazilians aged 60 years and older from community, clinical/hospital and long-term care settings were considered for inclusion. Sarcopenia was defined as low muscle mass (i.e. according to Baumgartner's criteria) or low muscle mass plus low muscle strength and/or low physical performance (i.e. according to EWGSOP recommendation) and identified by validated diagnostic criteria commonly used in previous clinical or epidemiological studies as follows: (i) muscle mass: magnetic resonance imaging, computed tomography, dual-energy X-ray absorptiometry (DEXA), bioelectrical impedance or anthropometry; (ii) strength: handgrip and knee extension/flexion strength tests; and (iii) physical performance: components of the Short Physical Performance Battery and Timed Up and Go test. Meta-analysis was conducted using a random-effects model. Independent t-test was used to compare the prevalence estimates obtained from the two diagnostic criteria (i.e. Baumgartner and the EWGSOP recommendation). **Results:** The searches retrieved 1,922 titles without duplicates. After screening titles and abstracts, 35 potential full-texts were assessed and a total of 12 studies were excluded due to the following reasons: sarcopenia was not outcome (n = 5), prevalence was not estimated (n = 6), and age of participants was less than 60 years (n = 1). Finally, 23 original studies, 12 using the Baumgartner's criteria to assess muscle mass alone and 11 using the EWGSOP recommendation to assess muscle mass plus muscle strength and/or physical performance, were included in the review. The 23 studies, dating from 2007 to 2015, included a total of 7,450 participants of both sexes (66% women), with the mean age ranging between 65.0 ± 6.0 and 83.0 ± 3.0 years. All 23 studies were cross-sectional in design. A total of 19 studies (84%) were from community settings, three studies (12%) were from clinical/hospital settings and only one study (4%) was from a long-term care setting. The prevalence of sarcopenia was 17% (95% CI 9 to 31) using the Baumgartner's criteria, and 16% (95% CI 12 to 23) using the EWGSOP recommendation. The difference between these two criteria was not significant ($p = 0.962$). **Conclusion:** Our results did not show significant difference between the two diagnostic criteria mentioned above. Since the criteria using muscle mass alone

are known to report higher prevalence estimates compared to criteria using muscle mass plus muscle strength and/or physical performance, this finding is conflicting with the current literature. Some explanation might be that factors such as age, body composition and technical features used in the selected studies were not considered. Also, the measurement using the ratio between appendicular skeletal muscle mass and height squared by the 12 studies reporting the Baumgartner's criteria might have underestimated the prevalence because the height-adjusted measure is highly dependent on body mass index and has limited ability to detect sarcopenia in subjects with overweight or obesity, which are common conditions in older Brazilians. Caution must be taken when selecting the Baumgartner's criteria to estimate the prevalence of sarcopenia.

P10- ANEMIA AND FRAILITY IN THE ELDERLY HOSPITALIZED IN AN ACUTE UNIT: PRELIMINARY RESULTS. A.-A. Zulfiqar¹, X.S. Seng¹, A. Gillibert², N. Kadri¹, J. Doucet¹, E. Andres³ (1. Geriatric Department, University Hospital of Rouen, France; 2. Pharmacovigilance Unit, University Hospital of Rouen, France; 3. Internal Medicine Unit, University Hospital of Strasbourg, France)

Background: Anemia is a frequent reason for hospitalization in acute geriatric units. The elderly are particularly susceptible and can condition the prognosis in cases of poor tolerance. Our goal is to determine if anemia is a geriatric frailty factor. The main objective is to research the link between anemia and weakness according to FRIED. The secondary objectives are on the one hand looking for a link between anemia and weakness according to SEGA, and on the other hand, the research for a link between anemia and ADL, IADL, and MMS. **Method:** This is a prospective, observational study, conducted in an acute geriatric unit at Rouen, from May 1 to August 31, 2016. All patients older than 65 years were included; only palliative patients were excluded. Anemia will be defined by a hemoglobinemia to the lower inlet to 12 g/dL regardless of gender. It will be analyzed as a binary variable, which is that anemia may be present or absent, but there is no intermediate possibility. The albumin rate, age, gender, and cardiovascular history were collected. In the relationship between anemia and outcome (FRIED, SEGA, ADL, IADL, or MMS), two analyses were systematically carried out: a crude analysis of the relationship by an Aspin-Welch t test, by comparing the average (eg. FRIED average) of anemic subjects to the non-anemic one; for the outcome FRIED, SEGA, the ADL or IADL, an adjusted analysis of the relationship by a general linear model explaining the outcome (eg FRIED) from anemia (yes/no), the age, sex, albumin, and a history of heart failure. **Results:** 120 patients were included, 62 anemic (51.7%). 77 women (64.2%). The average age of 86.8 years. 7% of subjects aged <75 years; 26% of subjects aged between 75 and 85 years; 68% of subjects aged ≥ 85 years. In the anemia group: the average age is 87.4 years; with a female predominance (42 patients). 55 patients have cardiovascular antecedents, of whom 13 have a documented heart failure. The Charlson average is 7.88. On the clinical side, 16 patients had mucocutaneous pallor and 21 had dyspnea. The hemoglobin average count is 9.7 g/dl (6 to 11.9), with an average MCV to 91.83fl, thrombocytopenia associated with 2 cases, lymphopenia associated with 18 cases and high PNN for 8 cases. The reticulocyte average count is 55.24/mm³, the average ferritin is 353,72µg/L, the average albumin is 28,63g/l. We find vitamin B9 deficiency in 21 cases, a B12 deficiency in 5 cases, and excess vitamin B12 in 11 cases. Only 3 cases of hypothyroidism have been reported. The average CRP count is 77,65mg/l, with 47 patients with high CRP. The creatinine average is 109,4µmol/l with renal failure found in 31 cases. 20 patients were transfused. The most common

causes of anemia are advanced and inflammatory deficiency. On the side of autonomy and frailty: ADL average is 1.8; IADL average is 0.52; MMS average is 16.6; Fried average is 3.8 and SEGA average is 17.8. We found 7 deaths in the service. In the group of non-anemic patients: average age 86.1, with a female predominance (35 cases); history of cardiovascular disease in 49 patients, including 12 with documented heart failure. The average Charlson score is 7. The average hemoglobin is 13.48g/dl, albumin at a rate of 29.7g/l; ADL average at 3.7, IADL average at 1.9, MMS average at 18.6, SEGA average at 12.6 and Fried average at 2.26. In bivariate analysis, anemic patients are more fragile as evidenced by the Fried's score (3.87 IC [3.62; 4.12] vs. non-anemic subjects: 2.26 IC [1.89; 2.63], $p < 0.0001$), but also SEGA score (17.87 IC [16.99, 18.75] vs. non-anemic subjects: 12.62 [11.33, 13.91], $p < 0.0001$) and less autonomous (ADL: 1.81 IC [1.51; 2.11] vs. non-anemic subjects IC 3.69 [3.27; 4.11], $p < 0.0001$; IADL 0.53 IC [0.32; 0.75] vs non-anemic subjects 1.88 [1.58; 2.18], $p < 0.0001$). In multivariate analysis, we can say that on average, anemic subjects have a FRIED score increase of 1.64 compared to non-anemic (of the sample). The increasing of FRIED score in anemics should be between 1.21 and 2.08. If we adjust on albumin, age, sex, and heart failure, the result is almost unchanged. This means that albumin, gender, age, and heart failure equal, a subject that has anemia will have on average a FRIED larger of 1.64 point compared to a non-anemic subject (95: 1.19; 2.09). These results are significant ($p < 0.0001$). Multivariate analysis wasn't done for the MMS because some data is missing. **Conclusion:** In all cases, anemia is a frailty marker independent from albumin, age, sex, heart failure. The clinical contribution of anemia in evaluating frailty is not obvious. If FRIED was made for a patient, does the information of anemia bring something? To answer the question, we should analyze the relationship of the adjusted anemia on the FRIED in models explaining an outcome such as rehospitalization, falls, or death.

P11- MEDICATION ADHERENCE AND FRAILTY AMONG ELDERLY OUTPATIENTS WITH CHRONIC HEART FAILURE. V.N. Larina, I.I. Chukaeva, D.G. Karpenko (*The Russian National Research Medical University named after N.I. Pirogov, Moscow, Russian Federation*)

Objective: To analyze the factors associated with medication adherence of elderly outpatients with chronic heart failure (CHF) and osteoporosis (OP). **Methods:** Fifty-three outpatients suffering from NYHA class II-III CHF (40 F, 13 M, aged 60 - 88 years) due to ischemic heart disease and/or arterial hypertension entered the study. All patients had clinical, laboratorial evaluation, ECG, Echo CG. Frailty was defined as three or more of the following: unintentional weight loss (more than 10 pounds within the past year), self-reported exhaustion, slow walking speed, MMSE < 24 points, weakness (chair test > 10 sec). Validated questionnaire Morisky Medication Adherence Scale (MMAS-4) is being used to evaluate adherence to treatments. Bone mineral density (BMD) in the lumbar spine (L1-LIV) and femoral neck (FN) were examined using dual-energy X-ray absorptiometry. BMD was expressed by T-score. All patients were under optimal CHF therapy. **Results:** OP (T-score < -2.4 SD) was present in 62,3% patients (29 F, 4 M; group 1) and absent in 37,7% patients (11 F, 9 M; group 2). Patients of both groups did not differ with respect to the age, education, family presence, working status, NYHA functional class (FC), systolic and diastolic blood pressure (BP), heart rate, atrial fibrillation cases or 6 min walking test distance. Diabetes mellitus was found in 45% patients with OP and in 18,2% patients without OP, $p = 0,036$. Serum concentration of HbA1 was higher among patients without OP compared with those with OP (6,3±0,7% vs 5,9±1,3%, $p = 0,047$). MMLVI was

111,1±5 g/m2 in patients with OP and 122±6,0 g/m2 - without OP, $p = 0,038$. Blood concentration of NT-proBNP was 1418,5±170,1 pg/ml in patients with OP, 228,6±179,5 pg/ml - without OP, $p = 0,001$. Patients with OP had higher rates of past bone fractures compared to those without OP, $p < 0,001$. Adherent to treatments was 42,4% patients with OP and 45% - without OP. MMAS-4 mean score was 3,3±0,9 in patients with OP and 3,25±0,8- without OP. There was correlations between high medication adherence and severity of CHF symptoms ($p = 0,027$, $r = 0,42$), MMSE ($p = 0,017$, $r = 0,36$), systolic BP ($p < 0,001$, $r = -0,44$), low density cholesterol ($p = 0,044$, $r = -0,33$), diastolic BP ($p = 0,04$, $r = -0,27$) and past osteoporotic bone fractures ($p = 0,039$, $r = 0,46$). Frailty associated with age ($p = 0,003$, $r = 0,45$), NYHA FC ($p = 0,003$, $r = 0,45$), CHF hospitalization ($p = 0,009$, $r = 0,40$), left ventricular ejection fraction ($p = 0,025$, $r = -0,37$), OP ($p = 0,019$, OR 4,5, 95% CI 1,3-15,8) and past myocardial infarction ($p = 0,001$, OR 6,8, 95% CI 2,2-20,8). **Conclusion:** Medication adherence was similar in two groups of elderly HF patients and correlated with disease severity and past OP bone fractures. Due to fact that frailty in this population significantly associated with OP, we can suppose that the frailty influence on elderly patient's adherence. Our finding raises the fact that OP fractures and frailty could be a mere marker of CHF severity and these parameters should become a routine additional assessment of CHF outpatients' adherence to treatment.

P12- ITP IN THE ELDERLY OVER 75 YEARS: EPIDEMIOLOGICAL, CLINICAL, BIOLOGICAL AND THERAPEUTICS CHARACTERISTICS. ABOUT A RETROSPECTIVE STUDY. A.-A. Zulfiqar¹, N. Kadri¹, J. Doucet¹, E. Andres² (*1. Geriatric Unit, University Hospital of Rouen, France; 2. Internal Medicine, University Hospital of Strasbourg, France*)

Background: Idiopathic thrombocytopenic purpura (ITP) can also occur in the elderly over 75 years. At present, there are no specific data on the care of subjects aged 75 and over. **Methods:** This is a retrospective study, focusing on a population of subjects above age 75, and having been previously diagnosed with ITP, by the Department of Internal Medicine University Hospital of Reims. The collection period spans the years between 2009 and 2015. **Results:** Fifteen patients were enrolled. The average age of diagnosis was 83.9 years, females representing 11 cases (73.3%). The initial clinical presentation is dominated by a significant medical history of hemorrhagic bleeding. We note the presence of autoimmune diseases, previous diagnosis of ITP, including one case bullous dermatosis autoimmune, a case of autoimmune hemolytic anemia, and scleroderma. Two haematologic malignancies (cutaneous lymphoma, LLC) were also observed. A diagnosis of systemic lupus was raised concomitantly. After the diagnosis of ITP, vasculitis ANCA was observed (in the suites). During the diagnostic phase, the mean platelet count was 14,46G / l. one case of Evans syndrome was diagnosed. The first line of treatment is based on oral corticosteroid therapy for 14 of the cases. We observed: a month, in order to obtain a complete response for 9 patients, a partial response in 3 patients, 2 patients failed to respond; At 6 months, a complete response for 0 patients and recurrence for all patients was recorded. Polyvalent immunoglobulins have not been successful for patients, collected either alone or combined with corticosteroid therapy; as well as for platelet transfusions. Splenectomy was performed for a single patient with recurrence observed after 6 months. Alternative treatments used include: mycophenolate mofetil, in a case of partial response, dapsone for 2 patients with partial responses (with hepatic adverse events occurring after 2 years of its introduction), the cellcept for 2 patients, with a partial response for one patient, and a failure for the other (associated with adverse effects such dysuria and gastric heaviness), danazol for

one patient with failed results, eltrombopag used for a single patient with adverse events that led to his stopping. Rituximab had been used for 3 patients with a complete response for one patient and a partial response in the other two. Romiplostim was used for one patient with a complete response following the use of Rituximab, which had provided a partial response for this patient. We incurred a loss of 5 patients. We noted one death within 1 month of the initial charge. **Conclusion:** Large-scale studies should be conducted in this age population, in order to standardize these practices.

P13- SCREENING FOR FRAILTY AND SARCOPENIA AMONGST OLDER PERSONS IN MEDICAL OUTPATIENT CLINICS AND ITS ASSOCIATIONS WITH HEALTHCARE BURDEN. L.F. Tan¹, Z.Y. Lim², R. Choe³, S. Seetharaman¹, R. Merchant¹ (1. Division of Geriatric Medicine, National University Hospital, Singapore; 2. Department of Medicine, National University Hospital, Singapore; 3. Yong Loo Lin School of Medicine, National University of Singapore)

Background: Frailty and sarcopenia have increasing prevalence with age. Frailty and sarcopenia have both been shown to be associated with disability, mortality and poor healthcare outcomes. With increasing subspecialisation in tertiary healthcare institutions, at risk older adults often receive fragmented care from organ-specific subspecialists. Most patients are not routinely screened for sarcopenia and frailty in the outpatient setting even though both these geriatric syndromes can be targeted for treatment. Structured physical activity, managing polypharmacy, nutrition and reversible medical illnesses have been shown to benefit frail and sarcopenic patients. Our aim was to employ simple screening tools for frailty and sarcopenia and to examine its association with healthcare burden in a sample of elder persons attending medical specialist outpatient clinics. **Methods:** A cross-sectional study of 115 older adults aged 65 and above attending Medicine Specialist Outpatient Clinics (SOC) using a standardized questionnaire was performed. All patients were assessed for sarcopenia using the SARC-F questionnaire. The Sarc-F is a rapid questionnaire designed to identify sarcopenia. It has been well-validated against physical measurements of muscle strength and is a robust predictor of adverse health outcomes associated with sarcopenia. The Edmonton Frail Scale is also a well-validated questionnaire which measures frailty across 10 domains and can be reliably administered by non-specialists with no formal training in geriatrics. Data on comorbidities, demographics, presence of caregiver, number of follow-ups, medications and hospital readmissions in the past 1 year were also collected. Comorbidities burden were assessed using Charlson Comorbidities Index. Function was assessed using Modified Barthel's Index (MBI). **Results:** The mean age of all patients was 76.6±6.5 years. The majority were female (52.2%) and 75.7% (n=87) were of Chinese ethnicity. 50% (n=57) of patients were independent and did not require a caregiver. 27% (n=31) were classified as frail, of which 38.7% (n=12), 45.2% (n=14) and 16.1% (n=5) of frail patients were classified as mild, moderate and severe frailty. 44.3% (n=51) patients were classified as sarcopenic. 44% (n=51) of patients were sarcopenic. Women were more likely to be sarcopenic than men (58.3% vs 29.0%, p=0.001). Both sarcopenia as assessed by SARC-F and frailty as assessed by The Edmonton Frail scale were found to be significantly associated with similar adverse outcomes. Sarcopenic patients had a higher Charlson Comorbidities Index (5.0 vs 6.6, p=0.001) and a lower modified Barthel's Index score (32.78 vs 78.09, p=0.001). Being sarcopenic was associated with a higher likelihood of having a caregiver (p=0.001) with an increasing dependence on children and domestic helpers. They had an average of 3.0 medical specialty follow ups compared to 2.3 follow ups for

non-sarcopenic patients (p=0.004). Sarcopenia was significantly associated with polypharmacy (74.5% vs 42.1%, p=0.001) and more than 2 hospital readmissions within a year (23.5% vs 9.4%, p=0.043). Frail patients were found to have a poorer pre-morbid function (frail vs non-Frail, 78.13±18.35 vs 96.75±5.36, p<0.001). They had more than 2 hospital readmissions yearly (frail vs non-Frail, 66.7% vs 33.3%, p<0.001), a higher number of falls (frail vs non-frail, 1.39±1.87 vs 0.35±0.80, p=0.001) and falls with significant consequences (frail vs non-frail, 0.16±0.37 vs 0.04±0.19, p=0.019). They also had significantly increased comorbidities burden (frail vs non-Frail, 6.68±2.27 vs 5.31±2.66, p=0.013) and poorer quality of life based on SF-12 (p<0.001). In addition, there is strong correlation between SARC-F score results and The Edmonton Frail scale results (rs = 0.727, n=115, p<0.001). **Conclusion:** Sarcopenia and frailty, assessed using SARC-F and The Edmonton Frail Scale, are strongly associated with similar adverse outcomes such as increased co-morbidities, number of specialty follow-ups, polypharmacy, hospital readmissions, falls and need for dedicated caregivers. Sarc-F and the Edmonton Frail Scale are simple and easy to use in a clinical setting and should be readily employed so that timely and targeted treatment can be administered. SARC-F scores correlate strongly with Edmonton Frail Scale results. High risk adults should be screened for sarcopenia using SARC-F and should this be positive, they should be assessed for frailty across multiple domains if which the Edmonton Frail Scale is one such tool. Screening for sarcopenia is practical and expedient and should be more widely used in clinical settings for elderly persons.

P14- PHYSICAL ACTIVITY, FRAILTY AND ELDERLY: PROSPECTIVE AND OBSERVATIONAL STUDY OVER A PERIOD OF 3 MONTHS. PRELIMINARY RESULTS. A.-A. Zulficar¹, H. Habchi², M. Dramé³, A. Gillibert⁴, N. Kadri¹, J. Doucet¹ (1. Geriatric Department, University Hospital of Rouen, France; 2. Emergency Unit, Hospital of Chaumont, France; 3. Research and Innovation center, methodological support unit; 4. Pharmacovigilance Unit, University Hospital of Rouen, France)

Background: In their privileged relationship and repeated contact with the elderly, general practitioners should be the first line of defense for the early identification of frailty. This would allow a reversal of the frail state if appropriate management strategies are in place, including counseling for physical activity adapted to the condition of the elderly. **Methods:** This is a prospective study conducted in a general practice in Chaumont, France. It took place during the period from 1 February 2016 to 30 April 2016 inclusive. The inclusion criterion was to be age 65 years or more at the primary care office visit. **Results:** Forty-four patients were included, 26 of whom were female (59.10%); they had a mean age of 75 years, an average Charlson score of 2.8, an average MMS of 25.4, an average IADL of 6.7, and an average ADL of 5.8. Sixteen of the subjects (36.36%) were accompanied during their medical visit to the doctor. For 25% of the patients, the reason for the visit was a single medical consultation; for 57%, the visit was a follow-up. We noted 21 patients (47.73%) who had a manual occupation. Sixteen smoked (36.36%), and 30 said they drink alcohol moderately (68.18%). Arthritic diseases, cardiovascular history (primarily high blood pressure), and lung disease were the conditions most frequently encountered in the patients' medical histories. Malnutrition was found by the BMI for 11 patients (25.00%), by the MNA for six patients (13.64%), and by albumin levels for three patients; the mean albumin level was 38.4 g/l. We noted weakness among the subjects on the SEGA scale for seven patients (15.91%) and according to the Fried scale for 25 patients (56.82%). According to the Ricci-Gagnon scale, 10 patients (22.73%) were considered inactive; the average Ricci-Gagnon score was 22.6. The monopodal

support test found pathology in 18 patients; two patients had a Get-Up and-Go Test result of greater than 20 s (4.55%). Anemia was present in one patient (2.33%) (One patient had missing data); whereas a vitamin D deficiency was present in 34 patients (85.00%). Among the subjects, six patients (13.64%) practiced a team sport. We did not find a correlation between the SEGA fragility score and the Ricci-Gagnon physical activity ($p = 0.68$), but a slight correlation was found between the Fried fragility score and Ricci-Gagnon physical activity ($p = 0.092$); this may be explained by the small sample size. We found a slight correlation between the SEGA fragility score and the monopodal support pathology test result ($p = 0.083$) as well as between the Fried fragility score and the monopodal support pathology test result, close to significance ($p = 0.06$). No correlation was found between the SEGA fragility score and Get-Up-and-Go Test result > 20 s ($p = 0.17$) nor between the Fried score and a Get-Up-and-Go Test result > 20 s ($p = 0.2$), nor even between the SEGA score and team sport participation ($p = 0.25$) nor between the Fried score and team sport participation ($p = 0.6$). We did not find a correlation between SEGA fragility and malnutrition according to the BMI ($p = 0.47$), whereas we did find a significant link between Fried fragility and malnutrition according to the BMI ($p = 0.02$). We found a significant link between the Fried score and malnutrition according to the MNA ($p = 0.02$), but not between SEGA and malnutrition according to the MNA ($p = 0.21$). We did not find a significant relationship between the SEGA score and malnutrition according to albumin level ($p = 0.002$), but not between the Fried score and malnutrition according to albumin level ($p = 0.1$). No significant associations were found between SEGA and vitamin D ($p = 0.26$), nor for the Fried score with vitamin D ($p = 0.68$). Finally, we found a slightly significant link between the SEGA score and comorbidities according to the Charlson score ($p = 0.07$) and a significant association between the Fried score and comorbidities according to the Charlson score ($p = 0.05$). We studied the physical activity by Ricci-Gagnon score, and we found significant links between inactive character according to the Ricci-Gagnon scale and the monopodal support pathology test ($p = 0.014$), a Get-Up-and-Go Test result above 20 s ($p = 0.0076$), malnutrition according to the MNA ($p = 0.0057$), and the Charlson comorbidity score ($p = 0.027$), as well as a marginally significant correlation with age, this most likely associated with a lack of power ($p = 0.06$). We did not find any significant correlation with the team sport participation item ($p = 0.15$), malnutrition according to BMI ($p = 0.68$), malnutrition according to albumin level ($p = 0.3$), or vitamin D deficiency ($p = 0.61$). **Conclusion:** Our study indicates physical activity appears to bring benefits to the elderly; thus, this research should continue.

P15- RELATIONSHIP BETWEEN DIETARY PATTERN AND MODERATE FRAILTY SYNDROME IN ELDERLY.

A. Alavi Naeini (*Isfahan University of Medical Sciences (UMI), Isfahan, Iran*)

Background and Objective: There exists evidence of nutrients deficiency as a risk factor for frailty syndrome. This study aimed at determining the relationship between the dietary intake pattern and the risk of frailty syndrome. **Materials and Methods:** In this cross-sectional study, 250 men and women aged 60-75 years who were members of the Qazvin Retirement Center were selected randomly. Moderate frailty syndrome is recognized with 2-3 out of 5 criteria defined by Fried et al. including 1) slowness while walking, 2) muscle weakness, 3) exhaustion, 4) low physical activity, and 5) unintentional weight loss. Weight and height of the elderly were measured. In order to assess the participants' diet during the past month, the general questionnaire and the food frequency questionnaire (FFQ) were completed. The results were analyzed with SPSS-21. Along with

controlling confounding variables, regression analysis was used to determine the risk of moderate frailty syndrome in quartiles of common dietary patterns. **Findings:** Two dietary patterns of healthy and unhealthy were obtained in the study population using factor analysis. The risk for syndrome in the highest quartile of healthy dietary pattern was significantly less than the lowest quartile of healthy dietary pattern in both the raw model and after adjusting for confounding variables. The risk of metabolic syndrome in the highest quartile of healthy dietary pattern was 80% lower than the first quarter of healthy dietary pattern. **Conclusion:** The prevalence of moderate frailty syndrome significantly decreased with increasing quartile of healthy dietary pattern.

P16- CORRELATION BETWEEN BONE AND GLUCIDE METABOLISM DEPENDING ON THE NUTRITIONAL STATUS IN DIABETIC PATIENTS. S. Alfieri (*Endocrinology Department, Biomedical Campus, Rome; Diabetology Department, Gemelli Hospital, Rome*)

Background: Since Albright first proposed the concept of «diabetic osteopenia», many studies have investigated the levels of bone mineral density (BMD) and the risk of osteoporosis in type 1 and type 2 diabetes (Janghorbani et al., 2007). Diabetes mellitus and low-trauma fractures are the major causes of morbidity and premature mortality worldwide. Although several observational studies have been investigated the association between diabetes and risk of fractures, the role of diabetes as a potential risk factor for osteoporosis and low-trauma fractures remains unsettled (Janghorbani et al., 2007). The aim of this study was to evaluate the relationship between nutritional status, dairy calcium intake, serum levels of vitamin D, glycemic control, the onset of osteoporosis and/or bone fractures predisposition in diabetic patients. In addition, the differences between diabetic and non diabetic patients regards to anthropometric and physiologic parameters in relation to the onset of fractures were evaluated. **Material and Methods:** Between November 2013 and July 2014, a total of 1151 patients were enrolled (350 men and 799 women). They are divided into three groups: • 400 patients with T1DM of which 19 with osteoporosis (age 42.39 ± 13.66 yo; BMI 23.88 ± 3.28), • 401 patients with T2DM of which 64 with osteoporosis (age 62.01 ± 13.21 yo; BMI 30.25 ± 8.83), • 350 non-diabetic patients with osteoporosis (NDP) (age 64.59 ± 10.45 yo; BMI 25.64 ± 4.17). According to the National Health and Nutrition Examination Survey (NHANES, 2016), in all subjects, anthropometric parameters (age, BMI, waist and wrist circumference), cardio-metabolic parameters (basal metabolism, diastolic and systolic pressure, total cholesterol, HDL, LDL, triglycerides, serum levels of vitamin D) and parameters related to glycemic control (fasting glucose and HbA1c) were first evaluated. According to Park et al., 2013 also parameters related to nutritional status, like energy intake and nutrients intake, were determined throughout a validated food frequency questionnaire. BMD (as T-score) at the lumbar spine (LS-BMD), at femoral neck (FN-BMD) and at total femur (Ftot-BMD) were also measured with Dual energy X Ray Absorptiometry (IAEA, 2010). The risk factors involved in the etiology of osteoporosis and the prevalence of bone fracture between the different groups were determined throughout two different quality of life questionnaires: the QUALEFFO-41 was used for patients with vertebral fractures (Tadic et al, 2012), and the IOF Wrist Fracture Questionnaire was used for patients with wrist fractures (P Lips et al, 2010). For what concerning statistical analyses, the characteristics of all participants were compared to identify the main differences related to the anthropometric and physiological parameters between the different groups surveyed. Subsequently, the characteristics of type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM)

patients were compared to identify the differences between the two groups and, after this, they were compared with non-diabetic patients (NDP). **Results:** Low vitamin D levels were found in both T1DM (16.38±2.74ng/mL) and T2DM (15.04±9.35ng/mL) as well as low daily calcium intake (634.84±159.97mg/day and 649.43±189.86mg/day, respectively). About 89% of T1DM and 37.5% of T2DM had T-score≥-2.5; T1DM had also a FN-BMD (T-score:-2.373±0.68 vs -1.91±0.72; p=0.016) and Ftot-BMD (T-score: -2.368±0.79 vs -1.60±0.96; p=0.003) significantly lower than T2DM and a LS-BMD significantly lower compared to NDP (T-score:-2.26±0.79 vs -2.91±0.86). Instead, T2DM had a LS-BMD, FN- BMD and Ftot-BMD significantly higher than NDP (p=0.0001, p=0.004, p=0.007). We didn't found a positive correlation between BMD and HbA1c. 1% of T1DM, 3.2% of T2DM and 14.8% of NDP had vertebral fractures; 22.7%, 9.2% and 14% had non-vertebral fractures. T2DM had 38% reduction in risk of non-vertebral fractures (OR 0.62, 95%CI=0.39-0.98) compared with controls; instead, T1DM had an increased risk of non-vertebral fractures (OR 1.81, 95%CI 1.24-2.66). **Conclusions:** T1D had an increased risk of fractures. Calcium intake and vitamin D resulted insufficient in all groups. HbA1c did not affect BMD or risk of fractures in all groups. The therapeutic considerations in diabetic patients with osteoporosis may be considered simple recommendation of "good clinical practice" evidence based and they should include: maintaining a good control of glycemia, minimizing hypoglycemic episode, preventing diabetes complication, especially renal pathology, evaluating and prevent falls, supplementing calcium and vitamin D, practicing physical activity to minimize the risk of falls, using anti-osteoporotic treatment like alendronate. In conclusion, to achieve a good glycemic control throughout proper nutrition and an adequate level of physical activity in patients with diabetes appears to be the best way to prevent and treat this disease.

P17- SEGMENT ELEVATION MYOCARDIAL INFARCTION (STEMI) IN THE ELDERLY OVER 75 YEARS: RETROSPECTIVE STUDY IN A GENERAL HOSPITAL.

A.-A.Zulfiqar¹, M. Kerif², N. Kadri¹, J. Doucet¹ (1. Geriatric Department, University Hospital of Rouen, France; 2. Emergency Unit, Hospital of Troyes, France)

Background: Data on ST elevation myocardial infarction in patients aged over 75 years remains sporadic. **Methods:** We completed a retrospective study at the Centre Hospitalier de Troyes, including all patients aged over 75 years treated by emergency physicians in pre-admissions or in emergency wards presenting with acute ST elevation myocardial infarction between January 2015 and February 2016 inclusive. We also identified a second group of subjects, aged below 75 years, with the same number of members, in order to be able to perform a cross-analysis. **Results:** We retrieved details of 32 patients aged over 75 years, with a mean age of 84.56 years (75 – 100 years), of which 22 were women. The mean Charlson comorbidity score is estimated at 3.44 (1 – 8) and the mean Grace score is estimated at 216 (168 – 345). Reperfusion was performed by way of an angiogram in 46.75% of cases; no patient in this group was subject to thrombolysis. The mean time before performance of the initial angiogram is estimated at 5,149 minutes (or over 85 hours); approximately 21.9% of patients were treated by way of insertion of a stent. One half of angiograms were not accompanied by the insertion of stents. Mortality during hospitalization occurred in ten cases and, in total, 12 patients passed away within six months. Thirty-one patients aged below 74 years, with a mean age of 55.06 years (25 – 74 years) were included in a study over a shorter period, namely three months, with the majority being men (27 subjects). Angiograms were performed in 96.77% cases, whereas thrombolysis

was performed in the cases of only two patients. We did not record any mortality during hospitalization, nor at an interval of one month or three months. There are more female subjects among patients aged over 75 years and more male subjects among patients aged below 75 years (p<0.0001). Subjects aged over 75 years were more likely to have consulted their treating physician prior to attending the emergency ward (p=0.002). The Charlson score is more significant in subjects aged over 75 years (p<0.0001); the same applies for the Grace score (p<0.0001). Subjects aged over 75 years were provided with less access to angiograms than subjects aged below 75 years, and were less likely to benefit from a stent insertion (p<0.0001). Age≥75 years increases the risk of mortality during hospitalization (p=0.001), at one month (p=0.001) and at six months (p<0.0001). The prognosis for ST Segment Elevation Myocardial Infarction ("STEMI") patients is bleak. Mortality at one year in patients aged over 80 years is seven times higher than for patients aged below 70 years in the ASC II register. In the GRACE register, age was highlighted as an independent factor correlated with the absence of reperfusion treatment during the acute phase, along with a history of surgical revascularization, diabetes, heart failure, and the absence of chest pain. In the PLATO ELDERLY study, angiograms were deployed in 56.6% of cases, with angioplasty featuring in 73.2%. A recent study on sudden cardiac arrest in elderly patients based on the ACOS register shows that mortality during hospitalization was recorded at a rate of 12.5% among the medical treatment group, compared to 6% among the group that benefited from an invasive treatment strategy. In the FAST-MI register, 85.3% of patients aged below 65 years were treated via angioplasty or fibrinolysis in cases of STEMI, compared to only 53.6% of subjects aged over 85. According to Kuch, angioplasty is the single predictive factor for survival at 18 months. Coronary angioplasty in subjects aged over 85 years is thus technically feasible with a satisfactory success rate and acceptable rates of morbidity and mortality, given the severity of the coronary condition and the associated comorbidity. Mortality is the criterion used in studies to judge the effectiveness of coronary angioplasty in octogenarian patients, but it is also important to assess quality of life as suggested by Shah et al, demonstrating that angioplasty performed in subjects aged over 75 suffering from STEMI is an independent predictive factor for an improvement in long-term survival, and also demonstrating that their quality of life is comparable with that of a similarly aged, non-institutionalized control population. **Conclusion:** STEMI in elderly subjects remains a current topic, both in terms of therapy and prognosis.

P18- FRAILITY ASSESSMENT FOR PREDICTING READMISSION AND DISCHARGE DISPOSITION AMONG CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) PATIENTS.

N. Toosizadeh^{1,2,3,4}, L. Ghazala^{2,4}, T. Rabkin Golden², C. Berry^{2,5}, Y. Mei², M. Miramontes², C. Zaldizar², J. Mohler^{1,2,3,4} (1. Division of Geriatrics, COM, General Internal Medicine and Palliative Medicine, University of Arizona, Tucson, AZ, USA; 2. Arizona Center on Aging, COM, University of Arizona, Tucson, AZ, USA; 3. Department of Bioengineering, COE, University of Arizona, Tucson, AZ, USA; 4. Department of Medicine, University of Arizona, Tucson, AZ, USA; 5. Pulmonary, Allergy, Critical Care, & Sleep Medicine, Department of Medicine, COM, University of Arizona, Tucson, USA)

Background: Chronic obstructive pulmonary disease (COPD), with a prevalence of 6.3%, is the third leading cause of death in the United States among older adults. Patients living with COPD have an accelerated decline into frailty, and those with both frailty and COPD have a higher risk of mortality than those without. The risk of frailty in those with COPD is an estimated 25%, over twice that of community

dwelling older adults. In addition, the prevalence of COPD-related frailty increases with age, Global Initiative for Chronic Obstructive Lung Disease (GOLD) stage, Medical Research Council (MRC) score, and age-adjusted comorbidity burden. Frailty assessment in the acute care setting may be useful in identifying COPD patients at a higher risk for poor health outcomes, so as to provide targeted care and appropriate pulmonary rehabilitation. However, the gold standard Fried frailty protocol is time consuming, and requires gait speed, which is not easily achieved in in-patients hospitalized for exacerbation. We have recently developed and validated a simple 20-second upper-extremity function (UEF) test using wearable sensors to identify frailty with high sensitivity and specificity compared to the Fried frailty index, among community dwelling older adults, and out-patients with COPD. The purpose of this study was to test UEF in the acute care setting for the prediction of short-term health outcomes among older adults with COPD hospitalized for COPD exacerbation. **Methods:** Hospitalized patients with COPD-related exacerbations were recruited from an academic integrated medical system, Banner University Medical Center. Eligibility included age ≥ 55 years, capacity to consent, ability to perform the UEF test, and not ventilated. Frailty was assessed using the UEF test, which involves two wireless motion sensors that are attached to the wrist and the upper-arm to measure elbow angular velocity during a 20-second rapid elbow flexion test. UEF parameters were derived to assess frailty based on sensor-measured slowness, weakness, exhaustion, and flexibility. UEF frailty scores (0 to 1) were assigned with; "0" representing extreme resilience and "1" representing extreme frailty. Health outcomes based on chart review and telephonic 30-day survey included: discharge disposition (favorable: home; or unfavorable: home with care, rehab center, skilled nursing facility, or death), 30-day exacerbation with treatment, and 30-day readmission. Other baseline clinical measures included COPD assessment test (CAT, score range from 0 to 40: best to worst score) and Charlson Comorbidity Index (CCI, score range from 0 to 39 representing the number of chronic conditions). Multivariate nominal logistic regression models were used to predict adverse health outcomes, using the UEF score (0.0 to 1.0), age, body mass index (BMI), and gender as independent variables. Analyses were repeated considering CAT and CCI scores as independent variables instead of the UEF score. **Results:** Forty-six participants were recruited (mean age = 69 ± 9 years and BMI = 25.29 ± 5.88 kg/m²). Mean frailty and clinical test scores were: UEF = 0.58 ± 0.26 ; CAT = 24.05 ± 8.95 ; and CCI = 3.27 ± 1.56 . Among participants, 14 (30%) had unfavorable discharge disposition (one mortality), 14 (30%) had exacerbation within 30-days post-discharge, and 4 (9%) were readmitted to the hospital within 30-days post-discharge. As expected, age itself was not predictive of any adverse health outcomes ($p \geq 0.14$), while the UEF score significantly predicted unfavorable discharge disposition ($p < 0.001$). Of note, there was a trend for UEF score association with 30-day readmission; ($p = 0.06$); despite our small sample size and the low frequency of this event, however this association was not significant. Participants with unfavorable discharge and 30-day readmission showed 38% and 24% higher UEF scores, respectively. Furthermore, CAT and CCI scores were not significantly associated with any of the adverse health outcomes ($p \geq 0.11$). However, neither age nor UEF score were predictive of 30-day exacerbations ($p \geq 0.47$). **Conclusion:** In this pilot project performed in a small sample of COPD patients hospitalized for exacerbation, we demonstrated that a 20-second upper-extremity frailty test, 1) was feasible, and 2) could predict adverse post-discharge disposition with potential for predicting 30-day readmission. Assessing frailty using UEF may assist in objective triage, treatment, rehabilitation, and post-discharge decision-making in geriatric COPD patients. Findings should be further studied in a larger cohort.

P19- FERRITIN: A NEW POTENTIAL BIOMARKER FOR INSULIN RESISTANCE AND DYNAPENIA RISK IN HEALTHY OBESE POSTMENOPAUSAL WOMEN.

A. Meziani^{1,2,3}, P. Noirez^{1,2}, A.D. Karelis^{2,3,4}, M. Aubertin-Leheudre^{2,3,4} (1. Université Paris Descartes, INSERM UMR-S 1124, Paris, France; 2. UQAM, Faculté des sciences, Département des sciences de l'activité physique, Montréal, Canada (Qc); 3. Groupe de recherche en activité physique adapté (GRAPA), Montréal, Canada (Qc); 4. Centre de recherche de l'institut universitaire de gériatrie de Montréal (CRIUGM), Montréal, Canada (Qc))

Background: Aging is associated with an increase in ferritin levels. Moreover, several studies have shown a relationship between high levels of serum ferritin with metabolic disorders such as insulin resistance, metabolic syndrome, type 2 diabetes and muscle mass in the elderly. However, muscle strength seems to be more related to mobility and metabolic disorders in the elderly. Thus, the aim of this study was to examine the relationship between ferritin with insulin resistance and dynapenia in healthy obese post-menopausal women (PMW). **Methods:** Thirty-one sedentary ($< 10\,000$ step/d; mean: 7300 ± 2100), obese PMW (> 30 kg/m²; mean: 34.2 ± 3.6) without the metabolic syndrome aged 60 years and over (mean: 63 ± 3 years) were recruited. BMI, waist circumference, body composition (DXA), muscle strength (handgrip), energy expenditure (armband sensewear), cardiorespiratory fitness (VO₂max), blood pressure, diabetic profile (glucose, insulin, HOMA) and fasting ferritin levels were evaluated. Correlations and a stepwise linear regression analysis were performed ($p < 0.05$: significant; SPSS 22.0). **Results:** We observed a significant correlation between ferritin with handgrip strength ($r = -0.45$), insulin ($r = 0.66$) and HOMA ($r = 0.66$). Total FFM and ferritin were the only two predictors for Handgrip strength ($r^2 = 0.54$). In addition, ferritin was the only predictor for insulin resistance (HOMA; $r^2 = 0.45$). **Conclusion:** Ferritin was related to muscle strength and insulin resistance in obese but healthy PMW. Ferritin also predicted handgrip strength and insulin resistance in our cohort of obese but healthy PMW. Therefore, ferritin may be considered by health professionals as a potential marker of mobility and insulin resistance.

P20- PAIN AND FRAILTY IN ELDERLY WOMEN WITH OSTEOPOROSIS. G. Ünver¹, S. Kapucu² (1. Faculty of Nursing, Hacettepe University, Turkey; 2. Faculty of Nursing, Hacettepe University, Turkey)

Background: Osteoporosis, a chronic degenerative disease, is near the top among diseases that cause pain; it occurs as a natural result of a prolonged lifetime, a systematic skeletal disease characterized by bone fractures, and an increase in fracture susceptibility due to low bone weight and disruption of the microarchitectural structure of bone tissue. Frailty and osteoporosis have the same risk factors (age, sarcopenia, insufficient physical activity, low body weight, and smoking), the relationship between them has not been explained. This cross-sectional study aims to determine the pain level and frailty status of elderly females with osteoporosis. **Material and methods:** Study sample consisted of 105 elderly females admitted to geriatric outpatient unit of two university hospitals. Data were collected using the questionnaire prepared by the researcher upon reviewing the literature, the Geriatric Pain Scale, and the Edmonton Frail Scale. Data were analyzed with descriptive statistics, the Mann-Whitney U test, the Kruskal-Wallis h test, and correlation analysis. **Results:** 6.7% of osteoporotic elderly female reported slight level of pain, 67.3% reported mild pain, and 26% reported severe pain. Edmonton Frail Scale mean scores indicated that 16.3% were medium-level frail, and 44.2% were high-level frail. Females expressing more sadness

and depression feelings due to pain in previous week were more frail ($p<0.05$). In addition, weight loss, depressive symptoms, and urinary incontinence were found to be related to frailty ($p<0.05$). A poor positive significant relationship was found between the mean scores of the Geriatric Pain Scale and the Edmonton Frail Scale ($r=0.271$, $p=0.000$). **Conclusion:** Nurses and health care persons should assess the frailty status of elderly females with osteoporosis, especially those reporting pain, and be aware of characteristics, possible symptoms, and the affecting factors.

P21- ASSOCIATION BETWEEN USE OF THE PUBLIC HEALTH SERVICE AND FRAILITY IN BRAZILIAN COMMUNITY-DWELLING ELDERLY. S. Lanzaoti Azevedo da Silva¹, J. Ude Viana², M.J. Pereira³, V. Carvalho L. Gama Rocha⁴, D. Sirineu Pereira¹ (1. Adjunct professor, Federal University of Alfenas, Alfenas, MG, Brazil; 2. Physical Therapist, PhD in Rehabilitation Science Program of Federal University of Minas Gerais, Belo Horizonte, MG, Brazil; 3. Physiotherapy Student, Federal University of Alfenas, Alfenas, MG, Brazil; 4. Physical Therapist, Master Student in Rehabilitation Science Program of Federal University of Alfenas, Alfenas, MG, Brazil)

Background: Frailty is a healthy condition that leads to reduction in elderly's physiological reserves, decreasing their resilience and adaptation capacity to adverse events. This way, it is fundamental that frail and pre-frail elderly, once these last are at higher risk of becoming frail, have more access to preventive and curative services, in all three levels of health care: primary or basic attention, secondary or specialized and tertiary or hospital setting. This is the model that guides Public Health Service in Brazil. Thus, the objective of the present study was to evaluate community-dwelling elderly access to health services, classifying them according to their frailty level.

Methods: A cross-sectional study was conducted with a sample of 470 community-dwelling elderly, that use public health service in a Brazilian town of approximately 77.000 inhabitants. Subjects were interviewed at home by trained interviewers. The questions comprised socio-demographic (age, gender, race, schooling, remunerated activity) and clinical data (number of present comorbidities). Health services use was evaluated through direct question in relation to medical and odontological consultations, participations in prevention of worsening and healthy promotion groups, home visits, specialists consultation, use of payed health services and hospitalization. In relation to frailty, elderly were classified as non-frail, pre-frail and frail, according to Fried's Frailty Phenotype, comprising the following five items: unintentional weight loss, exhaustion, physical activity level, muscle strength and gait speed. Statistical analyses included sample descriptive analyses through mean, standard deviation and percentages. Univariate analyses was conducted for non-parametric data through Kruskal-Wallis test, comparing the use or not of healthy services between the groups defined according to frailty phenotype. For those variables where there were differences a multinomial logistic regression was conducted to establish the magnitude of association. All analyses considered a level of significance of $\alpha=0.05$. **Results:** Sample was mostly composed of women (60.4%), with mean age of 70.77 (± 6.86) years. The majority were married (66.6%), white (64.9%), retired (81.9%) and able to read and write (67.7%). The mean of present comorbidities was 3.78 (± 2.34). In relation to the use of public healthy services, 86.2% performed basic medical consultations, 25.7% odontological consultations, only 9.4% took part in group activities, 16.7% were hospitalized, 90.9% received home visits. For specialized healthy services, 61.3% used public and 30% private service. Non-frail elderly comprised 37.4% of subjects, pre-frail 50.4% and 12.1% frail. In relation to the evaluated services,

only hospitalization showed significant differences between frailty groups ($p=0.025$), being the highest percentage for frail elders (40%). Binomial logistic regression identified that frail elderly have 62.7% more chances of being hospitalized when compared to the other groups (OR = 0.627, IC95%0.43-0.90). In frail and pre frail subjects it is observed that higher number of positive frail items, increase the chances of developing hospitalization (OR=1.39, IC95%1.12-1.72). **Conclusion:** Frailty was determinant for hospitalization once frail elderly with higher number of positive items, had more chances of being hospitalized. However, the use of other health services is the same for all groups, where the elevated number of medical consultations indicates a curative approach, while the low participation in preventive groups indicate that a preventive approach for questions such as functional capacity maintenance is not being considered on health services routine. Elderly use the service independently of their frailty profile, which is probably not considered by professionals, only when adverse outcomes become evident, and require hospitalization. This could be considered a fail on Brazilian Public Health Service when dealing with elderly individuals.

P22- GENERAL PRACTITIONER'S CLINICAL IMPRESSION IN THE SCREENING FOR FRAILITY: DATA FROM FAP STUDY PILOT. B. Fougère^{1,2}, M.-J. Sirois³, P.H. Carmichael³, B.-L. Batomen-Kuimi³, B. Chicoulaa⁴, E. Escourrou⁴, F. Nourhashémi^{1,2}, S. Oustric^{2,4}, B. Vellas^{1,2} and FAP group** (1. Gérontopôle, Centre Hospitalier Universitaire de Toulouse, Toulouse, France; 2. Inserm UMR1027, Université de Toulouse III Paul Sabatier, Toulouse, France; 3. Centre d'Excellence sur le Vieillessement de Québec, Québec, Canada; 4. Département Universitaire de Médecine Générale, Université de Toulouse III Paul Sabatier, France; **Frailty and Alzheimer's disease prevention into Primary care (FAP) group: For University Department of General Practitioners of Toulouse: Serge Ané, Marie Baillou-Découard, Elisabeth Barberan, Marguerite Bayart, Jean-Philippe Becq, Michel Bismuth, Jeremy Blanco, Odile Bourgeois, Valerie Boyer JMel, Pierre Boyer, Jean-Paul Boyes, Claude Burguier, Bruno Chicoulaa, Claude Gendre, Michel Combier, Sophie Cot, Michel Dutech, Brigitte Escourrou, Christian Gaillard, Stéphane Oustric, Jean-Luc Rastrelli, Bernard Rico, Jean-Luc Souyri, André Stillmunkes, Julie Subra, Eric Vergnes, Marc Vidal. For Toulouse Gérontopôle: Henri Boccalon, Laure Bouchon, Julien Delrieu, Bertrand Fougère, Christine Lagourdette, Fati Nourhashémi, Maryse Pédra, Yves Rolland, Maria Soto, Bruno Vellas)

Background: The progression of frailty is marked by increased risk of adverse health outcomes in the elderly including falls, physical and/or cognitive disability, hospitalizations and mortality. In primary care, the general practitioner's (GP) clinical impression about their elderly patients' frailty state seems to be a key point in identifying frail individuals in their clinical practice. The aim of this paper is to examine if GPs' clinical impression about frailty concurs with objective measures of the gold standard Fried frailty phenotype in community-dwelling older persons. **Design:** Cross-sectional study in 14 primary care GP offices in the Toulouse area from May 1st to October 31, 2015. **Participants:** 14 GPs screened their patients ≥ 70 years old. **Measurements:** GPs' "Frailty impression" was based on the Gérontopôle Frailty Screening Tool. "Objective measures of the five Fried frailty criteria" were obtained by a geriatric nurse through standardized testing. The capacity of the GPs' clinical impression to detect participants objectively measured as frail was examined with diagnostic values of observed sensitivity (Se), specificity (Sp), predictive positive value (PPV), and predictive negative value (PNV). **Results:** A total of 268 participants were screened by GPs and

assessed by the nurse. Mean age was 81 years and 62.3% were female. According to the objective measures of Fried's criteria, frailty (3-5 criteria) and pre-frailty (1-2 criteria) states were respectively identified in 31% and 45.2% of participants. The Se of the GPs' impression was good (80.39%, 95% Confidence Interval [CI]: 74.27-85.61%) and the Sp was moderate (64.06%, 95% CI: 5.10-75.68%). The overall PPV of the GP's impression was 87.70% (95% CI: 82.12-92.04) and the PNV was 50.51% (95% IC: 39.27-61.91). While PPV increased with age reaching 93.33% (95% IC: 85.12-97.80%) among patients \geq 85 years old, the PNV decreased accordingly to a minimal 21.43% (95% IC: 4.66-50.80%) in that sub-group. **Conclusion:** The present study highlights the importance of the GPs clinical impression on frailty as a fair mean to identify this syndrome in community-dwelling older patients in primary care. However, this clinical impression may not be sufficient and some objectives tests could be added to improve accuracy of frailty detection in older patients in primary care.

P23- ASSOCIATION BETWEEN SERUM URIC ACID CONCENTRATIONS AND GRIP STRENGTH: IS THERE EFFECT MODIFICATION BY AGE? E. García-Esquinas, F. Rodríguez-Artalejo (*Department of Preventive Medicine and Public Health, Universidad Autónoma de Madrid/ IdiPaz and CIBERESP, Spain*)

Background: Muscle strength is an important predictor of cause-specific and total mortality in middle-aged and older adults. Decreased muscle strength has been associated with an increased risk of obesity, hypertension, insulin resistance or the metabolic syndrome among middle-aged and older adults, and with an increased risk of future cardiovascular disease among adolescents. Evidence for an association between uric acid and muscle strength is limited to older adults, among which this biomarker has been associated with decreased risk of muscle weakness. Given that some of the deleterious effects of uric acid on health are greater in younger than in older subjects, and that age is strongly associated with skeletal muscle composition and function, this study tested the hypothesis that the association between UA and muscle strength differs by age. **Methods:** Cross-sectional analysis with 3595 participants in the US National Health and Nutrition Examination Survey 2011-2012. Serum uric acid was determined by the uricase-peroxidase technique. Grip strength was calculated as the average of the best measure obtained in each hand with a Takei digital grip strength dynamometer. Statistical analyses were performed with linear regression, and adjusted for the main confounders. **Results:** Among individuals aged 20-40 years, the beta coefficients (95% confidence intervals) of muscle strength comparing the second and third tertiles to the lowest tertile of uric acid were, respectively, -0.45 kg (-1.46; 0.57) and -2.36 kg (-3.27; -1.44), p-linear trend \leq 0.01. By contrast, for subjects age 40-60 years the corresponding beta coefficients were 0.21 kg (-1.00; 1.42) and -0.45 kg (-2.10; 1.20), p-linear trend: 0.60; and for subjects \geq 60 years they were 0.58 kg (-3.27; 1.65) and 1.57 kg (0.63; 2.50), p-linear trend $<$ 0.01. These results held after numerous sensitivity analyses. **Conclusions:** Our findings suggest that age modifies the effect of serum UA concentrations on muscle strength. Although we are unaware of the exact mechanisms that can explain these findings, we believe that they should be confirmed in future studies in order to evaluate if uric acid targets for individuals with hyperuricemia should consider patients' age and muscle strength. Funding: This work was supported by FIS grant no. 12/1166 (ISCIII, State Secretary of R+D+I and FEDER/FSE), the FRAILOMIC Initiative (EU FP7-HEALTH-2012-Proposal no. 305483-2) and the ATHLOS project (European project H2020- grant agreement no 635316).

P24- TELEVISION VIEWING TIME AS A RISK FACTOR FOR FRAILTY AND FUNCTIONAL LIMITATIONS IN OLDER ADULTS. E. García-Esquinas¹, E. Andrade¹, D. Martínez-Gómez², F. Caballero³, E. López García¹, F. Rodríguez-Artalejo¹ (*1. Department of Preventive Medicine and Public Health, Universidad Autónoma de Madrid/ IdiPaz and CIBERESP, Spain; 2. Faculty of Teacher Training and Education, UAM, Spain; 3. Department of Psychiatry, Universidad Autónoma de Madrid and CIBERSAM, Spain*)

Background: Sedentary time is an important risk factor for cardiovascular disease, type 2 diabetes, cancer, cause-specific and all-cause mortality, independently of physical activity. No previous studies have evaluated the prospective association between sedentary behavior and functional limitations in older adults. **Methods:** Data were taken from two independent cohorts of community-dwelling older adults: the Seniors-ENRICA (n=2392, follow-up 3.5 years), and the ELSA (n=3989, follow-up 3.9 years). Television viewing and other sedentary behaviors were ascertained at baseline using interviewer-administered questionnaires. In the Seniors-ENRICA cohort overall physical function at baseline and at follow-up were assessed using the physical component summary (PCS) of the 12-item Short-Form Health Survey. In both cohorts assessments for incident mobility and agility limitations were based on standardized questions, and incident frailty measured with the Fried criteria. Analyses were adjusted for sociodemographic factors, lifestyle behaviors (including physical activity at baseline) and comorbidities. Results across cohorts were pooled using of a random effects model. Between-cohort heterogeneity was tested with the chi-squared-based Q statistic and quantified with the use of the I2 statistic. **Results:** In the Seniors-ENRICA cohort, 30.0% participants developed mobility limitations, 44.8% agility limitations and 7.3% frailty during a mean (SD) follow-up period of 3.3(0.6) years. The corresponding figures in the ELSA cohort were 47.10%, 48.4% and 5.09% during a mean (SD) follow-up of 3.9 (0.2) years. Lower scores in the PCS were observed among those in the highest vs. the lowest tertile of television viewing time (b-coefficient:-1.66; 95%CI:-2.81,-0.52; p-trend=0.01). The pooled odds ratios (OR) and 95% confidence intervals (95%CI) for mobility limitations comparing the second and third to the lowest tertile of television viewing were, respectively, 1.00 (0.84, 1.20) and 1.17 (1.00, 1.38). The corresponding figures were 1.18 (0.97, 1.44) and 1.25 (1.03, 1.51); p-trend=0.02 for agility limitations; and 1.10 (0.80, 1.51) and 1.47 (1.09, 1.97); p-trend=0.03 for incident frailty. In general no association between other types of sedentary behavior and risk of functional limitations were found. However, in the Seniors-ENRICA cohort the time seated at the computer showed a trend to better values of the SF-12 (p=0.05), while in the ELSA cohort internet usage was associated with a decreased risk of agility limitations (OR: 0.76; 95%CI: 0.62,0.93) and frailty (OR:0.64; 95%CI:0.43,0.95). **Conclusions:** Among older adults, greater television viewing time is associated with an increased risk of limitations in physical function independently of physical activity. Funding: The Seniors-ENRICA cohort has been funded by FIS grants no. 12/1166 and 13/0288 (ISCIII, State Secretary of R+D+I & FEDER/FSE), MINECO R+D+I grant DEP2013-47786-R, the FRAILOMIC Initiative (EU FP7-HEALTH-2012-Proposal no. 305483-2), the ATHLOS project (European project H2020- grant agreement no 635316), CIBERESP and CIBERSAM. ELSA waves have been funded jointly by UK government departments and the National Institute on Aging, in the USA.

P25- RISK FACTORS OF SARCOPENIA IN CHINESE ELDERLY ADULTS IN BEIJING, SHANGHAI AND CHENGDU. Y. Guo¹, W. Chen², S. Ge³, B. Dong⁴, X. Zhao¹ (1. Abbott Nutrition Research and Development, Shanghai, China; 2. Peking Union Medical College Hospital, Beijing, China; 3. The Sixth People's Hospital Affiliated Shanghai Jiaotong University, Shanghai, China; 4. West China Hospital, Chengdu, China)

Backgrounds: Sarcopenia is defined as age-related decline in muscle mass and function, and is highly prevalent among elderly adults in many countries. However, limited studies report the prevalence of sarcopenia in Chinese elderly adults. Even fewer studies investigate associated risk factors of sarcopenia in Chinese population. A lack of characterization of sarcopenia precludes us to identify at-risk population and develop prevention strategies. **Methods:** An observational multi-center study was conducted in community-dwelling Chinese elderly adults living in urban areas in Beijing (BJ), Shanghai (SH) and Chengdu (CD) to evaluate prevalence of sarcopenia and identify risk factors of sarcopenia. Sarcopenia, pre-sarcopenia and at-risk of sarcopenia were determined using cut-off values derived from our previous study. Muscle mass was measured using bioelectrical impedance analysis method. Muscle function was assessed through measuring hand grip strength and gait speed. Questionnaires were used to assess participants' food pattern, nutritional status, medical history, mental status and physical activity. Stepwise logistic regression was used to analyze risk factors associated with sarcopenia. **Results:** A total number of 2823 community-dwelling Chinese elderly adults aged 68 ± 6 y participated and completed the study. Prevalence of sarcopenia, pre-sarcopenia and at risk of sarcopenia was 5.8-18.2%, 4.3-8.2% and 16.0-32.4%, respectively, in BJ, SH and CD. Site differences were observed in sarcopenia prevalence, malnutrition status, and life style. Compared to BJ and SH subjects, CD subjects had higher prevalence of sarcopenia, higher incidence of mouth problem in males and malnutrition in females. Site-specific risk factors of sarcopenia were identified as less exercise in BJ subjects and ≥ 3 prescribed medicines in CD subjects. Risk factors for overall subjects included aging, underweight, decreased calf circumference, being male, less food intake and outdoor time, having mouth problem, living alone or in CD, whereas overweight was a protective factor. **Conclusion:** Chinese elderly adults, who were male, aged ≥ 65 y, were underweight, having lower calf circumference, mouth problem, less food intake and outdoor time, as well as living alone or in CD, were more susceptible to sarcopenia. Our study bettered understanding of sarcopenia prevalence and its risk factors in community-dwelling Chinese elderly population, which will help to develop intervention program to mitigate the impact of sarcopenia.

P26- BASELINE BODY MASS INDEX AND PHYSICAL ACTIVITY PREDICTS 2-YEARS SARCOPENIA PROGRESSION IN COMMUNITY DWELLING OLDER ADULTS: THE GERI-LABS STUDY. W.-S. Lim¹, L. Tay², Y.-Y. Ding¹, A. Yeo¹, S. Yew¹, N. Hafizah¹, B. Leung³, M.-S. Chong¹ (1. Tan Tock Seng Hospital, Singapore; 2. Sengkang Hospital, Singapore; 3. Singapore Institute of Technology, Singapore)

Background: Sarcopenia, the age-related loss of skeletal muscle mass and strength, is a potential upstream target to avert frailty-related adverse outcomes such as disability, falls and increased mortality. Longitudinal studies that comprehensively assess risk factors which predict progression of sarcopenia are lacking. This prospective cohort study sought to elucidate potentially modifiable clinical, functional, nutritional and blood biomarkers that predict sarcopenia progression

at 2 years among community-dwelling older adults. **Methods:** We recruited 200 functionally independent Asian adults aged ≥50 years. We collected clinical information on demographics, comorbidity conditions, and self-rated health. We assessed performance on Chinese Mini-Mental State Examination; Barthel Activities of Daily Living; Instrumental Activities of Daily Living; Frenchay Activity Index (FAI); Short Physical Performance Battery; and Repeated Chair Stand Test. Nutritional biomarkers included body mass index (BMI), A Body Shape Index (ABSI), Mini-Nutritional Assessment, vitamin D and albumin. We also measured blood biomarkers of inflammation [interleukin 6 (IL-6), tumour necrosis factor-α receptor 1 protein (TNFR1) and C-reactive protein (CRP)], anabolic hormone [insulin-like growth factor-1 (IGF-1)], and catabolic myokine (myostatin). Appendicular skeletal mass (ASM) was measured using DXA imaging at baseline and 2-years. Sarcopenia was defined using the Asian Working Group for Sarcopenia criteria. Subjects not fulfilling criteria for sarcopenia were further classified as either: (i) pre-sarcopenia (low muscle mass with intact physical performance measures), or (ii) non-sarcopenia (if muscle mass was normal). We classified subjects as progressors if they had a diagnosis of sarcopenia at 2-years or progressed from non- to pre-sarcopenia. We performed univariate analyses, followed by binary logistic regression to ascertain baseline predictors of 2-year progression. **Results:** One hundred and fifteen (57.5%) subjects completed baseline and 2-year DXA. There were 43 (37.4%) progressors, comprising 35 with a diagnosis of sarcopenia at 2 years and 8 who progressed from non- to pre-sarcopenia. In univariate analysis, there was a significant difference between progressors and non-progressors in baseline BMI [22.51(2.65), 24.90(4.22), p<.01] and FAI score [30.72(5.81), 33.24(4.59), p=0.01], with diabetes mellitus showing a trend (p=0.09). Among the blood biomarkers, only TNFR1 showed a trend (p=0.09) towards significance. In logistic regression adjusted for age, gender and diabetes mellitus, baseline BMI [OR= 0.82 (0.72-0.93), p=0.002] and FAI score [OR= 0.90 (0.82-0.99), p=0.028] were independent predictors for progressors at 2-years but not TNFR1. Posthoc logistic regression analysis using validated factor scores for FAI revealed that "outdoor work" factor [OR= 0.79 (0.65-0.97), p=0.025], but not outdoor leisure, indoor work, or indoor leisure factors, predicted 2-year progressors. **Conclusion:** Comprehensive evaluation of clinical, functional, nutritional and blood biomarkers in this 2-year longitudinal study revealed baseline BMI and physical activity as independent predictors of sarcopenia progression. Specifically, early decline in outdoor work activities such as gardening heavy housework, and household/car maintenance were predictive, whereas baseline measures of cognitive function, physical function, physical performance, and blood biomarkers were not. Our findings, if corroborated, may facilitate early detection of at-risk older adults to guide targeted interventions to counteract sarcopenia and maintain functional performance.

P27- BIOPSYCHOSOCIAL FACTORS ASSOCIATED WITH FRAILTY OCCURRENCE IN COMMUNITY-DWELLING OLDER ADULTS. C.M.C. Nascimento, M.S. Zazzetta, G.A.O. Gomes, F.S. Orlandi, K. Gramani-Say, F.A. Vasilceac, A.C.M. Grato, S.C.I. Pavarini, M.R. Cominetti (Federal University of São Carlos, São Carlos, SP, Brazil)

Background: The global population is ageing at an accelerated rate. As a consequence there is a rise in the prevalence of the major age-associated chronic conditions. Frailty is a geriatric syndrome that can lead to disease and death outcomes. A good definition for frailty should not only capture the biological, but also the psychosocial correlates of frailty. The clinical use of biomarkers to identify elderly at risk of frailty is strongly needed. Therefore, in the present study

we examined whether blood metabolic parameters, endocrine and inflammatory markers, as well as some psychosocial aspects would be associated to frailty in community-dwelling older adults and, moreover, proposed a set of biopsychosocial factors that are associated with frailty in this population. Our hypothesis is that altered biological factors, such as high glucose levels and a pro-inflammatory state, associated to poor psychosocial conditions, such as low per capita income and depressive symptoms would be associated to a high risk of frailty occurrence. **Methods:** This was a cross-sectional study conducted in primary health care settings covered by Family Health Support Team in São Carlos, São Paulo, Brazil. From the total subjects (n=852) registered at the primary health care database, 60 years and older, who meet the eligibility criteria, a randomized and gender and age stratified sample of 363 representative participants was selected. These individuals provided blood samples and information on frailty criteria for the study. Informed consent form received ethics approval from the Federal University of São Carlos Ethic Committee on Human Experimentation (860.653/2014). Participants were classified according to diagnostic criteria based on the phenotypic classification proposed by Fried and colleagues as robust, pre-frail and frail. Fasting blood samples were drawn for the analysis of metabolic parameters such as glucose, insulin, total cholesterol, triglycerides, urea, creatinine, dehydroepiandrosterone (DHEA), dehydroepiandrosterone sulfate (S-DHEA), hydroxyvitamin-D, human growth hormone (GH), Insulin-like growth factor 1 (IGF-1) and glycated hemoglobin, which were performed by a specialized clinical laboratory. The detection of Interleukin-1 α (IL-1 α); Interleukin-1 β (IL-1 β); Interleukin-6 (IL-6); Tumor Necrosis Factor α (TNF- α) and Tumor Necrosis Factor β (TNF- β) levels was performed through a customized multiplex panel (Hcytomag, Millipore). **Results:** We verified that alterations in glucose metabolism, associated to high levels of inflammatory biomarkers and low leisure-time of physical activity increased the risk of frailty dramatically for the oldest (>70 years old) participants. On the other hand, for youngest participants (60-69 years old), the presence of a pro-inflammatory state, associated with alterations in glucose metabolism and low per capita income or the presence of depressive symptoms was determinant to increase frailty risk. **Conclusion:** Results presented here should help in the implementation of preventive healthcare strategies for socially vulnerable elderly populations..

P28- FACTORS ASSOCIATED WITH FEAR OF FALLING IN COMMUNITY-DWELLING OLDER ADULTS WITH AND WITHOUT DIABETES MELLITUS: FINDINGS FROM THE FRAILTY IN BRAZILIAN OLDER PEOPLE STUDY (FIBRA-BR). B. de Souza Moreira¹, R. Ferreira Sampaio¹, J. Bergamaschine Mata¹, A. de Carvalho Bastone², E. Ferriolli³, A. Liberalesso Neri⁴, R. Alves Lourenço⁵, R. Corrêa Dias¹, R. Noce Kirkwood¹ (1. Graduate Program in Rehabilitation Science, Universidade Federal de Minas Gerais, Brazil; 2. Physical Therapy Department, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Brazil; 3. Internal Medicine Department, Universidade de São Paulo, Brazil; 4. Graduate Program in Gerontology, Universidade Estadual de Campinas, Brazil; 5. Internal Medicine Department, Universidade do Estado do Rio de Janeiro, Brazil)

Background: Fear of falling may be understood as a low perceived self-efficacy or confidence at avoiding falls during essential, nonhazardous activities of daily living. Several studies have investigated the factors associated with fear of falling in community-dwelling older adults. Nevertheless, these studies were conducted with older populations in general, i.e. both diabetic and non-diabetic older adults were included. Only two studies have examined variables associated with fear of falling in older adults with diabetes, and

their limitations include the small sample sizes and the selection of participants based on convenience. Furthermore, no prior study has investigated the factors associated with fear of falling in those without diabetes. Therefore, this study aimed to determine among several sociodemographic, clinical (chronic diseases and health-related variables) and functional factors, which could be associated with fear of falling in older adults with and without diabetes mellitus. Knowledge of the associated factors with fear of falling, particularly those that are modifiable, may be useful in developing strategies to decrease this common and disabling health problem in older adults. **Method:** Data from 4,449 older adults, both sexes, aged 65 years or older (19.2% with diabetes), resulting from a multicenter, multidisciplinary and epidemiological study named the Frailty in Brazilian Older People Study (FIBRA), were analyzed. The FIBRA study included 15 cities from all five Brazilian geographical regions with diverse human development indexes. The cities were chosen by the convenience of research coordinators and the sample in each city was selected according to probabilistic sampling strategy among community-dwelling older adults stratified by sex and age. Sociodemographic data included sex, age, marital status, educational level and living alone. The self-reported chronic diseases diagnosed by a physician included cardiac disease (angina, myocardial infarction or heart attack), hypertension, stroke or cerebral ischemia, arthritis or rheumatism, pulmonary disease (bronchitis or emphysema), depression and osteoporosis, in addition to the total number of diseases. The health-related variables included the number of medications used regularly in the last three months, hearing and visual impairment, health self-perception classified as positive or negative, fall history in the previous 12 months, cognitive status assessed by the Mini-Mental State Examination, body mass index categorized as underweight, eutrophic, overweight and obese, depressive symptoms assessed by the 15-item Geriatric Depression Scale and frailty level operationalized by the Fried et al.'s phenotype. The functional capacity measures included the Katz Index score, Lawton Scale score, handgrip strength and gait speed test. Binary logistic regression was performed to identify the factors associated with fear of falling. **Results:** Factors independently associated with fear of falling in non-diabetic older adults were female gender (OR = 1.69; 95%CI = 1.36-2.11), arthritis or rheumatism (OR = 1.33; 95%CI = 1.10-1.60), depression (OR = 1.55; 95%CI = 1.22-1.96), visual impairment (OR = 1.18; 95%CI = 1.01-1.39), negative health self-perception (OR = 1.56; 95%CI = 1.33-1.84), falls in the previous 12 months (OR = 1.35; 95%CI = 1.13-1.61), obesity (OR = 1.28; 95%CI = 1.02-1.61), depressive symptoms (OR = 1.28; 95%CI = 1.02-1.61), frailty (OR = 1.79; 95%CI = 1.18-2.71), Katz Index score (OR = 1.42; 95%CI = 1.11-1.80), Lawton Scale score (OR = 0.87; 95%CI = 0.84-0.91), handgrip strength (OR = 0.97; 95%CI = 0.96-0.99) and gait speed test (OR = 0.33; 95%CI = 0.24-0.46). On the other hand, factors associated with fear of falling in diabetic older adults were female gender (OR = 1.93; 95%CI = 1.36-2.75), arthritis or rheumatism (OR = 1.61; 95%CI = 1.13-2.29), negative health self-perception (OR = 1.77; 95%CI = 1.27-2.46), Mini-Mental State Examination score (OR = 0.95; 95%CI = 0.90-0.99), frailty (OR = 2.31; 95%CI = 1.14-4.67), Lawton Scale score (OR = 0.85; 95%CI = 0.78-0.93) and gait speed test (OR = 0.41; 95%CI = 0.22- 0.79). **Conclusion:** Frailty was the factor with the greatest strength of association with fear of falling in both older adults with and without diabetes. As frailty involves a dysregulation in multiple organ systems, such as musculoskeletal, endocrine and cardiovascular, it is conceivable that frailty plays an important role in the pathogenesis of fear of falling. The factors associated with fear of falling did differ between non-diabetic and diabetic older adults. Health care professionals should consider such differences when planning their therapeutic approaches.

P29- TARGET AND BIOMARKER IDENTIFICATION PLATFORM TO DESIGN NEW DRUGS AGAINST AGING AND AGE-RELATED DISEASES. K. Khodova, P. Fedichev (*Gero Limited, Moscow Russia*)

Our scientific team develops omics data analysis methods to identify potential targets for therapeutic intervention against age-related diseases and aging. Since modern omics data is high dimensional, i.e. the number of features in it is much higher than the number of measurements, the use of traditional machine learning methods is impossible due to the emerging problem of overfitting. Therefore, it is necessary to develop new mathematical methods to analyze this type of data. In our work we use the models of statistical physics to analyze gene networks stability and predict their dynamics over time. The proposed models allow us to link gene network stability with mortality. The models we developed were validated on omics data of different types, such as transcriptome, proteome and metabolome measured in different tissues of various organisms. Our techniques open new opportunities to identify targets to develop new therapy candidates against aging.

P30- COMPREHENSIVE AND MULTIDISCIPLINARY ASSESSMENT OF HIV-INFECTED POPULATION AGED 60 YEARS OR OLDER. OVER60 COHORT. E. Negrodo^{1,2}, P. Echeverría¹, J. Puig¹, A. Bonjoch¹, J.A. Muñoz-Moreno¹, B. Lemos¹, C. Estany¹, B. Clotet^{1,2,3} (*1. Fundació de la Lluita contra la Sida, Hospital Universitari Germans Trias i Pujol, Badalona, Spain; 2. Universitat Autònoma de Barcelona, Barcelona, Spain; 3. Fundació Irsicaixa, Hospital Universitari Germans Trias i Pujol, Badalona, Spain*)

Background: The incidence of morbidities seems to be higher among HIV-infected subjects than in the general population. However, limited data are published about psychological, socioenvironmental and functional limitations. The objective of this study is to determine the prevalence of morbidities and age-related conditions among HIV-infected people aged 60 years or older, carrying on a comprehensive geriatric assessment (Over60 ongoing cohort). **Methods:** The following areas were assessed: medical (comorbidities, polypharmacy and drug-drug interactions), functional ability and physical health (Frailty syndrome, Barber, Barthel, Lawson, Tinetti), social (financial situation, social isolation- OARS test) and psychological/mental (adherence, quality of life, depressive symptoms, cognitive complaints and reserve). Physiological habits (incontinence-Lagro-Janssen; malnutrition; sleep disorders-Pittsburg), sensory deficits (hear and VFQ-25), fatigue, dizziness and risk of falls (SSPB and Gait speed, Get up and go) were also assessed. Other assessments were: bone and total DXA scan, EKG and chest and lumbar spine X ray. **Results:** Since January 2016 to now, 41 subjects have been evaluated; 95.9% men, mean (SD) age 72 years (± 4), 86.6% >70 years. The mean number of comorbidities (excluding HIV) were 2,9 (± 1); 68.3% presented ≥ 3 comorbidities. Percentage of subjects with abnormal results: 10.8% were considered frail; 2.9% in the Lawton scale (Instrumental Activities of Daily Living); 16.9% were elderly at risk (Barber); 10.1% and 22% showed hearing and visual impairments, respectively; 4.1% presented urinary incontinence; sleep disturbances in 56%; risk of falls in 3.2%; 45.2% showed an unsatisfactory social environment. All subjects reported >95% adherence levels, depressive symptoms were present in 16%, 86% referred a good or very good quality of life, 23% complained about cognitive symptoms, and mean cognitive reserve was in a medium-high range (11/25 points). **Conclusions:** This comprehensive and multidisciplinary assessment

of our elderly patients shows a high prevalence of subjects with comorbidities, subjects considered frail and at risk of comorbidities/mortality. In addition, almost half of them show an unsatisfactory social environment. Psychologically outcomes are more optimistic, although a close monitoring is recommended. A specific management of aging HIV-infected people could reduce morbidities and mortality, as well as improve functional parameters and daily living.

P31- CHARACTERISTICS OF AGE-RELATED SKELETAL MUSCLE DECLINE AND COGNITIVE IMPAIRMENT IN MOUSE: INFLUENCE OF VASCULAR INFLAMMATION. T. Hashizume, B.-K. Son, M. Nanao-Hamai, S. Ogawa, M. Akishita (*Department of Geriatric Medicine, Graduate School of Medicine, University of Tokyo, Tokyo, Japan*)

Background: Recent epidemiological studies have suggested that decline of skeletal muscle function is associated with cognitive impairment and could predict future decline of cognitive function. However, the characteristics of age-related muscular dysfunction and cognitive impairment and further, the association between the two phenotypes are still unclear. For this purpose, we investigated age-related alteration of skeletal muscle mass, physical performance and cognitive function, using normal aging mice. In addition, the influence of vascular inflammation on muscular and cognitive aging was examined using the aortic aneurysm model. **Method:** We used male C57BL/6J mice that were 4 months ("young, "Y"), 13 months ("middle-aged, "M"), and 25 months ("aged, "A") old. Skeletal muscle mass was measured in gastrocnemius muscle (GCM) and soleus muscle (SOL). To evaluate skeletal muscle function, we performed inverted-cling grip test (muscle strength) and rotarod test (overall motor function). Morris water maze test (spatial learning) and synaptic parameters including slope of field excitatory postsynaptic potentials (fEPSP), were examined to assess cognitive function. Histological changes were examined by hematoxylin & eosin (H&E) staining in GCMs and SOLs and by Nissl staining in hippocampus, respectively. To induce vascular inflammation and aortic aneurysm, 2 week-infusion of angiotensin II (AngII, 2000 ng/kg/min) with local application of calcium chloride (CaCl₂) in infrarenal aorta was performed. **Results:** With respect to the age-related skeletal muscle changes, we found "M" and "A" mice had significant short latency to fall compared to "Y" mice in rotarod test, whereas only "A" mice exhibited significant decline of latency to fall in inverted-cling grip test. Muscle mass of GCM and SOL, and mean fiber cross-sectional area decreased only in "A" mice. The interstitial area of GCM and SOL was increased in "A" mice. Regarding age-related cognitive changes, we found that "A" mice exhibited significant decrease of spatial learning by Morris water maze test, compared with "Y" and "M" mice. Also, slope of fEPSP significantly decreased in "A" mice. With Nissl staining, we found decrease in the number of neuronal cells in hippocampus of "A" mice. We also found that microglia (MHC II-positive cells or Iba1-positive cells) was significantly decreased in hippocampus of "A" mice. These results suggest that overall motor function decreases at the middle-age, followed by decline of muscle strength and histological changes at the old age, whereas cognitive function and related changes occur only at the old age. Next, we tested the hypothesis that vascular inflammation might exacerbate age-related muscular and cognitive changes, using "Y" and "M" mice. We confirmed infiltration of aortic Mac3-positive immune cells and increase in aortic IL-6 expression and subsequent circulating IL-6 levels both in "Y" and "M" mice by AngII infusion and CaCl₂ application. Induction of vascular inflammation in "Y" mice caused the decrease of latency to fall in rotarod test, whereas the results of inverted-cling grip test or Morris water maze test did

not change. In “M” mice, however, vascular inflammation decreased the latency to fall in rotarod test and inverted-clip grip test. Also, spatial learning assessed by Morris water maze test was significantly impaired by vascular inflammation in “M” mice. **Conclusion:** These results suggest that the decline of overall motor function precedes that of muscular strength/mass and cognitive function in the process of normal aging and inflammation-induced aging. Precise mechanisms and the interaction between the phenotypes need to be addressed..

P32- SKELETAL MUSCLE AND HORMONAL STATUS IN OLDER WOMEN. V. Povorozyuk, N. Dzerovych, T. Solonenko, O. Vdovina («D.F. Chebotarev Institute of Gerontology NAMS of Ukraine», Kyiv, Ukraine)

Introduction: In recent years there has been a number of studies examining the association between skeletal muscle and growth hormone, as well as androgens (Di Monaco M., 2011; Cruz-Jentoft A. J., 2010; Buehring B., Binkley N., 2013). The aim of the present research was to study the correlation between skeletal muscles and growth hormone, total and free testosterone level in older women. **Materials and methods:** The study involved 42 healthy women aged 60 to 86 years (mean age – 70.62±6.97 yrs). According to the gerontological classification, the examined women were divided into groups: older – 60-74 years (n=25), and senile – 75-89 years (n=17). Lean mass of the total body, upper and lower extremities was evaluated using Dual X-ray absorptiometry (Prodigy, GEHC Lunar, Madison, WI, USA). Strength of skeletal muscle was evaluated using springy carpal dynamometer. To determine the functional capacity of skeletal muscle, we used a «4-meter» test. To measure the level of 25(OH)D, Immulite 2000 analyzer-based electrochemiluminescent method was used (Siemens DPC, USA). **Results:** For the purpose of quartile analysis, women were divided into 4 groups depending on their growth hormone values: Q1 – growth hormone <1.12 ng/ml (n=11), Q2 – growth hormone being 1.13-1.98 ng/ml (n=10), Q3 – growth hormone being 1.99-2.60 ng/ml (n=11), Q4 – growth hormone >2.61-3.19 ng/ml (n=10). Women with the lowest growth hormone values are also marked with the lowest lean mass of upper (p=0.01) and lower (p<0.05) extremities, as well as appendicular lean mass (p=0.03). We found a significant correlation between appendicular lean mass and level of growth hormone (women aged 60-74 yrs: r=0.36; women aged 60-89 yrs: r=0.31), between strength of skeletal muscle and level of total testosterone (women aged 75-89 yrs: r=0.55; women aged 60-89 yrs: r=0.32), free testosterone (women aged 75-89 yrs: r=0.31), growth hormone (women aged 75-89 yrs: r=0.35; women aged 60-89 yrs: r=0.32); between function of skeletal muscle and level of total testosterone (women aged 75-89 yrs: r=0.46), free testosterone (women aged 75-89 yrs: r=0.48). **Conclusion:** Significant correlation between parameters of lean mass, skeletal muscle strength, functionality and level of growth hormone and androgens was determined in older women.

P33- SKELETAL MUSCLE AND VITAMIN D LEVEL IN WOMEN OF VARIOUS AGES. V. Povorozyuk, N. Dzerovych, T. Solonenko, O. Vdovina («D.F. Chebotarev Institute of Gerontology NAMS of Ukraine», Kyiv, Ukraine)

Introduction: In recent years there has been a number of studies examining the correlation between vitamin D status and skeletal muscles. However, there are many different approaches to the role of vitamin D metabolism and function of skeletal muscles. The aim of the research conducted at the SI «D.F. Chebotarev Institute of Gerontology NAMS of Ukraine» was to study the correlation between skeletal muscles and vitamin D level in women of different ages.

Materials and methods: The study involved 122 healthy women aged 20 to 83 years. According to the gerontological classification, the examined women were divided into groups: younger – up to 44 years (n=35), middle – 45-59 years old (n=26), older – 60-74 years (n=44), senile age – 75-89 years (n=17). Lean mass of the total body, upper and lower extremities was evaluated using Dual X-ray absorptiometry (Prodigy, GEHC Lunar, Madison, WI, USA). Strength of skeletal muscle was evaluated using springy carpal dynamometer. To determine the functional capacity of skeletal muscle we used a «four-meter» test. To determine the level of 25(OH)D electrochemiluminescent method was used with Elecsys 2010 analyzer (Roche Diagnostics, Germany). **Results:** We determined a significant correlation between parameters of lean mass (r=0.45; t=2.08; p=0.05) and the level of vitamin D in women of middle (45-59 years) age; skeletal muscle functionality (r=-0.51; t=-2.29; p=0.04) and the level of vitamin D in women of older (60-74 years) age. We did not find the significant correlation between parameters of muscle strength and level of vitamin D. **Conclusion:** Significant correlation between parameters of lean mass, skeletal muscle functionality and the level of vitamin D was determined in women of middle and older age.

P34- FRAILITY IN OLDER ADULTS WITH AMNESTIC MILD COGNITIVE IMPAIRMENT DUE TO AD: A COMPARISON OF TWO MODELS OF FRAILITY CHARACTERIZATION. N.O.C. Cezar¹, R. Izbicki², D. Cardoso², L. Valiengo¹, J.G. Almeida¹, M.V. Z. Camargo¹, O.V. Forlenza¹, M.S. Yassuda^{3,4}, I. Aprahamian^{1,5} (1. Laboratory of Neurosciences LIM-27, Institute and Department of Psychiatry, Faculty of Medicine, University of São Paulo, São Paulo, Brazil; 2. Department of Statistics, Federal University of São Carlos (UFSCar), State of São Paulo, Brazil; 3. Department of Neurology, Faculty of Medicine, University of São Paulo, São Paulo, Brazil; 4. School of Arts, Sciences and Humanities, University of São Paulo, São Paulo, Brazil; 5. Department of Internal Medicine, Faculty of Medicine of Jundiaí, State of São Paulo, Brazil)

Background: mild cognitive impairment (MCI) is a possible prodromal phase of dementia and therefore is an important target for diagnosis and future treatment strategy. At the same time, the fragility syndrome (FS) is a common disease among the elderly and is associated with lower cognitive performance and higher incidence of MCI. Thus, it is expected that the elderly with MCI show a greater number of criteria for FS when compared to controls. The aim was to identify and characterize the FS through validated instruments in elderly patients with MCI and evaluate cognitive performance according to the frailty phenotype. **Method:** cross-sectional, observational and descriptive design. In the study, 40 subjects with amnesic MCI and 26 controls without neuropsychiatric disorders, follow-up in a cohort of cognitive disorders, were evaluated with clinical, neurological, psychiatric, neuropsychological and functional evaluation. The FS was assessed by the Fried criteria (CHS) and the Edmonton Frail Scale (EFS). Data were analyzed using the software R. **Results:** prevalence of frailty was significantly higher in the aMCI compared to control group when it was assessed with the EFS (p=0.047), but not with the CHS (p=0.255). Prevalence of frailty varied upon the criteria used (EFS 7.5%; CHS 30%). Fatigue variable in CHS (p = 0.036) and Mood (p = 0.019) and functional independence (p = 0.042) variable from EFS were significantly different between the groups. Visuospatial function (OR = 2.405, p = 0.042) was associated with the CHS criteria. **Conclusion:** the identification of frailty features in aMCI appears to depend on the protocol used for evaluation. Visuospatial function showed a higher risk for frailty with the CHS.

P35- SUBJECTIVE SLEEP QUALITY IN SARCOPENIC VERSUS NON-SARCOPENIC OLDER ADULTS FROM THE SARCOPHAGE COHORT. M. Locquet, C. Beaudart, L. Delandsheere, J.Y. Reginster, O. Bruyère (*Department of Public Health, Epidemiology and Health Economics, University of Liège, Belgium*)

Background: A relationship between sleep quality and muscle protein metabolism has recently been suggested and this could impact the physiological process related to the age-related loss of muscle mass and a fortiori sarcopenia). The present analysis seeks thus to compare subjective sleep quality measures between sarcopenic and non-sarcopenic elderly subjects diagnosed following 6 different definitions of sarcopenia. **Methods:** Cross-sectional data used in this analysis were collected from the SarcoPhAge (for Sarcopenia & Physical Impairment with Advancing Age) cohort, a prospective study aiming to assess the incidence of sarcopenia and its related clinical and physical parameters among subjects aged 65 years and over. In the context of the present specific analysis, a diagnosis of sarcopenia was established according to 6 different definitions: 2 based on the criteria of low lean mass alone (Baumgartner et al., 1998; Delmonico et al., 2007) and 4 based on both low lean mass and decreased performance in a functional test (Cruz-Jentoft et al., 2010; Fielding et al., 2011; Morley et al., 2011; Studenski et al., 2014). For this purpose, 3 main assessments were carried out : an evaluation of lean mass using Dual-Energy X-Ray Absorptiometry (DXA) (Hologic Discovery A, USA), a measure of muscle strength with a hand-dynamometer (Saehan Corporation, MSD Europe Bvba, Belgium) and an assessment of physical performance by the Short Physical Performance Battery test, which includes a measurement of gait speed. In addition, to evaluate the subjective quality parameters of participants' sleep, we used the validated French version of the Pittsburgh Sleep Quality Index (PSQI). This self-administered questionnaire evaluates 7 components of sleep: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and day-time dysfunction. Points are awarded to each of these aspects (maximum 3 points for each of them) and are added to obtain a total score (maximum 21 points). The higher the score, the more it reflects major sleep difficulties. **Results:** A total of 255 individuals, aged 74.71±5.79 years, have completed the questionnaire and were included in this ancillary analysis. Participants consisted of 151 older women (59.22%) and 104 older men (40.78%). Depending on which of the 6 different definitions was employed for the diagnosis, the prevalent cases of sarcopenia ranged from 15 subjects (5.88%) (Studenski et al.) to 83 subjects (32.55%) (Delmonico et al.). Only one definition gave rise to a significant difference between sarcopenic and nonsarcopenic older subjects: the definition of Cruz-Jentoft et al. (2010). It indicated that sarcopenic subjects had higher scores than non-sarcopenic ones for 2 of the sleep components: the sleep latency and the day-time dysfunction, which would both be altered in sarcopenic subjects compared to others (respectively, $p=0.0027$ and $p=0.048$, adjusted for age and number of co-morbidities). However, for the 5 other definitions tested, and after adjustments for age and number of co-morbidities, there was no statistically significant difference between sarcopenic and non-sarcopenic subjects regarding the PSQI score or any of its 7 components separately. **Conclusion:** No major clinically relevant differences in subjective sleep quality between sarcopenic and non-sarcopenic subjects were found, regardless of the definition of sarcopenia employed.

P36- TWO-WAY BRIDGE BETWEEN MUSCULAR DYSFUNCTION AND COGNITIVE IMPAIRMENT: SECONDARY ANALYSIS OF SABE – BOGOTA STUDY. E. Garcia-Cifuentes^{1,2}, D.G. David-Pardo^{1,2}, M.G. Borda^{1,2,3}, M.U. Perez-Zepeda^{1,4}, C.A. Cano^{1,2,3} (*1. Semillero de Neurociencias y envejecimiento, Facultad de Medicina, Pontificia Universidad Javeriana, Bogotá, Colombia; 2. Facultad de Medicina, Instituto de Envejecimiento, Pontificia Universidad Javeriana, Carrera 7 # 40-62, Hospital Universitario San Ignacio, Piso 8, Bogotá, Colombia; 3. Unidad de Geriatria, Hospital Universitario San Ignacio, Bogotá, Colombia; 4. Department of epidemiologic research on Geriatrics, Nacional institute of geriatrics, Mexico DF, Mexico*)

Background: Muscular dysfunction (MD) is an important marker of survival in elderly and leads to a worst performance in activities of daily living, such as dressing and walking between two places. From now on MD is understood as a worst performance in Gait Speed (GS) task and Handgrip strength (HS). On the other hand, cognitive impairment (CI) is the measurable deficit in cognition in at least one area, that leads or not to impairment in Activities of daily living [5]. However, the importance relies in early and properly identification, avoiding disabling state, dependence and improving their functionality and quality of life. The objective is to precise the relationship between muscular dysfunction and cognitive impairment in elderly adults in Bogotá, Colombia. **Methods:** Design: Cross-sectional study; survey. Sampling was probabilistic, made by clusters (housing segments) and block stratification. **Setting:** Data from SABE (Salud, Bienestar y Envejecimiento) 2012 Bogota survey. **Participants:** 2,000 subjects aged 60 years or more. Our sample is statistically representative of 779,539 subjects aged 60 years and older, with 81.9% of eligible adults finally agreeing to participate in the study. **Measurements:** We define muscular dysfunction as an abnormal result in gait speed and/or handgrip strength. Cognitive impairment was defined as an abnormal result in Mini Mental State Examination (MMSE). Other independent variables measured: sex, gender, age, years of school and body mass index. Initially, we used univariate analyses to explore extreme values and normal distribution to adjust and categorize variables. Categorical variables are presented using frequencies and percentages. Afterwards, we analyzed data with bivariate models to determine association between independent variables and subjects with and without CI, using chi-square tests for categorical variables and t-test for continuous variables. Finally, we made a multivariate regression model to obtain the odds ratio (OR) with 95% confidence intervals. We considered variables such as sociodemographic and BMI. The statistical level of significance was set at $p < 0.05$. **Results:** A total of 1,564 older adults were included after excluding for variables missing for the analysis. CI showed statistically significant association with low HS in the unadjusted model (OR 2.76; CI 2.01 – 3.80) and after adjustment (OR: 2.25; CI 1.52 – 3.33). Low GS also displayed association with CI both before (OR: 3.85; CI: 2.10 – 5.49) and after adjustment (OR: 2.76; CI 1.83 – 4.15). **Conclusion:** SABE is the first elderly dwelling study in Colombia. particularly, this study focuses on assessing association between MD and CI. This association has never been done before in Colombia. Results suggest elderly adults how had low HS and longer time during the GS task, had an increased odd to suffer of CI, regardless of sex, schooling, BMI and age. Our results could be explain based in the early description of the motor unit by Sherrington and Liddell in 1929 grounded on the main components, anterior horn cell, peripheral nerve, neuromuscular junction, and the muscle fibers, in where the model of cognitive impairment affected Gamma Cortical neuron in the frontal motor cortex, it is well know that Innervation ratio(IR) depends of the muscle used and complexity of the movement, for example the highly IR for the muscles of the

eye varies between 3 to 10 number of axon terminating on the outer membrane of muscles cell, for the muscles that involves walking and balance we use an IR 2000 that means for every 1 axon innervates 2000 muscle fibers. With these in mind it is more likely that MD appears in walking for a disruption in this motor unit chain, even in the early stages of CI. In older adults, Muscular Dysfunction is associated with Cognitive Impairment. New studies should address the causality of this relationship and whether this association is useful or not as to provide options to prevent Cognitive Impairment.

P37- OVERWEIGHT IN ELDERLY PEOPLE INDUCES MITOCHONDRIAL DYSFUNCTION AND CHANGES CELLULAR ENERGY CAPACITIES. Y. Potes¹, M. Bermúdez², V. del Moral², I. Vega-Naredo¹, J.J. Solano², A. Coto-Montes¹ (1. Department of Cell Biology and Morphology, University of Oviedo, Spain; 2. Geriatric Service, Monte Naranco, Spain)

Background: The age-related loss of skeletal muscle, strength and quality (sarcopenia) induces a disruption in the ratio of muscle to fat tissue leading to functional dependence. Imbalanced body composition is a crucial step in the development of chronic diseases. The study of wasting-muscle in overweight people is gaining more importance not only for its high prevalence but also with the purpose of preventing obesity-related alterations and the potential synergistic impact between both pathologies. Skeletal muscle is a post-mitotic tissue with a robust capacity to regenerate and maintain cellular homeostasis upon injury that relies on the efficiency of these cellular quality control mechanisms. Oxidative stress and alterations in mitochondrial function are considered major factors of atrophy during aging. This study has important implications that improve the understanding of sarcopenia displayed by overweight. **Method:** The participants were randomly selected from the HIPA study cohort (hip fracture in elderly patients undergoing surgery in the region of Asturias (Spain)). Individuals older than 70 years (84±6) were classified in two balance groups according to the World Health Organisation body mass index (BMI): 21 normal weight (22.4±1.9) and 18 overweight (28.0±1.7). The study complied with the Declaration of Helsinki. The Clinical Research Committee of the Central University Hospital of Asturias (HUCA) also approved this work. Systemic and muscular oxidative stress and muscular mitochondrial status were determined by biochemical measurements and western blotting analyses. Mitochondrial western blotting analyses were normalized to porin as a loading control. **Results:** Our findings showed no alterations on systemic markers of oxidative damage but skeletal muscle from overweight people has been affected at this level. In spite of triggering antioxidant activity, this response appears to be unbalanced, increasing only SOD activity and favouring a prooxidant situation that likely contributes to increasing macromolecular damage. As well as, to try to maintain cellular homeostasis overweight subjects trigger mitochondrial biogenesis and respiratory complex subunits synthesis. Even though, overweight individuals exhibited a nonsignificant downward trend in ATP levels suggesting a defective mitochondrial function and contributing to atrophy. **Conclusion:** Systemic study does not allow for the assessment of the impact of overweight on the redox status of muscle fibers. Overweight seems to induce muscle damage displayed by an excessive generation of reactive oxygen species and a defective antioxidant capacity, which is not able to counteract the oxidative damage suffered. Mitochondrial respiratory chain leads to a shift in energy metabolism resulting in a decline of muscle quality that is coinciding with oxidative stress, without possibility to discerning whether it is a cause or a effect. Acknowledgements: This work was supported by FISS-13-RD12/0043/0030, FISS-13-RD12/0043/0017, FISS-14-PI13/02741 and GRUPIN-071. Y.P. is a FISS pre-doctoral

fellow (FI14/00405).

P38- FRAGILE CONCORDANCE BETWEEN FRAILTY MEASURES. T. Dale MacLaine¹, O. Baker², L. Graham¹, R. Anthony³, A. Kotze³, D. Burke^{1,3}, S.J. Howell^{1,3} (1. Leeds Institute of Biological and Clinical Sciences, University of Leeds, Leeds, United Kingdom; 2. University of Leeds Medical School, Leeds, United Kingdom; 3. Leeds Teaching Hospital Trust, Leeds, United Kingdom)

Background: Frailty is associated with adverse outcomes in colorectal surgery and preoperative frailty assessment can be used to support decision making regarding a patient's fitness for surgery. Preoperative frailty assessment is recommended by several organisations including the National Institute for Health and Care Excellence (NG16, 2015), and the World Health Organisation (WHO, 2014) but is not yet routine practice. Amongst the most widely used frailty assessment tools are the Clinical Frailty Scale (CFS), the Accumulation Deficit (AD) model and the Frailty Phenotype (FP) model. It is unclear which would be best suited to use in surgical patients or indeed if these instruments yield consistent results in surgical patients. This study examined the concordance of these three instruments in an elective colorectal surgical population. The time taken to perform each of the assessments was also measured, as this is pertinent to the implantation of frailty screening in busy preoperative clinics. In order to test if frailty assessment takes longer in patients with a greater burden of frailty, we examined the concordances between frailty and time taken for assessment for each of the tools. **Method:** Elective colorectal surgical patients were recruited from surgical pre-assessment at St James' Hospital, in Leeds. Patients were assessed by the CFS, AD and FP in a set order, with each assessment individually timed. Categorical data are presented as percentages and continuous data as mean (standard deviation) unless otherwise indicated. Concordance between tools was assessed using the kappa statistic. The duration of assessments was compared using paired t-tests. Concordance between frailty and duration of assessment was measured using Pearson's R statistic. Analyses were performed using IBM SPSS statistics software, version 22. **Results:** 200 patients were recruited between June 2015 and February 2016, with a mean age of 57 (16.7) years. 108 of those recruited were female. Prevalence of frailty ranged from 1.5% to 32%, pre-frail ranged from 51.5% to 66.5% and between 15.5% and 43% were healthy (Table 1). There were significant differences between the three measures (chi Squared, p<0.001). There was no agreement between the CFS and AD (Kappa (K) = 0.078, p=0.064), CFS and FP (K=0.172, p<0.005) or AD and FP (K = 0.163, p< 0.001). The CFS took the least time to complete, followed by AD, with FP being the longest in duration (paired t-tests, p<0.001). There was a negligible positive concordance between both the CFS and FP scores and the time taken to perform the assessments (Pearson's R = 0.279, p<0.001, R=0.154, p<0.05 respectively). AD assessments, however, had a moderate concordance between score and time taken (R=0.549, p<0.001). **Conclusion:** Our data suggest that there are considerable differences in frailty scoring between these three well established tools when applied in a surgical patient population. One thing that is clear, however, is that there is a strikingly large prevalence of pre-frailty in our young population. The CFS offers the most rapid assessment and this makes it potentially appealing for use in routine practice. However, we noted that in our study population it had very little agreement with either AD or FP. The AD assessment could be performed more rapidly than the FP assessment, but took longer in frailer patients. The FP assessment requires both a grip strength measure and walk assessment and took the most time. This may make FP unappealing for surgical pre-assessment implementation. However, the most important factor in

selecting a tool for clinical use must be the strength of the association between frailty, as identified by the tool, and surgical outcome. We are currently collecting data on the association of frailty as identified by each of these instruments and adverse surgical outcome. This information will be key to the choice of a scoring system for routine clinical use.

Table 1

CFS: Clinical Frailty Scale, AD: Accumulation Deficit, FP: Frailty Phenotype

	CFS	AD	FP
Non-frail	32.0%	15.5%	43.0%
Pre-frail	66.5%	52.5%	51.5%
Frail	1.5%	32.0%	5.5%

P39- ESPEN MALNUTRITION CONSENSUS AND BIOMARKERS: DO THEY HAVE PROGNOSTIC VALUE IN POST-ACUTE CARE?

D. Sánchez-Rodríguez^{1,2,3,4}, E. Marco^{2,3,4,5,6}, E. Casanovas-Atienza^{1,3}, O. Vázquez-Ibar^{1,3,4}, R. Miralles^{1,3}, F. Escalada Recto^{2,3,5}, J.M. Muniesa^{2,3,5} (1. Geriatrics Department, Parc Salut Mar (PSMAR), Barcelona, Spain; 2. Hospital del Mar Medical Research Institute (IMIM), Barcelona, Spain; 3. School of Medicine, Universitat Autònoma, Barcelona, Spain; 4. School of Medicine, Universitat Pompeu Fabra, Barcelona, Spain; 5. Physical Medicine and Rehabilitation Department, Parc Salut Mar, Barcelona, Spain; 6. Universitat Internacional de Catalunya (UIC), Barcelona, Spain)

Background: The European Society of Clinical Nutrition and Metabolism (ESPEN) consensus definition of malnutrition has been applied in hospitalized older patients with diabetes and middle-aged patients, geriatric outpatients, healthy elderly, young adults, and in postacute care. Although clinical biomarkers of malnutrition have not been recommended by ESPEN for nutritional assessment, they are still widely used in clinical settings in our area. Our aim was to assess malnutrition in hospitalized deconditioned patients in post-acute care using both the ESPEN definition and biomarkers, and determine the relationship between these findings and clinical and functional outcomes. **Method:** Cross-sectional study of 88 in-patients (85.4 years old, 59.1% women). Inclusion criteria: aged ≥ 70 years and body mass index (BMI) < 30 Kg/m². Mini-Nutritional Assessment-Short Form (MNA-SF) was used for malnutrition screening; if MNA-SF ≤ 11 , ESPEN criteria were applied: 1) BMI < 18.5 Kg/m² or 2) unintentional weight loss plus a) low BMI or b) low fat-free mass index. Total proteins, albumin, and cholesterol levels were compared to clinical and functional outcomes [Rehabilitation Impact Indices: Absolute and Relative Functional Gain (EFG, RFG), Rehabilitation Efficiency Index (REI)]. **Results:** All patients were considered at risk of malnutrition according to MNA-SF (score < 11). Seventeen patients (19.3%) identified by the ESPEN definition as malnourished had a longer hospital stay than the other participants [18.7 (SD 8.5) vs. 13.6 (SD 4.9), $p=0.003$] and worse rehabilitation impact indices [AFG=16.5 (SD 18.8) vs. 25.1 (SD 19.7), $p=0.05$ and REI=0.21 (SD 0.24) vs. 0.4 (SD 0.3), $p=0.02$, respectively]. Serum levels of biomarkers in malnourished patients did not correlate with rehabilitation impact indexes or clinical outcome. **Conclusions:** Combining ESPEN criteria with MNA-SF delivered valid and feasible screening in post-acute care. In populations with a recent acute process, decreased levels of biomarkers were not useful to identify patients with worse prognosis. Further research in larger samples is needed to confirm this finding.

P40- IDENTIFYING FRAILTY AMONG OUTPATIENT FALLS CLINIC ATTENDEES IN A DISTRICT GENERAL HOSPITAL USING FRIED FRAILTY PHENOTYPE MODEL VS PRISMA7 & TUAG (TIMED UP AND GO). R. Impson, S. Awais, T. Shawis (Colchester Hospital University Foundation Trust, Colchester, Essex, England)

Background: The phenotype model is generally considered the gold standard measure for identifying frailty in the elderly population but it is difficult to administer in the clinical setting. PRISMA7 & TUAG are suggested as alternative methods (BGS, Fit for Frailty, 2014) Our aim was to compare the prevalence of frailty identified with the phenotype model with that identified by the PRISMA7 & TUAG in patients attending an outpatient falls clinic in a district general hospital and at the feasibility of using individual components of the phenotype model i.e. grip strength/ walk time. **Method:** 85 consecutive patients attending the falls clinic between January and August 2014 were assessed using the frailty phenotype model (Fried et al, Journal of Gerontology, 2001) 85 further consecutive patients attending between October 2015 and June 2016 were then assessed on the PRISMA7 & TUAG. There was no change to the clinic set up or referral criteria over the time of data collection so patients in the 2 cohorts would be similar in demographics and clinical presentation. **Results:** 61% of patients were classified as frail using the phenotype model in cohort 1 and 63.5% using the PRISMA7 in cohort 2. The phenotype model also identified 25 % as pre-frail. PRISMA7 has no pre-frail score recommendation. We looked at a possible cut off score of 2 but this only identified 15.3 %. TUAG of 10 seconds or more identified 96% as frail. A sensitivity of 100% and a specificity of only 6.5 % using the PRISMA7 scores as our gold standard. Scores of 23 seconds or more gives us a sensitivity of 76.4% and specificity of 74.2 %. Frail patients average TUAG was 47.27 seconds (with a high standard deviation 38.01) Not frail patients average TUAG was 19.72 seconds (standard deviation 8.35). Using the phenotype model as our gold standard - scores for just grip strength in men and women of 16 Kg or less gave a sensitivity of 73.08% and specificity of 69.7% in identifying frailty. Frail women's average grip strength was 13.19 Kg and frail men's 11.8 Kg. Not frail women's was 17.75 Kg and men's 25 Kg. For walk time of 7.5 seconds or more over 4.57m we found a sensitivity of 75% and specificity of 69.7%. **Conclusion:** PRISMA7 identified a similar prevalence of frailty as Fried's model so could be used as an alternative in clinical practice but was unable to match Fried's model in identifying pre-frailty. TUAG of 10 seconds or more lacked specificity in identifying frailty. A cut off score of 23 seconds or more may be more useful but variability in scores was high in those with frailty so needs to be used with caution. The usefulness of grip strength and walk time as independent measures in identifying frailty needs further research.

P41- EFFECTIVENESS OF THE INTERVENTIONS IN PREVENTING OR REDUCING FRAILTY IN OLDER ADULTS – EVIDENCE BASED REVIEW.

J. Apóstolo¹, E. Bobrowicz-Campos¹, R. Cooke², S. Santana³, M. Marcucci^{4,5}, A. Cano⁶, M. Vollenbroek-Hutten⁷, F. Germini⁵, B. D'Avanzo⁸, H. Gwyther², C. Holland² (1. Health Sciences Research Unit: Nursing, Nursing School of Coimbra, The Portugal Centre for Evidence-Based Practice: a Joanna Briggs Institute Centre of Excellence, Portugal; 2. Aston Research Centre for Healthy Ageing (ARCHA), Aston University, Birmingham, UK; 3. Department of Economics, Management and Industrial Engineering, University of Aveiro, Portugal; 4. Geriatric Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy; 5. Dept. of Clinical Science and Community Health, University of Milan, Milan, Italy; 6. Department Of Paediatrics, Obstetrics, And Gynaecology, Universitat de València, Spain; 7. University of Twente, Telemedicine group, Eschedede, The Netherland and Ziekenhuisgroep Twente, Almelo, The Netherlands; 8. IRCCS Istituto di Ricerche Farmacologiche Mario Negri, Milan, Italy)

Background: Frailty is an age-related state of decreased physiological reserves characterized by a weakened response to stressors and an increased risk of poor clinical outcomes. Various types of interventions for preventing frailty progression and/or minimizing its consequences have been proposed. However, it is still difficult to determine how effective these interventions are and how effectiveness can be influenced by other factors, for example, severity of clinical condition. There is also a need for synthesis of data on economic feasibility of the interventions for frailty. Aiming to summarize the existing evidence in relation to the effectiveness of interventions for preventing progression of frailty in older adults a systematic review (SR) was conducted. This SR was developed within the context of the project “664367/FOCUS” funded under the European Union’s Health Programme (2014-2020). **Method:** The SR process was based on the Joanna Briggs Institute (JBI) procedures. Databases were searched for all published and unpublished studies from January 2001 to November 2015, with participants aged 65 and over, explicitly identified as pre-frail or frail and receiving health care and support services in any type of setting. Studies that included participants selected on the basis of specific illness or with a terminal diagnosis were excluded. The interventions of interest were those focusing on the prevention of frailty progress, as compared to usual care, alternative therapeutic interventions or no intervention. Both clinical/medical and economic components of these interventions were addressed. The critical appraisal of the included studies was conducted by two independent reviewers using standardized instruments from the JBI. In the critical appraisal of the studies examining the clinical/medical components a cut-off point consisting of at least five “YES” answers was applied. In relation to studies analyzing the economic components, it was decided to include only those studies in which the effect on clinical outcomes of the intervention was reported with sufficient methodological quality, without applying any additional cut-off point. **Results:** Of 4726 records identified through searching in databases, 378 full-texts were assessed for inclusion criteria and then 36 for methodological quality. From those 36 studies, 21 were included in this SR. All 21 studies were RCTs. They described a total of 33 interventions, including physical exercise programs alone or with supplementation, supplementation alone, hormone replacement, individually tailored management of clinical condition, group meetings, home visits from a nurse or other health professionals, cognitive interventions, and combined treatments. As these interventions were heterogeneous in terms of their characteristics, duration, follow-up periods and frailty operational definition and

measurements, pooling of data was not appropriate. The analyses of the extracted data revealed that the physical exercise programs conducted in group and supplementation alone or with physical exercise are generally effective in terms of reducing or postponing frailty. Individually tailored management of clinical condition, group meetings, home visits, cognitive training and combined treatment were not found to be universally effective. Finally, lack of effectiveness was shown for hormone supplementation and for physical exercise performed individually or delivered one-to-one. Only two of the included studies reported economic data. One of these studies revealed that intervention targeting frailty characteristics is more effective than usual care to reduce prevalence of frailty. This intervention was also shown to be less costly for very frail subgroup, but not for frail subgroup. The second study showed that geriatric evaluation and management in hospitalized patients improves basic activities of daily living and physical performance, but the initial hospitalization, as compared with usual inpatient care, is more costly. The authors also indicated that the same intervention conducted with outpatients has positive impact on quality of life and its total cost is similar to the costs of usual care. **Conclusion:** This SR has demonstrated mixed effectiveness of frailty interventions, but with clear evidence for the usefulness of such interventions in careful evidence based circumstances, supporting clinical investment of resources into frailty intervention.

P42- INTAKE OF B VITAMINS AND IMPAIRMENT IN PHYSICAL FUNCTION IN OLDER ADULTS.

E.A. Struijk¹, A. Lana², P. Guallar-Castillon¹, F. Rodríguez-Artalejo¹, E. Lopez-Garcia¹ (1. Department of Preventive Medicine and Public Health, School of Medicine, Universidad Autónoma de Madrid-IdiPaz; and CIBERESP (CIBER of Epidemiology and Public Health), Madrid, Spain; 2. Department of Medicine, Preventive Medicine and Public Health Area, School of Medicine and Health Sciences, Universidad de Oviedo, Spain)

Background: The effect of vitamin B intake on physical function is not well known. **Objective:** To examine the prospective association of the intake of vitamins B6, B12 and folate with physical function impairment in older adults. **Methods:** We performed a prospective cohort study with 1,630 participants from the Seniors-ENRICA study, a cohort of community-dwelling adults aged ≥60 years who were free of physical function impairment at baseline. In 2008-2010, nutrient intake was obtained through a validated computer-assisted face-to-face diet history. Study participants were followed-up through 2012 to assess incident impairment in agility and mobility, as well as impairment in overall physical functioning, defined as a decrease in the physical component summary of the 12-Item Short-Form Health Survey. **Results:** Over a median follow-up of 3.5 years, we identified 343 individuals with agility limitation, 212 with mobility limitation, and 457 with decreased overall physical functioning. A significant association was observed between intake of vitamin B6 and lower risk of impaired mobility (odds ratio [OR] for highest vs. lowest tertile: 0.66; 95% confidence interval [CI]:0.44-0.99; p-trend=0.05). The results lost significance when additionally adjusted for vitamin B12 and folate, however the OR did not materially change. A higher consumption of important sources of vitamin B6, such as fish or fruit, was also related to a lower risk of impaired mobility (OR 100-gram increase in fish: 0.50; 95% CI:0.32-0.79; OR 100-gram increase in fruit:0.92; 95% CI:0.84-1.01). No association was found between vitamin B12 and folate intake and physical function. **Conclusions:** A higher intake of vitamin B6 and of several of its main sources, such as fish and fruit, was associated with lower risk of impaired mobility in Spanish older adults.

P43- SERUM LEPTIN CONCENTRATION IS ASSOCIATED WITH INCIDENT FRAILTY IN OLDER ADULTS.

A. Lana^{1,2}, A. Valdés-Bécares¹, A. Buño³, F. Rodríguez-Artalejo², E. Lopez-García² (1. Department of Medicine, Preventive Medicine and Public Health Area, School of Medicine and Health Sciences, Universidad de Oviedo, Avda. Julián Clavería s/n. 33006, Oviedo, Spain; 2. Department of Preventive Medicine and Public Health, School of Medicine, Universidad Autónoma de Madrid; IdiPaz (Instituto de Investigación Sanitaria Hospital Universitario La Paz); and CIBERESP (CIBER of Epidemiology and Public Health), Madrid, Spain; 3. Department of Laboratory Medicine, La Paz University Hospital, Madrid, Spain)

Purpose: Obesity has been associated with higher risk of frailty in older adults, but the pathophysiological mechanisms are unclear. No previous study has examined the association between leptin, an adipokine, and the risk of frailty in older adults, and whether this association could be explained by insulin resistance or chronic inflammation. **Subjects/Methods:** Data were taken from 1,573 individuals without diabetes mellitus, aged ≥ 60 years, from the Seniors-ENRICA cohort. In 2008-2010, leptin, the homeostasis model assessment of insulin resistance (HOMA-IR) and C-reactive protein (CRP) were measured. Study participants were followed-up through 2012 to assess incident frailty, defined as at least two of the following Fried criteria: exhaustion, weakness, low physical activity, and slow walking speed. Analyses were performed with logistic regression and adjusted for the main confounders. **Main findings:** Over a median follow-up of 3.5 years, 280 cases of incident frailty were identified. Compared to individuals in the lowest tertile of serum leptin, those in the highest tertile showed an increased risk of frailty (odds ratio [OR]: 2.12; 95% confidence interval [CI]: 1.47-3.06; p-trend < 0.001). Further adjustment for the percentage of body fat led to an OR of 1.69 (95% CI 1.11-2.61; p-trend=0.01). After additional adjustment for HOMA-IR and CRP, the OR for frailty was 1.59 (95% CI 1.01-2.52; p-trend=0.04). Results did not vary according to sex, abdominal obesity or the percentage of body fat. Being in the highest versus lowest tertile of leptin was associated with increased risk of exhaustion (OR: 2.16; 95% CI: 1.32-3.55; p-trend=0.001) and muscle weakness (OR: 1.77; 95% CI: 1.25-2.51; p-trend=0.001), in the analyses adjusted for potential confounders and body fat. **Conclusions:** Higher leptin concentration was associated with greater risk of frailty in older adults. This association was only modestly explained by insulin resistance and chronic inflammation, as measured by CRP.

P44- EFFECT OF A HOSPITAL EXERCISE PROGRAM ON THE FUNCTIONAL STATUS OF OLDER ADULTS AGED ≥ 75 YEARS.

N. Bustamante-Ara^{1,2}, J.A. Serra-Rexach³, A. Lucia¹, M. Vidán³, M. Valades³, J. Ortiz³ (1. European University of Madrid, Spain; 2. Public Health Department, Pontificia Universidad Católica de Chile-ACCDIS, Chile; 3. Geriatrics Department, Hospital General Universitario Gregorio Marañón, Spain)

Background: Decline in functional status is associated with low mobility and loss of independence: both situations may co-exist during a hospital stay and contribute to negative outcomes in older adults. The aim of this study was to evaluate the effect of an exercise program on functional status during a short hospital stay in older adults. **Method:** Randomized controlled trial. Prospective patients aged ≥ 75 , not fully dependent in ADLs, and discharged alive, admitted to acute geriatric ward of the Hospital General Universitario Gregorio Marañón, Madrid, were randomly assigned to either usual care (CG) or intervention group (IG). The Intervention group received usual care and an exercise program (three sessions per day), including

aerobic and lower limb strength exercises. Each session consisted of walking for up to 10 minutes and standing from a seated position (three sets with up to ten repetitions). The progression in the volume of work was considered for each session. Primary outcomes were the changes in physical ability from baseline to discharge and 3-months after discharge, using the Katz index (range 0-6). Continuous scales of ADL were compared between groups using ANOVA for repeated measures adjusted for baseline ADLs. At discharge, the proportion of patients who recovered baseline ADLs were compared using multivariate logistic regression analysis, controlling for age, dementia, frailty, and baseline ADLs. Data were analyzed using SPSS version 20; $p < 0.05$ was considered for statistical difference. **Results:** A total of 154 patients were studied in the IG and 129 in the CG. Mean age was 88 ± 5 years (range 75-103 years), 59% were women and Charlson index score was 6.8 ± 1.8 . At admission, the IG had more dementia (30% vs. 22%), depression (33% vs. 26%), falls (36% vs. 28%), worse functional status (3.8 ± 2.0 vs. 4.4 ± 1.8 , Katz index), and frailty (65% vs. 54%) than the CG, all $p < .05$. Mean duration of hospital stay was comparable in both groups (7.7 ± 4.2 vs. 8.3 ± 5.4 days). There was a significant interaction effect between group and time ($p = .025$), mainly driven by the greater improvement in ADLs from admission to discharge in the IG vs. CG (2.13 ± 1.9 to 2.84 ± 2.1 vs. 3.04 ± 2.06 to 3.21 ± 2.11 ; $p = .005$). At discharge, 80 patients in the IG (55%) and 52 patients in the CG (42%) recovered their baseline functional status, $p = 0.26$. Using multivariate analysis, the IG was 84% more likely to recover their baseline functional status (95% CI: 1.09-3.10). Post hoc analysis suggest better effect of the intervention in patients over 90 years, with frailty and dependency in at least 1 ADL at baseline but without dementia. **Conclusion:** An intra-hospital strength and walk program during a short hospital stay improves functional status at discharge in a frail and oldest old population. There is a need to better understand how different programs can help to maintain independence, improve functional status and delay disability during aging.

P45- SARCOPENIA AND FALLS RISK: A PHYSIOLOGICAL PROFILE APPROACH.

J.A. Pires¹, T.P. Silva¹, S.A.L. Silva², B. Silveira¹, M.P. Volpato¹, C.C. Oliveira¹, I.C. Canale¹, D.O. Estevam³, L.S. Xavier⁴, L.S.M. Pereira⁵, D.S. Pereira² (1. Physiotherapy Student, Federal University of Alfenas, Alfenas, MG, Brazil; 2. Adjunct professor, Federal University of Alfenas, Alfenas, MG, Brazil; 3. Physical Therapist, Master Student in Rehabilitation Science Program of Federal University of Alfenas, Alfenas, MG, Brazil; 4. Physical Therapist, Master Student in Biosciences Program of Federal University of Alfenas, Alfenas, MG, Brazil; 5. Associate professor, Federal University of Minas Gerais, Belo Horizonte, MG, Brazil)

Background: Sarcopenia is an aging-related condition, recognized as a geriatric syndrome. The European Working Group on Sarcopenia in Older People characterizes sarcopenia as a progressive and generalized loss of skeletal muscle mass and strength with a risk of adverse outcomes such as physical disability, poor quality of life and death. In Brazil, there are approximately 23.5 million older individuals, representing 12.6% of the total population, and it is estimated that 17.0% of them are sarcopenic. Falls are a frequent event among older adults and are associated with increased disability and morbidity. Approximately 30% of individuals over 65 years of age fall at least once a year and these falls are not random events. Many researchers have attempted to early identify and evaluate the risk of falling in elderly adults. A portable instrument to assess fall risk is denominated Physiological Profile Assessment (PPA). The PPA gives reliable and valid measurements that can be used for assessing fall risk, once it can correctly identify fallers and non-fallers among

older adults with an accuracy of approximately 75%. This objective of the study was to investigate the association between elderly with positive screening for sarcopenia and the risk of falling through the Physiological Profile Assessment. **Method:** The study included a sample of 278 elderly (70.1 ± 6.2 years). The positive screening for sarcopenia was estimated by the presence of both low muscle strength and low physical performance. Low muscle strength was assessed by hand grip strength (<30kg/f man and <20kg/f women), whereas low physical performance was evaluated measuring participants' usual gait speed over a 4,6-m course (<0,8m/s). The risk of falling was assessed by the Physiological Profile Assessment - Short Version. This instrument assesses the risk of falls in the elderly from the measurement of sensorimotor skills such as vision (measured through a test that uses a chart containing edges with reducing contrast with variable orientation); proprioception (they were asked to close their eyes and to align their lower limbs simultaneously on either side of a vertical clear acrylic sheet placed between their legs); strength (testing of the knee extensor muscles was performed using a spring gauge attached to the subject's leg); reaction time (assessed through a hand-held electronic timer that emits a red light that needs to be turned off as fast as possible by the patient's finger); and body sway (measured using a sway meter and the subject was instructed to stand as still as possible for 30 seconds). A computer program was developed to assess individual performance using data from the PPA. The results of these tests are inputted into a software program (FallScreen) and adjusted for age and sex. The program computes a fall risk ratio by using an algorithm. The risk of falls was classified as very low (-2 to -1); low (-1 to 0); light (0 to 1); moderate (1 to 2) and severe (2 to 3). The Mann Whitney U test was used to verify the difference in PPA scores between the elderly without sarcopenia and those with positive screening for sarcopenia. Simple linear regression analysis was used to determine the influence of sarcopenia on the physiological risk of falls ($\alpha = 5\%$). **Results:** Overall, the participants were overweight, not suffering from depression, non-smokers, and low alcohol consumers. They had a small number of comorbidities and the most prevalent comorbidities were hypertension (71.2%), diabetes mellitus (34.19), arthritis (29.1%), and urinary incontinence (23.4%). 19.1% of the sample presented a low or mild risk, 26.6% a moderate risk and 54.3% of the sample shows a high risk. Elderly subjects with positive screening for sarcopenia had a higher frequency of falls in the last 12 months than the older individuals without sarcopenia. There was a significant difference in the PPA score among the elderly groups, indicating that those with positive screening for sarcopenia had a higher physiological risk of falls compared to the elderly without sarcopenia ($p < 0.001$). Sarcopenia and the physiological risk of falls were significantly associated. Sarcopenia explained 8% of fall risk, influencing the overall risk of falls in the elderly from scores above 1.06. **Conclusions:** Our study revealed that elderly people with positive screening for sarcopenia had the highest physiological risk of falling assessed by the PPA and this association was significant. Further research is needed to establish the role of sarcopenia on determining clinical outcomes and to early diagnose the high risk of falling in the elderly.

P46- FRAILTY AND FALLS RISK IN ELDERLY PEOPLE LIVING IN THE COMMUNITY. T.P. Silva¹, J.A. Pires¹, S.A.L. Silva², B. Silveira¹, M.P. Volpato¹, C.C. Oliveira¹, I.C. Canale¹, D.O. Estevam³, L.S. Xavier⁴, L.S.M. Pereira⁵, D.S. Pereira² (1. *Physiotherapy Student, Federal University of Alfenas, Alfenas, MG, Brazil*; 2. *Adjunct professor, Federal University of Alfenas, Alfenas, MG, Brazil*; 3. *Physical Therapist, Master Student in Rehabilitation Science Program of Federal University of Alfenas, Alfenas, MG, Brazil*; 4. *Physical Therapist, Master Student in Biosciences Program of Federal University of Alfenas, Alfenas, MG, Brazil*; 5. *Associate professor, Federal University of Minas Gerais, Belo Horizonte, MG, Brazil*)

Background: Frailty syndrome in the elderly is characterized by decreased physiological reserves, and it is associated with increased risk of disability and high vulnerability to mortality and morbidity. In a Brazilian study with more than 3,000 elderly people in seven cities of the country, 9.1% of the individuals were frail, 51.8% pre-frail and 39.1% were considered as non-frail. Frailty is related to adverse outcomes such as increased incidence of hospitalization, recurrent falls, increased use and costs for health services, social vulnerability, institutionalization, and death. Although frailty is related to falls, few studies have investigated the physiological risk of falls in the elderly, using the Physiological Profile Assessment (PPA), through the levels of frailty. Thus, the objective of this study was to compare the risk of falls among frail, pre-frail and non-frail elderly. **Method:** The study included a sample of 278 elderly in the community (70.2 years ± 6.4). The elderly were classified as fragile according to the Fried Frailty Phenotype, which is based on five pre-defined physical frailty criteria. The five frailty criteria are exhaustion, weight loss, slowness, low physical activity and weakness. The sum score of these five criteria classifies people into one of three frailty stages: not frail (score 0), pre-frail (score 1–2) and frail (score 3–5). The risk of falling was assessed by the PPA - Short Version. This instrument assesses the risk of falls in the elderly from the measurement of sensorimotor skills such as vision (measured through a contrast sensitivity test that uses a chart that has 20 circular patches containing edges with reducing contrast); proprioception (the participants were instructed to sit on PPA's chair and asked to close their eyes and to align their lower limbs simultaneously on either side of a vertical clear acrylic sheet inscribed with a protractor and placed between their legs); muscle strength (testing of the knee extensor muscles was performed using a spring gauge attached to the subject's leg and the force was measured); reaction time (assessed in milliseconds through a hand-held electronic timer that emits a red light that needs to be turned off as fast as possible by the patient's finger); and body sway (measured using a sway meter and the subject was instructed to stand as still as possible for 30 seconds). A computer program was developed to assess individual performance using data from the PPA. The results of these tests are inputted into a software program (FallScreen) and adjusted for age and sex. The program computes a fall risk ratio by using an algorithm. The risk of falls was classified as very low (from -2 to -1); low (from -1 to 0); light (from 0 to 1); moderate (from 1 to 2) and severe (from 2 to 3). Elderly subjects with positive screening for cognitive impairment were excluded from the study. The comparison of the physiological risk of falls between the frailty levels was verified by Kruskal Wallis and Mann Whitney test ($\alpha = 5\%$). **Results:** In the sample, 25% of the elderly were non-frail, 59% pre-frail and 15.8% were considered frail. Regarding the risk of falls, 19% presented a light risk, 27% moderate and 54% high risk. There was a significant difference in the risk of falling among the three frailty levels according to the PPA score ($p = 0.016$): frail (3.8 ± 1.9), pre-frail (2.4 ± 1.4) and non-frail (1.5 ± 0.9). There was a significant difference in the risk of

falling among the three levels of frailty according to the PPA score ($p = 0.016$). Frail individuals had a higher risk of falls compared to pre-frail and non-frail. Likewise, the pre-frail individuals had a higher risk of falls compared to non-frail. **Conclusions:** The results of the study suggest that the PPA was an instrument capable of differentiating the risk of falls according to the levels of frailty. Preventive actions regarding falls should be considered with the objective of minimizing their negative impact on the evolution of the frailty syndrome..

P47- PHYSICAL STATUS AND FRAILITY INDEX IN NURSING HOME RESIDENTS: RESULTS FROM THE INCUR STUDY.

M. Tabue-Teguo, J.F. Dartigues, N. Simo, C. Kuate-Tegueu, B. Vellas, M. Cesari (*Centre Hospitalier de Villeneuve-sur-Lot; Centre INSERM U 1219; ISPED, Université de Bordeaux; Université de Yaoundé; Gérontopôle CHU de Toulouse; UMR 1027 INSERM, Université Toulouse 3*)

Objectives: The Short Physical Performance Battery (SPPB) is a widely used instrument for measuring physical performance, consisting of 3 sub-tests: a hierarchical test of balance, a gait speed test, and a chair stand test. Scores vary from 0 to 4 for each subtest and from 0 to 12 for the global SPPB (higher is better). Although equally considered in the computation of the SPPB score, each of the components may present a specific and different weight in clinical practice. The objective of this study was to estimate the relationship of SPPB and its components with an age-related deficit accumulation index (the so-called Frailty Index [FI] proposed by Rockwood and colleagues). **Design, Setting, and Participants:** Cross-sectional analysis using data from a nursing home cohort study (Incidence of pNeumonia and related Consequences in nursing home Residents [INCUR]) of 730 older persons (74.29 % women) living in 13 French nursing homes. **Measurements:** The FI was computed as the ratio of present deficits divided by the maximum number of potential deficits (ie, 30) at the baseline visit (range between 0 [no deficit] and 1 [30 deficits]). Descriptive statistics and linear regression analyses were used to determine the relationship between the SPPB and FI and estimate which components of the SPPB were most strongly associated with the FI. **Results:** Mean age of participants was 86.5 (SD 7.5) years, with a mean FI of 0.37 (SD 0.11) and SPPB of 2.5. The SPPB and its components were all significantly associated with the FI, but the magnitude of the associations varied. Linear regression analyses adjusted for age and sex showed small effect sizes for all associations, with the balance test [$\beta = -0.045$ (95%CI -0.042; -0.028)] the most strong association with the FI, followed by the chair stand [$\beta = -0.040$ (95%CI -0.054; -0.027)] and gait speed [$\beta = -0.015$ (95%CI -0.021; -0.008)]. **Conclusion:** Physical function, particularly static balance, is a relevant indicator of frailty among very old and complex elders living in nursing homes.

P48- GREATER GRIP STRENGTH CORRELATES WITH LOWER RISK OF NONALCOHOLIC FATTY LIVER DISEASE.

G. Guaraldi¹, A. Malagoli¹, F. Nascimbene², A. Lonardo³, S. Sartini⁴, M. Mancini¹, G. Besutti², G. Ligabue², M. Menozzi¹, A.R. Silva⁶, C. Mussini¹, F. Palella³ (*1. Infectious Disease Clinic, University of Modena and Reggio Emilia, Italy; 2. Geriatrics Division, University of Modena and Reggio Emilia, Italy; 3. Metabolic Medicine Clinic, University of Modena and Reggio Emilia, Italy; 4. Physiatics Division, University of Modena and Reggio Emilia, Italy; 5. Radiology, University of Modena and Reggio Emilia, Italy; 6. Infectious Disease Department, Hospital Beatriz Ângelo, Loures, Portugal; 7. Department of Medicine, Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA*)

Background: Enhanced muscle strength improves insulin sensitivity and production, lipid metabolism, and secretion of myokines; these are important mechanisms in the development and progression of non-alcoholic fatty liver disease (NAFLD), implying that muscle strength may predict NAFLD. We assessed the relationship between grip strength (GS) and NAFLD in HIV-infected persons receiving ART. **Methods:** GS was assessed using a hand-grip dynamometer, and NAFLD was diagnosed by liver-spleen attenuation values of <1.1 on CT scans among persons without chronic viral hepatitis nor high amounts of alcohol consumption. Sarcopenia was defined using Baumgartner's criteria using DEXA derived appendicular skeletal muscle index < 7.26 kg/m² for males. **Results:** We enrolled 161 male patients. Mean (SD) age was 56.65 (5.84), BMI was 24.55 (2.95). Mean HIV infection duration was 227.07 (78.09) months, HIV RNA level was <40 copies in 143 (95.33%) of participants, median current CD4=630 (489-790.5) cells/ μ L NAFLD was diagnosed in 53 (32.9%) pts. Sarcopenia was present in 40 (27.9%) pts. Mean hand grip measurement in the dominant hand was 37.53 (± 7.61) Kg. The following comorbidities were present at evaluation: type 2 diabetes ($n=29$, 18.01%), cardiovascular disease (17, 10.56%), osteopenia/osteoporosis (45, 27.95%), chronic obstructive pulmonary disease (7, 4.35%), chronic kidney disease 27 (16.77%), hypertension 115 (71.49%), metabolic syndrome (82, 50.9%). Greater HG predicted lesser risk of NAFLD in analytic models adjusted for age, height, smoking status, metabolic syndromes, CD4 nadir and cumulative exposure to ART (in months), including specific ART drug classes, $p=0.04$ for trend (table). **Conclusion:** In adjusted models, greater GS was independently associated with lesser risk of NAFLD among HIV infected adults with a high prevalence of metabolic disease. Specific pathophysiologic mechanisms through which muscle weakness and NAFLD are related require further exploration, but are not accounted for merely by the burden of comorbid illness, HIV disease stage, or ART exposure.

Table
Risk of NAFLD by tertile of grip strength

Tertiles of grip strength per body weight (range, kg/kg)	Level 1(0.17,0.44) Low GS	Level 2 (0.45,0.56) Intermediate GS	Level 3 (0.57,0.85) High GS	p for trend
No. of subjects	50	50	61	0.47
Number (%) with NAFLD	19 (38%)	21 (42%)	13 (21%)	0.04
Odds Ratio (OR) for NAFLD	2.46 (1.01- 6.18) p value 0.05	3.04 (1.27- 7.54) p value 0.01	Reference value	

Analytic model adjusted for age, height, smoking status, metabolic syndrome, CD4 nadir and cumulative exposure to ARV (including specific ART drug classes).

P49- EFFECTS OF A CHRONIC STRETCHING PROTOCOL IN THE SOLEUS MUSCLE HISTOMORPHOMETRY OF AGED FEMALE RATS. K.J. Veiga Massenz¹, A.F. Schewtschik¹, H.R. Fiuza Martins², A.R. Silveira Gomes³, A.P. Cunha Loureiro⁴, D. Moro Santana⁵, T. Gianello Gnoato Zotz³ (1. Academic, Pontifical Catholic University of the State of Paraná (PUCPR) – Physiotherapy Department; 2. Master, State University of the Central West (UNICENTRO) – Physiotherapy Department; 3. Federal University of the State of Paraná (UFPR) – Prevention and Rehabilitation Physiotherapy Department; 4. Master, Pontifical Catholic University of the State of Paraná (PUCPR) - Physiotherapy Department; 5. Academic, Pontifical Catholic University of the State of Paraná (PUCPR) - Veterinary Medicine Department)

Introduction: sarcopenia is an age-dependent syndrome characterized by a reduction in muscle mass and strength. In older people sarcopenia may be accompanied by a decrease in range of motion (ROM). Thus, in order to minimize the ROM decline, stretching exercises are strongly recommended. However, the adaptations of skeletal muscle tissue in response to a chronic stretching protocol, i.e., performed for weeks, are still unclear. **Objective:** to evaluate the effects of static passive mechanical stretching on histomorphometry of soleus muscle of elderly female rats. **Method:** A sample of 20 female *Rattus norvegicus*, Wistar albino, (26 months) were divided into two groups: control group (CG= 10, 335 ± 39g) and stretching group (SG = 10, 321 ± 32g). SG was anesthetized and submitted to the static passive mechanical stretching protocol of the left soleus muscle, by means of an stretching apparatus, composed by a load cell to detect the force applied during the stretching. The stretching protocol consisted of 1 set of 4 repetitions of 60 seconds with 30 seconds interval between each repetition, three times a week, for three weeks. After nine sessions, the left soleus muscle was removed, and the following analyzes were performed: the muscle length was measured with a caliper, body and muscle were weighed by a precision scale, and the muscle was subsequently submitted to histomorphometric procedures, to count the serial sarcomere number and to measure the muscle fiber cross-sectional area (MFCSA). Statistical analyses were carried out to verify the normality and homogeneity of the data, Shapiro-wilk and Levene tests, respectively were used. For comparisons between SG and CG, the oneway ANOVA test was used for parametric data and Kruskal Wallis for non-parametric data. **Results:** There was no significant difference in body weight between groups (335 ± 39g vs 321 ± 32g, $p \geq 0.05$, ANOVA). The SG showed greater muscle mass (0.26 ± 0.3g vs 0.14 ± 0.03g, $p = 0.003$, ANOVA one way) but lower MFCSA when compared to the CG (3.919 ± 1.694 μm^2 vs 4.172 ± 1.446 μm^2 , $p = 0.002$, Kruskal Wallis). There was no significant difference in serial sarcomere number comparing SG with CG (11.475 ± 2048 vs 10.956.42 ± 1.150, $p = 0.57$, ANOVA one way). **Conclusion:** Chronic stretching protocol in female aged rats reduced 5% MFCSA suggesting atrophy and it was not enough to promote sarcomerogenesis. Studies to investigate mechanisms involved in the regulation of radial and longitudinal muscle mass of female aged rats are recommended, since in humans, stretching exercises have demonstrated an improvement in range of motion and physical performance.

P50- IDENTIFICATION OF MOUSE MODELS TO STUDY FRAILITY. A. Matheu¹, E. Carrasco-Garcia¹, L. Moreno-Cugnon¹, M. Moreno¹, A. Izeta² (1. Cellular oncology group, Biodonostia Institute, Paseo Dr. Beguiristain s/n, San Sebastian, Spain; 2. Tissue Engineering Laboratory, Biodonostia Institute, Paseo Dr. Beguiristain s/n, San Sebastian, Spain)

People in nearly every part of the advanced countries (and world) are living longer, but in most of the cases are accompanied by severe comorbidities, disabilities and dependency. It is clear that disabilities and dependency worsen the quality of life, increases the risk of hospitalisation and death and increases healthcare spending. Disability is usually preceded by frailty, a clinically recognisable state characterised by a reduced functional reserve and impaired adaptive capacity across multiple physiologic systems that can precede by several years the development of disability and other clinical outcomes like falls, fractures, functional impairment, disability, institutionalisation and death. There are not many preclinical models to study frailty and this is a major challenge in order to deeply characterize this syndrome. Frailty and aging have been associated to an impaired functional reserve. Since regenerative capacity of tissues resides in stem cells, mouse models with gain and loss of function of stem cell regulators might be tools to study frailty. We are actively working in this idea in our laboratory. Thus, we generated different mouse models identifying the benefits of increased gene dosage of *Ink4a/Arf* and *p53* in cancer and, surprisingly, aging (Matheu et al., 2009; Matheu et al., 2007; Tomas-Loba et al., 2008). Recently, we demonstrated that aged mice carrying an extra copy of combined *Ink4a/Arf* and *p53* displays ameliorated neural stem cell activity, delayed cognitive degeneration and increased neuro-muscular coordination (Carrasco-Garcia et al., 2015). These events are characteristic of frail individuals and therefore this mouse strain can be considered a model for frailty resistance. Moreover, we are characterizing whether the decreased function of stem cells affects frailty and aging. To study this idea, we took advantage of a mouse model where a construct containing EGFP allele has been integrated under the control of endogenous *Sox2* regulatory elements. Consequently, this knock-in allele faithfully reports *Sox2* expression in documented *Sox2* cell types becoming haploinsufficient for *Sox2* i.e. existence of a single functional copy of it. Noteworthy, the transcription factor *Sox2* maintains the pluripotency of early embryonic cells and regulates the formation of several epithelia during fetal development and adult tissues. We have characterized this mouse model finding that *Sox2* haploinsufficiency (i) decreases both lifespan and different aging biomarkers (ii) reduces neuro-muscular coordination and weight in aged mice (v) promotes premature stem cell exhaustion and cognitive decline when compared to control littermates. These events are characteristic of frail individuals and therefore this mouse strain can be considered a model for frailty. We are further studying these mouse models and these and additional results will be presented in the meeting. References: Matheu A et al., Nature, 2007, Jul 19;448(7151):375-9. Tomas Loba A et al., Cell, 2008, Nov;135(4):609-22. Matheu A et al., Aging Cell, 2009, Apr;8(2):152-61. Carrasco-Garcia et al., Aging Cell, 2009, Aug;14(4):710-14

P51- THE USEFULNESS OF LOWER LEG MUSCLE ULTRASONOGRAPHY AS A DIAGNOSTIC METHOD OF SARCOPENIA. K. Sugimoto, M. Isaka, H. Akasaka, T. Fujimoto, K. Tachibana, Y. Takeya, K. Yamamoto, H. Rakugi (*Geriatric Medicine, Osaka University Graduate School of Medicine, Osaka, Japan*)

Background: Sarcopenia, defined as the aging-related loss of muscle mass and/or strength, has been shown to be a primary factor in the development of frailty, accounting for falls and disabilities. Detecting and improving sarcopenia in older subjects would be very useful to increase their healthy life expectancy. The problem in the diagnosis of sarcopenia is that calculated values of muscle mass are dependent on measuring instruments and enough space and time is needed to measure walking speed accurately, and that standard way of measuring muscle mass cannot detect decline of fast-twitch fibers, which is accentuated in age-related sarcopenia. Thus, the method making it possible to diagnose sarcopenia more accurately and conveniently should be required. Ultrasound imaging for appendicular muscle can be considered as a simple and noninvasive method evaluating muscle quality and quantity. The goal of this study is to examine the usefulness of lower leg muscle ultrasonography in the diagnosis of sarcopenia. **Methods:** The subjects of this study were outpatients or inpatients in our department of Osaka University Hospital who were over 65 years old who were hospitalized in our department and diagnosed as geriatric syndromes or lifestyle diseases, etc. Grip strengths and physical functions including walking speed and balancing ability were measured, and the relationships between these indexes and muscle thickness (MT) or echo intensity (EI) of lower leg muscles (TA; anterior tibialis, GM; gastrocnemius, SOL; soleus) using ultrasonography were examined. **Results:** 97 subjects were recruited in this study and the average of age was 75.7±6.1 years old. There were positive correlations between MTs of TA, and SOL and knee extensor muscle strength, grip strength and walking speed. EIs of TA and GM were negatively correlated with knee extensor muscle strength and grip strength. MT of TA and SOL as an independent factors associated with knee extensor muscle strength, MT of TA as an independent factors associated with grip strength, MTs of GM and SOL as independent factors associated with gait speed and EI of TA as an independent factors associated with grip strength and knee extensor muscle strength were extracted after adjusted for age, sex, body mass index in multiple logistic regression models. Standard error of measurements of TA was smallest compared to that of GA and SOL. **Conclusion:** The measurements of muscle thickness and echo intensity of lower leg muscles using ultrasonography were useful as a convenient diagnostic method of sarcopenia, and TA ultrasonography in particular might be superior in versatility with respect to advantages in measurement.

P52- RISK ASSESSMENT OF FALLS IN THE ELDERLY PATIENTS, TREATED IN THE GERIATRICS DEPARTMENT. J. Knasiene¹, K. Jurgelaitis², G. Legotaite³ (*1. Geriatric Department, Lithuanian University of Health Sciences; 2. Department of Orthopaedics and Traumatology, Lithuanian University of Health Sciences; 3. Department of Internal Medicine, Lithuanian University of Health Sciences*)

Background: The number of elderly people is rapidly increasing in the Lithuanian population. It is forecasted that after 14 years, around one third (28.9 percent) of Lithuanian inhabitants will be composed of people, who are 60 years old and older. Falls are a frequently occurring and a relevant problem for the elderly people. From 30 to 60% of elderly people falling at least once a year. For as much as up

to 60% of people, the results of such falls are unfortunate and have serious consequences: fractures in femoral neck and upper limbs, brain injuries or even death. These consequences may harm their health, worsens the quality of life, independence and mobility. It is important to assess the risk of falls in elderly people, in order to avoid the potential falls in the future. Ours aim was to assess the risk of falls in the patients, treated in the Geriatrics Department. Objectives: to evaluate risk of falls by using different tests of gait and balance assessment, to establish factors, related with a great risk of falls, by analysing data from physical, laboratory, anamnesis and mental assessment. **Methods:** The study population consists of 68 patients, hospitalised in the Geriatrics Department of Kaunas Clinical Hospital. Four tests were performed: “Romberg test” (test No. I), “Stand up and go” (test No. II), “Speed test of normal gate” (test No. III) and “Standing up from the chair test” (test No. IV). A great risk of falls was established in the following cases: test No. I – if a person stands in Romberg position <10 sec., in test No. II – if it takes >20 sec., test No. III – if a person walks <1 m in 1 sec., and in test No. IV – if a person cannot stand up and sit down for 5 times or takes up >10 sec. Three functional and psycho-emotional condition tests were performed: Mini-mental State Examination (MMSE), Barthel Index and Geriatric Depression Scale (GDS). Certain factors were established, which are related with a great risk of falls in elderly people. Statistical analysis was performed, using IBM SPSS Statistics 22 and Microsoft Excel 2016 software. Moreover, descriptive statistics was calculated. Chi-square χ^2 criteria was used to assess qualitative features. The results are statistically significant, when $p < 0.05$. **Results:** In the group of the observed persons, there were 67.65% (n=46) of women and 32.35% (n=22) of men. Average patient’s age – 79.32±8.65 years. 64.71% (n=44) of patients experienced at least one fall in anamnesis, 35.29% (n=24) – live alone and 25% (n=17) – use walking aids. Results of the performed balance and falls risk tests: test No. I – average 7.24±3.08 sec. (0-10 sec.), high risk of falls for 45.59% (n=31) of patients; test No. II – average 18.25±8.4 sec. (5-54.74 sec.), average risk of falls for 41.18% (n=28) of patients, while high risk for 35.29% (n=24); test No. III – average 8.72±4.81 sec. (1.48-34.17 sec.), high risk of falls for 86.76% (n=59) of patients; tests No. IV - average 16.5±5.09 sec. (7.4-28 sec.) and high risk of falls - 88.23% (n=60) of patients. Results of the performed functional and psycho-emotional condition tests: MMSE – average 22.88±4.26 points (9-30 points), disorders of cognitive functions were established for 60.29% (n=41) of patients, of whom 70.73% had mild cognitive impairment (n=29); Barthel Index – average 80.15±15.4 points (15-100 points), independent patients (100 points) constituted 17.65% (n=12), remaining ones – on average (72.06%), almost fully (8.82%) or fully (1.47%) dependent; GDS – average 5.35±3.39 points (0-14 points), while depression (>10 points) diagnosed to 17.71% (n=10) of patients. Following the results of every balance and falls risk tests, certain factors were established, which are related with a higher risk of falls at an older age. By using the results of test No. I, we have established that older persons ($p=0.018$) and lower Barthel Index ($p=0.002$) are statistically significantly related to a high risk of falls; by using the results of test No. II - lower Barthel Index ($p=0.001$), female gender ($p=0.012$), the necessity to use additional walking aids ($p=0.001$), osteoarthritis ($p=0.029$); by using the results of test No. III – falls, experienced in anamnesis ($p=0.034$), visual impairments ($p=0.009$); by using the results of test No. IV - lower Barthel Index ($p=0.03$) and falls, experienced in anamnesis ($p=0.012$). **Conclusions:** A high risk of falls was established for the following: test No. I – 45.59%; test No. II – 35.29%; test No. III – 86.76% and test No. IV – 88.23% of patients. Disorders of cognitive functions were diagnosed for 60.29% of patients; depression – 17.71%; reduced independence or complete dependence – 82.35%. Factors, related with high risk of falls in the elderly persons are older

age, lower Barthel Index, female gender, necessity to use additional walking aids, osteoarthritis, falls, experienced in anamnesis and visual impairments.

P53- CHARACTERIZATION OF MOLECULAR PROFILE OF SARCOPENIA IN OSTEOPOROTIC AND OSTEOARTHRITIC PATIENTS. J. Baldi (*Department of Orthopedics and Traumatology, University of Rome «Tor Vergata» Rome, Italy*)

Background: Sarcopenia has emerged as an important risk factor for osteoporosis. Indeed, it might decrease bone strength by reducing mechanical loading to the skeleton. Reduction of mechanical stimulation could result from decreased maximal force that weaker muscles produce and/or less time that the skeleton is loaded due to relative immobility, and thus bone formation is reduced. Aim of this study is to identify the possible molecular pathways involved in physio-pathogenesis of sarcopenia. In particular, we performed morphological and immunohistochemical studies to investigate the expression of BMP2, BMP4, BMP7, Myostatin and vitamin D receptor (VDR) and their relationship with the activity of muscle CD44 + stem cells. **Methods:** We obtained muscle biopsies from 30 female patients underwent total hip arthroplasty for osteoarthritis (OA) (mean age 71.6 ± 10.3) and 30 age matched female patients with osteoporotic fragility fracture of the femoral neck (OP). Thanks to immunohistochemistry, transmission electron microscopy and immuno-gold labeling we investigated the role of BMP-2/4/7, VDR, myostatin and CD44+ satellite muscle cells. **Results:** Morphometric investigations allowed us to demonstrate the delay in the onset of Sarcopenia in OA patients. As concern immunohistochemistry, we found that BMPs and nuclear VDR were more expressed in OA patients than OP ones. In OA patients muscle loss rate was replaced by adipose tissue (18.32%), in OP muscle atrophic fibers were substituted by adipose (8.27%) and connective tissue (6.68%). The morphometric analysis in OA patients showed 38.00% of atrophic fibers (17.90% typeI and 20.10% typeII). In OP group, we observed more than 50.00% of atrophic fibers with prevalence of typeII fibers (21.10% typeI and 39.20% typeII). Moreover we found that OA muscle biopsies there were a significantly higher number of BMP-2-positive fibers (62.79 ± 6.205) as compared with muscle of OP patients (13.92 ± 3.343). Finally results showed a significantly different rate of CD44+ cells in OA as compared with OP. Noteworthy, our data showed an age dependent decrease of nuclear expression of VDR in OP patients but not in OA. As concern myostatin, we note a strongly association between their expression and degenerative phenomena observed in biopsies of OP patients. **Conclusion:** The identification of the molecular profile of sarcopenia can provide the rationale for new therapies. In particular, our data allowed us to propose the use of human recombinant BMPs, VIT. D3 supplementation and the anti-myostatin molecules as drugs capable to prevent or treat sarcopenia of OP patients.

P54- THE EXPRESSION AND RELATIONSHIPS BETWEEN PHYSICAL AND COGNITIVE CAPACITIES INFLUENCING THE FALLS RISK OF ELDERLY PERSONS. J. Knasiene¹, V. Piscalkiene², E. Lapinskas², L. Rutkauskienė², I. Knyviene² (*1. Geriatric Department, Lithuanian University of Health Sciences; 2. Kauno kolegija, University of Applied Sciences*)

Background: Ageing of society is common problem in humanity's all over the world and is deeply connected with an often physical and emotional discomfort of foreseen that in the beginning of 2030, 28.9 % of Lithuania's inhabitants will be elderly people (60 years old and above) and the situation in the European Union will be similar – 30.4 % of people will be older than 60. People living in the European Union do not live a physically active life (Special Eurobarometer,

Sport and Physical activity, 2014). The high level of physical activity ascertains healthy ageing, helps to avoid the risk of falling, prevents from all kinds of physical damages, better psychological state and cognitive characteristics, and helps to avoid diseases such as overweight, etc. The aim of the research: to assess interface of physical abilities and physical activity in older age. **Methods:** Analysis of the scientific literature, hand grip strength measurement, tests (dynamic balance assessment by "Timed up and go" test, static balance assessment by the modified "Romberg" test and the assessment tool "Sigma Balance PAD", anthropometric measurements (body height and weight, BMI, thickness of calves and upper arms), oral interviews, statistical data analysis using SPSS 17 (descriptive statistics, T test, Anova test, correlation analysis). **Results:** The study involved 65 people whose average age was 74.3 years. Minimum age - 60 years, maximum - 86 years. The subjects were divided according to age groups: 60-74 years (41.3%) and 75 years or more (58.7%) persons. The results of the Romberg test tended to worsen in the face of the complexity of the task requirements. The subjects succeeded to better perform the Romberg test with their eyes open than closed. The task «The timed up and go» test took the average time - 15.9 sec. The assessment of cognitive functions using Mini Mental State Examination (MMSE) showed that more than 2/3 of the elderly and old persons had normal cognitive functions, and the rest had smaller or larger problems regarding these functions. In assessing the strength with a standard hand dynamometer it was found that the right and left-hand averaged 24 kg. The left upper arm thickness is 31.9 cm, the right 32.5 cm. The left calf thickness - 38.3 cm, the right - 38.2 cm. The static balance was measured using "Sigma Balance Pad". However, this device did not evaluate the balance of all test persons but only of those who on their own managed to stand on an unstable platform. The length of the visual field was 12.6 cm, and the size of the visual area was 0.46 cm². The average, and in some cases, a strong statistical deviation between the right and left hand grip strength, was measured on the dynamometer, and static and dynamic balance, calf thickness, and even cognitive functions were evaluated by MMSE. Evaluating the statistical balance, relevant differences appeared which show that the length of the visual field at the time of measuring is connected with the size of the visual area (strong correlation). Also, the visual length is statistically significantly associated with the subjects' calf thickness (weak statistical relationship). It was found that individuals who currently live a physically active life have better dynamic balance indicators and better mental capacities (status?). Individuals with signs of malnutrition whose body mass index (BMI) is lower than the norm show weaker MMSE results. These conclusions are statistically significant ($p \leq 0.05$). The persons who participated in the study and who over the past six months have not experienced any falls, had a stronger left and right grip strength ($p \leq 0.05$). The task «The timed up and go» test was more quickly performed by the group of inexperienced persons ($p \leq 0.05$). The group of individuals who did not experience fallings had improved static balance indicators ($p \leq 0.05$). Individuals who are physically more active (they practice walking, working in the garden, and so on) are less likely to experience fallings ($p \leq 0.05$). **Conclusions:** After summarizing the data of the research, we can claim that the physical activity of older people is insufficient. Participants who currently have higher level of physical activity have higher results of testing physical abilities – both hands grip strength, static and dynamic balance. Thickness of upper arms and calves, BMI are not depending of physical activity.

P55- EXERCISE-BASED INTERVENTIONS TO LIMIT FUNCTIONAL LOSSES IN PRE-FRAIL SENIORS WITH MINOR INJURIES. M.-J. Sirois¹, D. Martel², L. Fruteau de Laclous¹, M. Aubertin-Leheudre², M. Émond¹, R. Daoust³ (1. Centre d'excellence sur le Vieillissement de Québec, Université Laval; 2. Université du Québec à Montréal, 3. Hôpital du Sacré-Cœur de Montréal)

Background: Each year in Canada, more than 400,000 community-dwelling seniors (people age 65 and over) sustain injuries that are not fatal but limit their mobility and activities of daily living (ADL). Up to 65 % of these seniors seek medical care in Emergency Departments (EDs) and two thirds are discharged back home with various minor injuries. In its prospective cohorts of independent seniors with minor injuries, the CETI team (Canadian Emergency Team Initiative) has shown that minor injuries do trigger a downward spiral of functional decline (FD) in 18% of those seniors up to 6 months post-injury, and that pre-frail or frail individuals are 10 times more at risk than robust ones. Frailty is a syndrome resulting in decreased capacities affecting multiple physiological systems that translates into loss of reserve (energy, physical ability, cognition, emotion, health) causing increased vulnerability to even minor stressors such as minor injuries. Some of the consequences of frailty include decline in physical and social functioning, fear of falling, falls, etc. Because of their effects on multiple physiological systems, multicomponent mobility interventions with physical exercises have been shown as among the best methods to limit frailty and improve mobility & function in community-living seniors. In this study, exercise-based interventions were prescribed to seniors at the time of an ED consultation for minor injuries. **Objectives:** To measure the effects of multicomponent exercise-based interventions on functional, & mobility status as well as on frailty markers of at risk seniors after a minor injury. **Method:** Pilot clinical trial conducted in two Canadian EDs including four groups: one home-based exercises with a telerehab platform (JIN), two groups with community-based exercise programs (YWCA & PIED), one control (CONTR). Population: pre-frail seniors ($\geq 65y/o$), discharged home after an ED consultation for minor injuries. Interventions: JIN, YWCA & PIED: 2x 1hour sessions/week/12 weeks with muscle strengthening, functional and balance exercises under kinesiology supervision. CONTR: discharge as usual. Pre-post measures: the following self-reported measures were performed at the initial ED visit and at the 3-month follow-ups. Measures: Functional Status in Activities of Daily Living (Older American Resources Scale); Global physical & social functioning and global health (12-Item Short-Form Health Survey questionnaire [SF-12]), physical activity level (RAPA questionnaire) and fear of falling (Short Fall Efficacy Scale [MFES-1]). **Results:** A total of 135 injured seniors were recruited (Controls: n=50; PIED: n=28; Jintronix: n= 27; YWCA: n=18). Mean age was 72.6 ± 6.2 years, 45% were prefrail, 86% and 8% consulted the ED for fall or motor vehicle-related injuries that included: fractures (30%), mild traumatic brain injuries (24%), contusions (37%), sprains (20%), lacerations (13%), abrasions (8%). The 3 months follow-up results indicate that home or community-based exercises could start as early as 7 days after the ED visit. At three months post-injury, when comparing patients without the intervention, those who enrolled in exercise interventions maintained or improved their functional status (84% vs 60%, $p \leq 0.05$), their global physical functioning (73% vs 59%, $p < 0.05$) and their global social functioning (45% vs 23%, $p \leq 0.05$). No significant differences were reported between groups on their self-perceived global health. While 21% of seniors in the control group improved its physical activity level at three months post-injury, 46% of seniors in intervention did ($p \leq 0.05$). Finally, fear of falling in daily life decreased in patients in

the intervention groups as compared with controls as reflected by the increased in MFES-1 scores in 25% in intervention vs 13% in CONTR ($p \leq 0.05$). **Conclusion:** Both home-rehab technology and conventional community-based mobility interventions are feasible in pre-frail seniors after a minor injury. Moreover, exercises-based interventions can help improve seniors' overall daily living functional capacities, physical and social functioning as well as contribute to decrease their fear of falling and increase their level of physical activity which are keys to maintain their health and quality of life.

P56- FRAILTY ASSESSMENT TO HELP PREDICT PATIENTS AT RISK OF ED-INDUCED DELIRIUM. M. Giroux^{1,2}, M.-J. Sirois^{1,2}, V. Boucher^{1,2}, M. Émond^{1,2} (1. Centre d'excellence sur le Vieillissement du Québec 2. CHU de Québec)

Background: Delirium is a frequent complication among seniors in the emergency department (ED). This condition is often underdiagnosed by ED professionals even though it is associated with functional & cognitive decline, longer hospital length of stay, institutionalization and death. Frailty is increasingly recognized as an independent predictor of adverse events in seniors and screening for frailty in EDs is now recommended. **Objectives:** The aim of this study was to assess if screening seniors for frailty in EDs could help identify those at risk of ED-induced delirium. **Methodology:** This study is part of an ongoing Canadian multicenter prospective cohort, the MIDI-INDEED study. Patients were recruited after 8 hours of ED exposure & followed up to 24h after ward admission. Frailty was assessed at ED admission using the Canadian Study of Health and Aging Clinical Frailty Scale (CSHA-CFS), which classifies seniors from robust (1/7) to severely frail (7/7). Seniors with CSHA-CFS $\geq 5/7$ were considered frail. Delirium was assessed using the Confusion Assessment Method (CAM). **Results:** 335 patients were recruited. Preliminary data show an incidence of ED-induced delirium of 10%. Average frailty score at baseline was 3.5/7, 70 patients were considered frail, while 265 were considered robust. Among the frail seniors, there were 17 (25.7%) patients with ED-induced delirium, while there were 18 (6.8%) in the non-frail group. Risk of incident delirium during ED stay was 3.2 times higher in frail patients than in robust ones, after adjusting for age ($p < 0.01$). **Conclusion:** Increased frailty appears to be associated with increased ED-induced delirium. Screening for frailty at emergency triage could help ED professionals identify seniors at higher risk of ED-induced delirium.

P57- IMPACT OF MUSCLE FUNCTION IN THE LENGTH OF STAY IN INTENSIVE CARE UNIT AND IN THE LENGTH OF HOSPITALIZATION – AVANTCCA PRELIMINARY DATA. P. Amante de Oliveira, I. Cardoso Pimentel, C. Kovacs, A. Guerra de Moraes Rego Sousa, D. Magnoni (Nutrition Department, Instituto Dante Pazzanese de Cardiologia, São Paulo, Brazil)

Background: Sarcopenia is a multifactorial syndrome with loss of muscle mass and function and is promoted by different conditions that may play synergistically in determining the detrimental effects: nutritional status alterations, pharmacological side effects, neuropathic changes, physical inactivity and prolonged bed rest, alone or in combination. Frail and malnourished patients are hospitalized twice as often as well-nourished equivalents and stay three days longer or more. In hospitalized patients, sarcopenia has been shown to raise the risk of complications such as infections, pressure ulcers, loss of autonomy, institutionalization and poor quality of life, as well as to increase mortality. How to prevent early these complications? To answer this question, we used some preliminary data from AVANTCCA, a prospective, observational study with patients

who will undergo a cardiac surgery and had their nutrition state observed pre and post-surgery as well as the outcome. **Method:** We conducted a prospective study with patients undergoing cardiac surgery who underwent laboratory tests, bioimpedance and hand grip strength test pre and post-surgery and compared these results with clinical outcomes. **Results:** We evaluated 9 patients (5 men and 4 women) of which 7 underwent valve surgery and 2 underwent myocardial revascularization with mean age 59.2 years. We did not find correlation with biochemical parameters like pre-albumin ($p < 0.797$). The anthropometric measure such as bioimpedance results showed a tendency of relation between the reactance and the length of total hospitalization ($p < 0.088$) but not with the muscle mass ($p < 0.966$). The hand grip strength at the beginning of the hospitalization was inversely related with the length of stay in intensive care unit in the nondominant hand ($p < 0.001$) and in the dominant hand ($p < 0.002$), as well as the total length of hospitalization that showed the same inverse relationship with the nondominant hand ($p < 0.026$) and a tendency of relation with the dominant hand ($p < 0.086$). The higher the hand grip strength, the lower the total time hospitalization and the nondominant hand is more sensitive to changes than the dominant hand, what makes our results more meaningful. **Conclusion:** We concluded that the muscle function can be a risk factor predictor of patient outcome with regard to the hospitalization time and its complications, being an important marker to preventive measures in the elective pre-surgery period such as assessing their nutritional state and offering adequate protein requirements, as the early physical therapy implementation. These are the first results and in the future, the bigger number of patients can be determinant of other results and can provide more information regarding the relationship between nutritional state, muscle mass and function and surgery outcomes.

P58- PROSPECTIVE ASSOCIATIONS OF LOW MUSCLE MASS AND STRENGTH WITH 10-YEAR HEALTH-RELATED QUALITY OF LIFE IN COMMUNITY-DWELLING OLDER ADULTS. S. Balogun¹, T. Winzenberg¹, K. Wills¹, D. Scott^{2,3}, M. Callisaya^{1,2}, G. Jones¹, D. Aitken¹ (1. Menzies Institute for Medical Research, University of Tasmania, Australia; 2. Department of Medicine, School of Clinical Sciences at Monash Health, Faculty of Medicine, Nursing and Health Sciences, Monash University, Clayton, Victoria, Australia; 3. Melbourne Medical School (Western Campus) and Australian Institute for Musculoskeletal Science, The University of Melbourne and Western Health, St Albans, Victoria, Australia)

Little is known about the extent to which low muscle mass and strength independently contribute to health-related quality of life (HRQoL). Furthermore, it is unclear whether upper-limb and lower-limb muscle strength have a different impact on HRQoL. This prospective study aims to describe the association of low muscle mass, handgrip (HGS) and lower-limb muscle strength (LMS) with health-related quality of life (HRQoL) over 10 years in community-dwelling older adults. **Methods:** 817 participants (50% women; mean age 63 ± 7.3 years) were prospectively followed for 10 years. HRQoL was measured using assessment of quality of life (AQoL) instrument. Appendicular lean mass (ALM) was assessed using dual energy X-ray absorptiometry. HGS and LMS were assessed using dynamometer. Low muscle mass and strength was defined as the lowest sex-specific 20% distribution for ALM, LLS, and HGS. Linear mixed effect regression models, with adjustment for confounders, were used to estimate the association between low muscle mass and strength at baseline and 10-year HRQoL. **Results:** Median AQoL utility score at 10 years was 0.76 (range $-0.03, 1.00$), and 49% of the participants obtained scores indicating a high HRQoL (>0.90). Low HGS ($\beta = -0.045$, 95% CI: $-0.072, -0.017$), LMS ($\beta = -0.058$,

95% CI: $-0.085, -0.032$) but not ALM ($\beta = -0.027$, 95% CI: $-0.056, 0.001$) was significantly associated with lower HRQoL over 10 years. **Conclusions:** Muscle strength which is closely related to physical performance is more important than muscle quantity in estimating long-term quality of life in community-dwelling older adults. LMS was slightly superior to HGS in estimating HRQoL, as the minimal clinically important difference in the HRQoL score is 0.06 for the Australian population. This could be due to the relationship between lower-limb muscle strength with mobility.

P59- LONGITUDINAL ASSOCIATIONS BETWEEN SERUM 25-HYDROXYVITAMIN-D PHYSICAL ACTIVITY AND KNEE PAIN AND DYSFUNCTION WITH MUSCLE MASS, STRENGTH AND QUALITY IN COMMUNITY-DWELLING OLDER ADULTS. S. Balogun¹, T. Winzenberg¹, K. Wills¹, D. Scott^{2,3}, M. Callisaya^{1,2}, D. Aitken¹, G. Jones¹ (1. Menzies Institute for Medical Research, University of Tasmania, Australia; 2. Department of Medicine, School of Clinical Sciences at Monash Health, Faculty of Medicine, Nursing and Health Sciences, Monash University, Clayton, Victoria, Australia; 3. Melbourne Medical School (Western Campus) and Australian Institute for Musculoskeletal Science, The University of Melbourne and Western Health, St Albans, Victoria, Australia)

Background: Traditionally, analysis has focused on examining how risk factors for loss of muscle mass and function differ between individuals (between-person comparison). Less well recognized is how variability in PA, 25(OH) D, knee pain and dysfunction over time within the same individual (within-person comparison) is related to muscle changes. This study aim to describe the associations of between-person and within-person variability in serum 25-hydroxyvitamin D (25(OH)D), physical activity (PA) and knee pain and dysfunction with age-related loss of skeletal muscle mass, strength and muscle quality over 10 years in community-dwelling older adults. **Method:** We studied 1033 participants (51% women; mean age 63 ± 7.4 years) at baseline, 2.5, 5, and 10 years. Lower-limb lean mass (LLM) was assessed using DXA, lower-limb muscle strength (LMS) measured using dynamometer, and lower-limb muscle quality (LMQ) calculated as LMS/LLM. Knee pain and dysfunction were assessed using Western Ontario and McMaster Universities Osteoarthritis (WOMAC) index. PA was measured using pedometer. Linear mixed effect regression models, with adjustment for confounders, were used to estimate the association of within-person and between-person variability in PA, 25(OH) D and WOMAC score with muscle mass, strength and muscle quality. **Results:** Between-person effect showed that 10-year average LLM, LMS, and LMQ were higher in participants with a higher average 25(OH) D and PA (all $p < 0.05$). Within-person effects also showed that LLM, LMS, and LMQ were higher at time-points when participants had higher PA levels than their 10-year average PA level (all $p < 0.05$). Within-person increase in 25(OH) D was associated with a higher LMS ($\beta = 0.10$ per nmol/l, 95% CI: 0.03, 0.17) and LMQ ($\beta = 0.01$ per nmol/l, 95% CI: 0.002, 0.01) but not LLM. Within-person and between-person increases in knee pain and dysfunction were associated with lower muscle strength and quality but not LLM. **Conclusions:** Our unique analysis method has allowed differentiation between the within-person and between-person correlates of age-related muscle changes. Older adults with higher levels of PA, 25(OH) D, on average, have a higher muscle mass, strength and muscle quality. Within-person effect suggests that having higher 25(OH) D and lower knee pain and dysfunction compared to an individual's average is associated with greater muscle strength and quality but not muscle mass. In addition, increasing one's own ambulatory PA further reduces loss of muscle mass, strength and muscle quality.

P60- RELATIONSHIP BETWEEN INVOLUNTARY WEIGHT LOSS WITH LOW MUSCLE MASS AND HEALTH-RELATED QUALITY OF LIFE IN KOREAN OLDER ADULTS. M. Kim¹, C. Won Won², J. Kim³ (1. Division of Geriatric Medicine, East-West Medical Research Institute, Kyung Hee University, Seoul, Korea; 2. Department of Family Medicine, College of Medicine, Kyung Hee University, Seoul, Korea; 3. Department of Preventive Medicine, Gachon University College of Medicine, Incheon, Korea)

Background: Health-related quality of life is a more powerful predictor of use of health services and mortality than many objective measures of health. Aging is associated with various changes in body composition, including changes in weight and loss of muscle mass. Monitoring weight in older adults is important as changes in weight may reflect declining health. Aging-related loss of muscle mass and involuntary weight loss are common in older adults and are linked to various health outcomes such as increased risk of morbidity and mortality. These are key components of geriatric syndromes such as sarcopenia and frailty. However, little is known about these associations in the general population. The purpose of this study was to investigate the relationship between involuntary weight loss with low muscle mass and health-related quality of life in older adults. **Method:** This cross-sectional study included a representative sample of 2,349 people aged ≥ 70 years who participated in the Korea National Health and Nutritional Examination Survey (KNHANES) from 2008 to 2011. The participants reported unintentional weight loss of >3 kg in the past year. We used Asian Working Group for Sarcopenia's criteria for diagnosing sarcopenia. We measured appendicular lean mass using dual-energy X-ray absorptiometry and calculated appendicular lean index (appendicular lean mass divided by square of height). The cut-offs for low muscle mass for men and women were ≤ 7.0 kg/m² and ≤ 5.4 kg/m² respectively. Health-related quality of life was measured by the EuroQol-5 dimension (EQ-5D) instrument. To account for the complex survey design of stratified, random, and cluster sampling, we computed 4-year sample weights based on recommended methods from the Korea Centers for Disease Control and Prevention and all data were analyzed using SPSS survey procedures. We performed survey logistic regression analysis to evaluate the relationship between involuntary weight loss, low muscle mass, and health-related quality of life. Univariate and multivariate survey logistic regression models were used to calculate odds ratios (OR) with 95% confidence intervals (95% CI) for the lowest quintile of the EQ-5D index and the five components of the EQ-5D descriptive system (mobility, self-care, usual activity, pain & discomfort, anxiety & depression). Multivariate models included the following variables as potential confounding factors: sex, age, education level, household income, physical activity, muscular training, smoking status, energy intake, alcohol consumption, body mass index, and history of hypertension, diabetes, stroke, renal failure, cardiovascular disease, and cancer. **Results:** Of the total number of participants, 39.1 % were males and 60.9 % were females. Weighted mean age was 75.6 years (95% CI; 75.3-75.9). Five percent of one's body weight mass in Korean older adults was 2.8 kg (3.1 kg for males and 2.7 kg for females). Study participants were divided into five groups: normal (53.8%), low muscle mass (28.2%), involuntary weight loss (10.0%), and involuntary weight loss with low muscle mass (8.0%) groups. Overall, the EQ-5D score was significantly lower in the involuntary weight loss group than low muscle mass group. Scores for individual components of health-related quality of life were higher in the involuntary weight loss than low muscle mass groups. When compared with the normal reference group, after controlling for potential confounders, the OR for the lowest quintile of the EQ-5D index in the low muscle mass group was 1.39 (95% CI, 0.92 to 2.10),

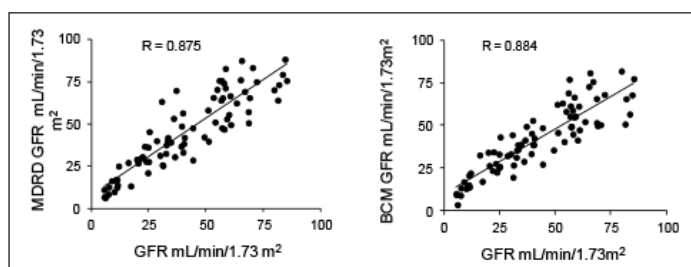
2.56 (95% CI, 1.56 to 4.18) in the involuntary weight loss group, and 3.40 (95% CI, 2.05 to 5.63) in the weight loss with low muscle mass group. Moreover, in the involuntary weight loss with low muscle mass group, the ORs (95% CI) for mobility, self-care, usual activity, pain & discomfort, and anxiety & depression were 1.93 (95%CI, 1.12 to 3.01), 3.13 (95%CI, 1.85 to 5.27), 2.65 (95%CI, 1.64 to 4.27), 2.34 (95%CI, 1.53 to 3.59), and 2.04 (95%CI, 1.26 to 3.31), respectively, after adjusting for potential confounders. **Conclusion:** Our study demonstrated that involuntary weight loss was associated with poor health-related quality of life in Korean older adults. In addition, involuntary weight loss combined with low muscle mass subjects was closely associated with poor quality of life, especially in self-care and usual activities. Attention and evaluation for aging-related sarcopenia are needed in subjects showing involuntary weight loss to prevent and manage poor quality of life. More studies that will specifically focus on weight loss are needed to identify specific body composition characteristics as potential targets for the prevention of poor quality of life in old age.

P61- IMPACT OF FALLS ON FRACTURES AND MORTALITY – AN OPPORTUNITY FOR ENHANCEMENT OF FRACTURE PREDICTION AND INTERVENTION. E. McCloskey^{1,2}, S. Chiu¹, N.C. Harvey³, C. Cooper³, L. Shepstone⁴, H. Johansson², J. Kanis² and the SCOOP Study team (1. MRC Arthritis Research UK Centre for Integrated research in Musculoskeletal Ageing (CIMA), Mellanby Centre for Bone Research, University of Sheffield, Sheffield, United Kingdom; 2. Centre for Metabolic Bone Diseases, University of Sheffield, Sheffield, United Kingdom; 3. MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton, United Kingdom; 4. School of Medicine, University of East Anglia, Norwich, United Kingdom)

Background: FRAX® is a widely used clinical tool for determining an individual's ten year fracture risk using easily obtained clinical variables. Currently, a history of falls is not directly included in the tool. This analysis aimed to determine if a history of falls predicts future outcomes independently of the FRAX® variables using data from the MRC- and Arthritis Research UK-funded SCOOP study, a pragmatic randomized controlled trial of the effectiveness and cost effectiveness of screening for osteoporosis in older women for the prevention of fractures. **Methods:** The SCOOP study is a multi-centre, randomised controlled trial involving 12 483 eligible women aged 70-85 years, identified within primary care, followed over a five year period. The women were evaluated by questionnaire and randomised to a control or screening arm. Data from both control and screening arms combined were analysed by logistic regression using SPSS v.22. **Results:** At baseline, 3444 (27.6%) of the women reported a history of falls in the previous year. Compared to non-fallers, those with a history of falls were older (mean 76.0 vs. 75.4 years, $p<0.001$) and had a higher BMI (mean 27.1 vs. 26.5, $p<0.0001$). Fallers reported a higher prevalence of the following FRAX® risk factors: prior fracture, parental history of hip fracture, alcohol use, glucocorticoid use, rheumatoid arthritis, and secondary osteoporosis. During follow-up, fallers had a higher risk of mortality (OR=1.36, $p=0.000$, 95% CI=1.19-1.60) and osteoporotic fracture (OR=1.32, $p=0.000$, 95% CI=1.18-1.48). This predictive ability persisted following adjustment for all of the variables included in Frax® (i.e. osteoporotic fracture OR=1.29, $p=0.047$, 95% CI=1.00-1.65 and mortality OR=1.51, $p=0.006$, CI=1.12-2.04). **Conclusion:** A history of fall in the previous year predicts osteoporotic fractures and mortality in women 70-85 years of age in the UK, independently of FRAX risk variables. Identifying those at highest risk for falls and fractures may enable targeting of exercise, nutritional and/or pharmacological interventions to reduce the burden of musculoskeletal frailty.

P62- THE ESTIMATION OF GLOMERULAR FILTRATION RATE IN ELDERLY PATIENTS: NEW TOOLS FROM BODY COMPOSITION ANALYSIS. C. Donadio (Division of Nephrology, Department of Clinical and Experimental Medicine, University of Pisa, Pisa, Italy)

Background: The evaluation of renal function is relevant in elderly patients, since the reduction in glomerular filtration rate (GFR), which is frequent even in healthy aged subjects, may affect the renal clearance of drugs. Unfortunately, the direct measurement of GFR is not feasible to clinical practice. Furthermore, in aged patients the necessity of a precise timed collection of urine is the major limitation and source of errors in the measurement of creatinine clearance. Different formulas have been proposed to predict GFR from serum creatinine (SCr), avoiding 24-hour urinary collection. However, their accuracy in aged patients is debated. In fact, the decrease in muscle mass and the increase in extracellular fluids may affect the relationship between serum creatinine and GFR in aged patients. The aim of this study was to evaluate a new method to predict GFR from serum creatinine (Pcr) adjusted to the body composition of patients. **Methods:** The value of body cell mass (BCM), which is the body compartment determined mainly by muscle mass, was obtained, using a single frequency impedance analyzer (STA-BIA, Akern), in 80 renal patients (37 females and 43 males), aged 65-81 years (mean 71.0), with different degrees of renal function (Pcr 0.7-8.8 mg/dL, mean 1.98). In all patients, GFR was measured as the renal clearance of $^{99m}\text{Tc-DTPA}$. A very high correlation was found between GFR and the ratio BCM/SCr. From this relationship we derived a formula to predict GFR from the values of SCr and BCM. $\text{BCMGR}(\text{mL}/\text{min}) = \text{Patient's BCM} \times 2.69 / \text{SCr}$. In the same patients GFR was predicted from Pcr and individual values of BCM (BCM GFR), with the following formula, derived from the relationships found between BCM and Pcr with GFR: $\text{BCMGR}(\text{mL}/\text{min}) = 2.69 \times \text{BCM} / \text{SCr}$. For comparison, in all patients GFR was predicted according to the simplified version (4 variables) of the MDRD study. **Results:** In the wide range of measured GFR (5.5 and 85 mL/min/1.73 m², mean 42.0) the values of GFR obtained from BCM were slightly better correlated with GFR than those obtained with MDRD formula. The mean differences and the ranges of agreement with measured GFR were 0.1 mL/min (20.7/-20.5 mL/min) for BCMGR and -4.4 (18.0/26.8 mL/min) for MDRDGFR. In the mean time, it was possible to evaluate the nutritional status and the balance of fluid compartments. **Conclusions:** In elderly patients GFR can be predicted from body cell mass and serum creatinine. Furthermore, the analysis of body composition allows to evaluate the nutritional status and the equilibrium between body water compartments in aged patients which are frequently malnourished.



P63- IDENTIFYING SENIORS' RISKS OF HEALTH AND SOCIAL FRAILITY: THE FRAILITY OBSERVATORIES, A FRENCH SOCIAL SECURITY ORGANISATIONS INITIATIVE. D. Paccard¹, O. Zmuschi¹, A. Blanckaert², O. Charrier², O. Suzanne³, M. Noguès¹ (1. Retirement and occupational health insurance agency of Languedoc-Roussillon (Carsat LR), Montpellier, France; 2. National pension fund (CNAV), Paris, France; 3. Retirement and occupational health insurance agency of Nord Picardie (Carsat NP), Villeneuve-d'Ascq, France)

Background: French social security organisations identify the risks of frailty as a major element of their action towards the most vulnerable people. The objective is to ease their access to rights and care and prevent autonomy loss. As specified in the French law "adaptation of the society to ageing" (Law n° 2015-1776 from 12/28/2015), social and health inequalities are accelerated by the age factor, leading to an increased risk of autonomy loss. Its prevention requires the identification of risk factors at all stages of the pathway of the elderly, focusing on social and environmental determinants, within a targeted and graduated prevention system. Identifying the risks of frailty of young seniors enables changing the process of dependence which, once installed, is most often irreversible. The challenge is to target early on potentially frail seniors through the Health Insurance and Pension Fund databases which include markers of health and social frailty. This aims at proposing a personalised accompaniment. Each Regional Pension Fund has developed a Regional Frailty Observatory extended to the «Interregime» (agricultural and self-employed specific social insurances), allowing a high level target of populations and territories. **Method:** Regional frailty observatories: - Detect people whose criteria indicate a potential frailty and a risk of disruption (low resources, age, isolation, non-use of care ...). This allows personalised assistance and access to rights facilitation. - Identify the priority territories of intervention in the form of maps, enabling needs analysis, adaptation of procedures and fostering partnerships in response to local problems. A shared statistical definition of social frailty (by all Pension Funds) fosters a homogeneous national policy to identify seniors' frailty: similar methods to detect people and identify priority territories, from one region to another. Observatories rely on «retirement» data (socio-economic frailty) and «health» data (difficulties in accessing rights and care) to target and analyze the risks of economic, social and functional frailty, or related to care pathways. Anonymised territorial data can be consulted through geographic information systems (GIS), at national and local level. These GIS provide these data in "clickable" forms, involving partners in their diagnosis, allowing them to implement ageing risks prevention guidelines defined by the Pension Funds. Moreover, the individual targeting of seniors with health and social frailty cumulative risk factors will be widely refined from 2017. The French law "adaptation of the society to ageing" allows a nominative crossing of Health / Retirement / Family data (of all social security organisations), through the Regional Frailty Observatories. The identification of seniors at risk of frailty will indeed be extended to the Family branch data. It will emerge from the crossing of various frailty factors observed, providing proximity service offers, adapted to people's needs, in order to preserve autonomy. **Results:** At national level, among the 414,133 seniors identified at health and social risk of frailty, 363,245 were invited to participate in a service offer or collective prevention actions adapted to their needs, from whom 48 791 benefited. 2,210 service offers and collective prevention actions have been proposed by the Pension Funds in 2015. They cover 760 cantons among the 1,344 identified at risk of frailty. These actions cover access to rights, behaviors and lifestyles, fighting against isolation, loneliness and precariousness. They consider the

environment of the person, particularly the housing. Territorial data relating to seniors' frailty can be consulted at national and local level on the Internet. **Conclusion:** Various criteria characterize frailty: limitation of functional abilities, vulnerability beyond the state of health according to social, economic and environmental factors. The nominative crossing of data resulting from the Health / Retirement / Family databases will allow refining the nominative identification of people at risk. This will help improving territorial observation and adapting service offerings according to identified needs, in order to prevent autonomy loss. The impact on beneficiaries' frailty level will be evaluated to retain and spread only the service offerings that are promising.

P64- FIRST RESULTS OF THE FRENCH MACVIA FALLS PREVENTION PROGRAMME. H. Blain^{1,2}, P.L. Bernard², M. Noguès^{3,4}, J. Millot-Keurinck^{3,4}, J. Bousquet^{4,5} (1. Department of Geriatrics, Montpellier University hospital, Montpellier, France; 2. EA 2991 Movement To Health, Euromov, Montpellier University, Montpellier, France; 3. Retirement and occupational health insurance agency of Languedoc-Roussillon (Carsat LR), Montpellier, France; 4. Respiratory Diseases Department, University hospital, Montpellier, France; 5. MACVIA France)

Backgrounds: Falls represent a major cause of burden and death in older adults. The MACVIA France (fighting chronic diseases for active and healthy ageing) falls initiative, based on the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA), aims at reducing falls and falls-related injuries in the French Occitanie region. It includes: (i) a regional Balance and Falls Prevention Center (BFPC) set up in 2014 in the Montpellier University hospital for subjects who have fallen or who have been screened by their general practitioner (GP) as having a significant risk of falling (people who complain of fear of falling, balance disorders, dizziness, low muscle strength in the lower limbs, especially), (ii) public meetings organized by the BFPC in link with different municipalities in the region to inform people on measures effective to screen people at risk of fall and to prevent falls. The meetings are followed by a personalized fall risk assessment, organized with specialists in physical activity for older people from the Montpellier Science of Physical Activities and Sports Faculty. People at high risk of fall are orientated towards their GP and, if needed, towards the BFPC. People at intermediate risk of fall are orientated towards tailored MAC-VIA « Posture-Balance-Motivity & Health Education » (PBM-HE) pedagogic physical activity program. Advice for a successful ageing are given to people at low risk of fall. Screening people at moderate and high risk of fall is also performed by (iii) the Ageing Institute (CARSAT-LR), that provides advice and guidance to retired or pre-retired social security contributors. A study has been conducted in a sample of patients visiting the BFPC for a fall in the previous year and in a subgroup of people attending the PBM-HE groups to assess the effect of training on risk factors of fall, falls, and injurious falls. **Methods:** 195 patients visited the BFPC between Sept. 2014 and Sept. 2015, among which 160 have been included (with one fall during the last year) and finally 134 studied for whom all data on medical history and follow-up parameters were available. Patients visiting the BFPC benefited from a 3-hour geriatric multidimensional assessment by a geriatrician, a physiotherapist, an occupational therapist, and a podiatrist. Based on a comprehensive examination, a management plan for falls and fracture prevention was given to the patient and mailed to the referent physician. This plan included tailored physical exercises to improve balance, muscle strength, flexibility, and motor coordination, implemented by physiotherapists or in our PBM-HE program if possible. New falls, new injurious falls, and autonomy was assessed at 1, 3, and 6 months after the

assessment. In subjects enrolled after public meetings in the PBM-HE program, functional parameters associated with the risk of falling were measured at baseline and after a 3-month PBM-HE cycle. **Results:** The mean age of the 134 patients visiting the BFPC was 82, with 69% of women. Falls number between Month 6 after the visit (M+6) vs Month 6 before the visit (M-6) decreased significantly (-5.2 ± 20.6) ($p < 0.0001$), such as number of fallers (95.5 vs 32.5 %) ($p < 0.0001$), number of falls with major injuries [40 (14%) vs 8 (6%)] ($p < 0.0001$), and minor injuries [66 (50%) vs 23 (18%)] ($p < 0.0001$). In patients still falling after the assessment in BFPC, the number of injuries decreased significantly between M-6 vs M+6 ($p < 0.05$). Fear of falling decreased also significantly ($p < 0.0001$). Satisfaction of patients or of caregivers was very high (90%). Recommendations made to patients (physical therapy, chiroprapist, home adaptation, physical activity, medical treatment modifications) were well followed. More than a thousand people have already participated in the PBM-HE program in 5 cities in Languedoc. A study conducted in 200 subjects showed that all fall risk factors decreased significantly between baseline and M+3 [One leg stand (sec)(6.2 ± 7.9 to 7.9 ± 8.7)($p = 0.003$); Tandem position stand (sec)(8.5 ± 2.8 to 9.5 ± 1.7)($p = 0.001$); Timed up and go (sec)(11.5 ± 5.0 to 9.6 ± 4.0) ($p = 0.001$); 5 sit-to-stand (sec)(13.8 ± 4.4 to 11.5 ± 3.5) ($p = 0.001$); 4m-walk (sec)(4.0 ± 1.1 to 3.3 ± 0.9)($p = 0.001$)]. Those PBM-HE activities were very successful, not only to improve functional parameters, but also to break the isolation. While the first sessions were free, seniors offered to pay for future sessions. **Conclusion** The present preliminary results show level of evidence that fall risk reduction, and fall and injurious fall prevention are possible at a regional level in older subjects with different fall risk profiles.

P65- FUNCTIONALITY IN THE ELDERLY ATTENDED THE REFERENCE CENTER: FOLLOW-UP OF A YEAR. L. Paccini Lustosa¹, P. Parreira Batista², P. Sena Pinheiro², I. Gomes Nunes³, R. de Oliveira Torquetti³, L. Souza Máximo Pereira¹ (1. Physiotherapy Department, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil; 2. Doctorate Student of the Programa de Ciências da Reabilitação, UFMG, Belo Horizonte, MG, Brazil; 3. Multiprofessional Residence, Hospital das Clínicas/ UFMG, Belo Horizonte, MG, Brazil)

Background: Multiple comorbidities and functional deficits are frequent in the elderly and represent a challenge for health services because these conditions increase the risk of sarcopenia, frailty, hospitalization, and institutionalization, as well as the mortality. Effective care in this target group, with greater vulnerability to negative health outcomes, can identify the presence of subclinical syndromes, slow down the pathophysiological process or even reverse the clinical and functional status of the elderly. **Objectives:** (1) to compare the functional profile of elderly patients, no baseline and after a year of follow-up, (2) to investigate the association between gait speed, performance and functional capacity, no baseline and after a year of follow-up. **Method:** The initial evaluation were carried out and, after 12 months, the re-evaluation was conducted. Both of them consisted of: socioclinicodemographics information, basic and instrumental activities of daily living (BADL/IADL), hospitalization, use of assistive devices for walking, falls, functional capacity (Short Physical Performance Battery - SPPB) and gait speed (GS). The Wilcoxon test was used to compare the ability and functional performance after one year of follow-up. Furthermore, the Spearman correlation test was applied for associations between GS, performance and functional capacity. The significance level was 5%. **Results:** Initially 170 elderly (75.95 ± 10.12 years old) were evaluated, without distinction of race and/or social class. After one year, 95 elderly of the initial sample were re-evaluated. In the comparison between

baseline and a year of follow-up, there was no statistical difference in functional performance (SPPB, $p=0.01$); BADL, $p=0.01$); IADL, $p=0.01$). At baseline, there was a significant, positive and moderate correlation between GS and BADL ($\rho=0.53$; $p=0.01$), and between GS and IADL ($\rho=0.54$; $p=0.01$). After the follow-up, a strong, positive and significant correlation was noticed between GS and BADL ($\rho=0.93$, $p=0.01$), between GS and IADL ($\rho=0.93$, $p=0.01$), as well as SPPB and GS ($\rho=0.97$; $p=0.01$). **Conclusion:** The results of the present study demonstrated that after one year of follow-up, the elderly were better in terms of functional performance and independence. It is believed that these findings may be justified by the guidelines given in the first evaluation and that the use in clinical practice of guidelines and referrals of old people for specific services has proved to be effective in this sample. In this context, the monitoring and guidelines related to the clinical and functional status, as well as the instructions given to the caregivers, enabled the improvement of health status in these elderly people. Likewise, the strong association between gait speed and functional performance reinforces the literature that points out that this variable should be considered the sixth vital sign in the elderly. Key words: Aged, Healthy of the elderly, Health profile, Activities of daily living.

P66- PHYSICAL-FUNCTIONAL CHARACTERISTICS OF FRAILTY SYNDROME IN BRAZILIANS FEMALE ELDERLY.

L. Paccini Lustosa¹, P. Parreira Batista², P. Sena Pinheiro², C. Venturini², L. Souza Máximo Pereira¹, A. Netto Parentoni³
(1. *Physiotherapy Department, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil*; 2. *Doctorate Student of the Programa de Ciências da Reabilitação, UFMG, Belo Horizonte, MG, Brazil*; 3. *Physiotherapy Department, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina, MG, Brasil*)

Background: Frailty is a geriatric syndrome, complex, multifactorial and comprises physical/functional, psychological and social aspects. It is difficult to diagnose, because it does not present a universal consensus on the operational criteria for identification and because physical, sociodemographic and environmental differences among populations influence the discriminative values for each diagnostic criterion evaluated. In addition, it is known that the presence of frailty increases the risk of adverse health events, including falls, institutionalization, hospitalization and death. **Objective:** (1) to identify the most prevalent criteria in the frailty syndrome in community-based elderly women based on the phenotypic criteria proposed by Fried et al (2) to compare hand grip strength (HGS) and mobility among different categories of frailty. **Method:** Ninety-four community-dwelling women (65 years of age or older) participated, it was excluded: cognitive impairment (MMSE); acute neurological and neuromuscular diseases; labyrinthitis; unbalanced visual impairment; fractures. The frailty syndrome was classified by phenotypic criteria (exhaustion, weight loss, low gait speed, grip strength and caloric expenditure) and mobility was evaluated (Timed up and go - TUG). The categories of frailty syndrome were identified as: frail - FF, pre-frail - PF and non-frail - NF, and the frequencies of positive criteria. The categories of HGS and mobility were compared using ANOVA and Kruskal Wallis ($\alpha=5\%$). **Results:** The mean age was 71.49 (± 5.56) years. The majority were classified as pre-frail (71.3%). The most prevalent criteria were the physical criteria: gait speed (59.1%) and HGS (36.2%). Frail elderly showed a higher mean age (73.07 ± 5.11 years) and lower HGS (16.38 ± 5.8 kg/f). There was a difference between frail and non-frail categories (HGS, $p=0.003$; mobility, $p=0.005$), as well as between frail and pre-frail categories (HGS, $p=0.012$; mobility, $p=0.020$). **Conclusion:** Pre-frail elderly were more prevalent and better identified

by the decrease in HGS and gait speed. Frail elderly differed from the other groups both in the lower HGS and in the lower mobility, indicating worse functional performance, which is in accordance with the literature that indicates that this extract of the elderly are in worse physical and functional conditions. In addition, in this sample, the parameters of muscle strength and functional capacity were the most prevalent, pointing to the need for attention and early screening of the elderly, in relation to these items, since they are able to indicate the presence of the syndrome. **Keywords:** elderly, frailty syndrome, hand grip strength, function.

P67- MARKERS OF OXIDATIVE STRESS ARE INCREASED AND ASSOCIATED WITH CARDIOVASCULAR RISK IN SARCOPENIC OBESITY.

F. Bellanti¹, A.D. Romano¹, A. Lobuglio¹, V. Castriota^{1,2}, G. Guglielmi^{1,2}, A. Greco², G. Vendemiale¹ (1. *Department of Medical and Surgical Sciences, University of Foggia, Italy*; 2. *IRCCS "Casa Sollievo della Sofferenza", San Giovanni Rotondo, Foggia, Italy*)

Background: the age-related changes in body composition include both reduced muscle mass and increased visceral fat. Frequently reported in elderly subjects, sarcopenia is a condition characterized by loss of muscle mass as well as declining strength and physical performance, associated with significant morbidity and mortality. Sarcopenia is frequently combined with an increase in body fat, a condition termed sarcopenic obesity. Sarcopenia and obesity share several pathophysiological mechanisms which may potentiate each other. Moreover, sarcopenia with obesity may synergistically increase their effect on metabolic disorders, cardiovascular disease and mortality. The development of sarcopenic obesity might recognize an intricate interplay of factors including insulin resistance, altered dietary energy, mitochondrial dysfunction and oxidative stress. The present study aims to define whether circulating oxidative stress correlates to sarcopenic obesity in terms of glutathione balance and oxidative protein damage, and whether these biomarkers are associated with cardiovascular disease (CVD) risk in this special sub-population. **Methods:** we enrolled 115 outpatients (51 men, 64 women) aged between 65 and 94 years old. Baseline data were collected on subjects' demographics, co-morbidities and socio-economic factors. Anthropometric and biochemical measurements were performed for all the participants. The whole-body dual-energy X-ray absorptiometry (DXA) scan was used for the measurement of fat-free lean body mass (LBM) and percentage of fat mass. Appendicular skeletal muscle mass (ASM) was calculated as the sum of LBM from both arms and legs. Relative skeletal muscle mass index (RASM) was defined as ASM divided by height (in meter) squared. Sarcopenia was diagnosed in subjects presenting with a RASM < 7.25 kg/m² (men) or < 5.67 kg/m² (women), while obesity was diagnosed in those presenting with % fat > 27 (men) or > 38 (women). Subjects were then classified in non-sarcopenic non-obese (NS-NO), sarcopenic non-obese (S-NO), non-sarcopenic obese (NS-O), and sarcopenic obese (S-O). The CVD risk was estimated by the Framingham score, based on categorical values of age, gender, total and HDL cholesterol, systolic blood pressure, smoking, and diabetes. Blood reduced glutathione (GSH), oxidized glutathione (GSSG), malonaldehyde-(MDA) and 4-hydroxy-2,3-nonenal-(HNE) protein plasma adducts were performed. **Results:** the number of subjects in the 4 different groups was as follows: NS-NO 13 (11.3%), S-NO 24 (20.9%), NS-O 54 (46.9%), and S-O 24 (20.9%). The prevalence of sarcopenic obesity was 9.2% in men and 11.7% in women. The proportion of obese subjects was higher in the sarcopenic rather than the non-sarcopenic group ($\chi^2 = 11.9971$, $p < 0.001$). The Framingham CVD score was higher in the S-O group as compared to both NS-O and S-NO. A significant increase in the blood GSSG/

GSH ratio was observed in S-O with respect to the other groups; this was dependent on a reduced GSH, while no difference was shown in the GSH amount, suggesting an impairment of glutathione synthesis rather than oxidation. Furthermore, both plasma MDA- and HNE-protein adducts were significantly higher in S-O as compared to the other groups. A logistic regression model correlating S-O with redox balance showed a close relationship between glutathione ratio (OR=1.4, 95% CI=1.1-2.3) and plasma HNE-adducts (OR=2.3, 95% CI=1.3-2.7) to sarcopenic obesity. The linear regression analysis showed that the plasma HNE-protein adducts were the primary predictor of both lean mass decrease and fat mass increase; moreover, about 63% of variability in the Framingham CVD score could be predicted by plasma HNE-protein adducts in sarcopenic subjects. **Conclusion:** our findings show an association between oxidative imbalance and sarcopenic obesity. GSSG/GSH ratio and plasma HNE-protein adducts strongly predict the combination between loss of lean mass and gain of fat mass; finally, the latter seems to be also a reliable and easily measurable marker in the context of the determination of CVD risk in sarcopenic patients.

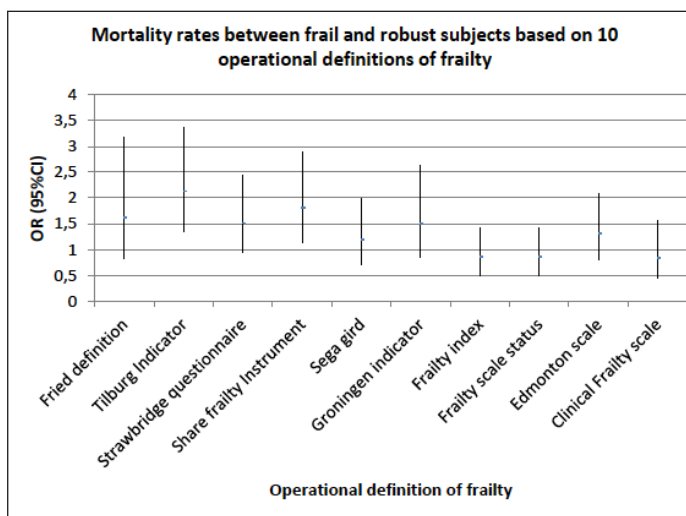
P68- EFFECTS OF A GIANT EXERCISING BOARD GAME INTERVENTION ON AMBULATORY PHYSICAL ACTIVITY AMONG NURSING HOME RESIDENTS: A PRELIMINARY STUDY. A. Mouton¹, N. Gillet¹, F. Mouton¹, O. Bruyère^{1,2}, M. Cloes¹, F. Buckinx² (1. Department of Motricity Sciences, University of Liège, Belgium; 2. Department of Public Health, Epidemiology and Health Economics, University of Liège, Belgium)

Background: The majority of elderly nursing home residents are physically inactive. However, sedentariness is a predictive factor of frailty and its undesirable consequences, such as falls, hospitalizations and death. The promotion of physical activity is an efficient strategy to reduce all causes of mortality and improve the quality of life. Therefore to move beyond the relatively monotonous characteristics of physical activity usually available in nursing homes, making physical activity enjoyable and sociable could encourage residents to participate more actively in activities. The aim of this study was to assess the effects of a giant exercising board game intervention on ambulatory physical activity among nursing home residents. **Methods:** This is a 3-month longitudinal study (one month of intervention and 2 months post-intervention follow-up), performed in 2 similar (i.e. number of beds, geographical location, nursing homes in Liège, Belgium). The first nursing home has been designated as the intervention group while the second one was the control group. Voluntary, mobile, and oriented subjects (MMSE > 18 points), living in the nursing homes enrolled in this study were included. The intervention was carried out using a giant game board measuring 4 meters long by 3 meters wide, composed of 24 cells, divided into 4 components (strength, balance, flexibility, endurance). The intervention was supervised by a specialist in physical activity during one month. In order to progressively lead nursing home residents to an independent participation to the giant exercising board game, the support of the supervisor was decreasing gradually during the one month intervention. Daily ambulatory physical activity (i.e. the number of steps per day) were measured using Actigraph GT3X + (ActiGraph, Pensacola, Florida) for a period of 3 consecutive days at the beginning of the study, after the intervention (1 month) and at the end of the post-intervention follow-up (3 months). **Results:** The intervention and control groups consisted of 10 and 11 subjects, respectively. The mean age was 82.5 (79-89) years in the first group and 89.9 (87-91) years in the second group (p=0.08). The percentage of women in these groups was 60% and 72.7% (p = 0.54). At baseline, the number of steps per day was comparable in the two groups (2920.9 ± 1351.5 vs. 3386.8 ± 730.7,

p = 0.19). At the end of the intervention, the number of steps was increased on average by 79.59 ± 1311.63 in the intervention group whereas it was decreased by -855.48 ± 994.13 in the control group. The difference between the 2 groups was not significant (p=0.24). The same observation was made at the end of the 3-month follow-up period as we observed an average increase of +754.33 ± 1706.83 steps in the intervention group and an average decrease of -38.72 ± 1004.94 in the control group (p = 0.21), compared to the results obtained at the end of the intervention. The increase observed in the intervention group was not significant (p = 0.10). On the other hand, the evolution observed in the control group was significant (p = 0.02). **Conclusions:** The implementation of a physical activity board game in nursing homes does not seem to increase the number of steps per day taken by the residents. However, the subjects benefiting from this intervention seemed to maintain their level of ambulatory physical activity during the period studied whereas the subjects not benefiting from the intervention have decreased their ambulatory physical activity.

P69- INTEREST IN 10 CURRENT DEFINITIONS OF FRAILTY TO PREDICT THE INCIDENCE OF DEATH AMONG ELDERLY NURSING HOME RESIDENTS. F. Buckinx^{1,2}, C. Lenaerts¹, T. Brunois¹, J.Y. Reginster^{1,2}, J. Petermans³, O. Bruyère¹ (1. Department of Public Health, Epidemiology and Health Economics, University of Liège Belgium; 2. Research Unit in Public Health, Epidemiology and Health Economics, University of Liège, Belgium; 3. Department of Geriatrics, CHU of Liège, Belgium)

Background: Although the concept of frailty is well established in the scientific literature, there is currently no consensus on an operational definition of frailty that could be used, particularly in the specific population of nursing home residents. The most appropriate operational definition could be the one that best predicts the occurrence of hard health outcomes, such as death. Therefore, the aim of this study was to evaluate to which extent the various operational definitions of frailty can predict mortality at one year, among nursing home residents. **Methods:** We studied a cohort (the SENIOR cohort: Sample of Elderly Nursing home Individuals: an Observational Research) of 662 subjects, including 484 (72.5%) women, aged 83.2 ± 8.99 years and living in nursing homes. Among this cohort, 584 subjects were monitored during 12 months, for mortality. The 78 subjects lost to follow-up either moved away (20 subjects) or lived in a nursing home which refused to continue the study for an additional year (58 subjects). In order to compare the mortality rate between frail and robust subjects, diagnosed according to 10 different operational definitions, logistic regressions, adjusted for age and gender, was performed. **Results:** Among the 584 subjects included in the analysis, 99 (16.9%) died during the year of follow-up. Only 2 out of the 10 operational definitions studied seemed to predict the one-year mortality, i.e. the Tilburg definition (OR = 2.21, 95%CI: 1.41-3.47) and the «Share Frailty Instrument» (OR = 1.94, 95% CI: 1.21-3.09). For these 2 definitions, the prevalence of frailty at baseline was 45% and 45.1%, respectively. For the other definitions studied (Fried definition, Edmonton Frail Scale, Clinical Frailty Scale, Frail Scale Status, Frailty Index, Groningen Frailty Indicator, Sega Gird, Strawbridge questionnaire) the rate of death was not significantly higher among frail subjects than among robust ones. **Conclusion:** Among the 10 studied definitions of frailty, Tilburg definition and the « Share Frailty Instrument » seem to be the most predictive of the one-year mortality among nursing home residents.



P70- INCIDENCE AND IMPACT MEASUREMENT OF DELIRIUM INDUCED BY ED STAY (INDEED). M. Émond^{1,2,3}, V. Boucher^{1,2,3}, P. Voyer^{1,2,3}, M. Pelletier^{2,4}, É. Gouin⁵, R. Daoust^{6,7}, S. Berthelot^{2,8}, M.-J. Sirois^{1,2,3} (1. *Axe Santé des populations et pratiques optimales en santé, CHU de Québec Hôpital de l'Enfant-Jésus, Québec, Canada*; 2. *Université Laval, Québec, Canada*; 3. *Centre d'excellence sur le vieillissement de Québec, Québec, Canada*; 4. *Centre Intégré de Santé et de Services Sociaux de Lanaudière, Joliette, Canada*; 5. *Centre Hospitalier Régional de Trois-Rivières, Trois-Rivières, Canada*; 6. *Centre de recherche de l'Hôpital du Sacré-Cœur de Montréal, Montréal, Canada*; 7. *Université de Montréal, Montréal, Canada*; 8. *CHUL, CHU de Québec, Québec, Canada*)

Background: Cognitive frailty is a fairly new concept and was recently defined by the IANA/IAGG International Consensus Group as a two-factor problem: 1) Presence of physical frailty and cognitive impairment and 2) Exclusion of concurrent dementia. This definition also includes the concept of reversibility of this cognitive frailty. Delirium is one of those reversible dreadful cognitive issues that can occur in seniors' acute care. Many studies are available on the incidence of this geriatric syndrome; however Emergency Department (ED)-induced delirium is less studied. We aim to evaluate its incidence and impact among admitted seniors with prolonged ED stay (≥ 8 hours). **Method:** This prospective study included patients from 4 Canadian EDs. Inclusion criteria: 1) Patients aged ≥ 65 ; 2) ED stay ≥ 8 hours; 3) admitted to hospital ward; 4) non-delirious upon arrival and after the first 8 hours; 5) Independent/semi-independent. Functional and cognitive status were assessed using validated Older Americans' Resources and Services (OARS) and the Modified Telephone Interview for Cognitive Status (TICS-M) tools at baseline interview. The Confusion Assessment Method (CAM) was used to detect incident delirium. Patients were assessed by a research assistant twice a day up to 24h after ward admission. Univariate and multivariate analyses were conducted to evaluate outcomes. **Results:** 338 patients were included, mean age was 76.8 (± 8.1) and 54.9% were female. The overall incidence of ED-induced delirium was 12.1%. Distribution by the 4 sites was: 8.5%, 20%, 8.3% & 14.5%. Mean ED LOS varied from 30.5 to 60.3 hours and was increased by 7.7 hours for patients who developed an episode of delirium ($p=0.043$). Mean hospital LOS was increased by 4.7 days in the delirious patients compared to non-delirious patient ($p=0.0009$). **Conclusions:** ED-induced delirium was recorded in 12.1% of included seniors after an 8 hour ED stay. An episode of delirium increases hospital LOS by 4.6 days and therefore

could contribute to ED overcrowding.

P71- USING THE BERGMAN-PARIS QUESTION TO SCREEN SENIORS IN THE EMERGENCY DEPARTMENT. A. Laguë^{1,2,3}, P. Voyer^{1,2,3}, V. Boucher^{1,2,3}, M. Pelletier^{2,4}, É. Gouin⁵, R. Daoust^{6,7}, S. Berthelot^{2,8}, M.-C. Ouellet^{2,9}, M. Giroux^{1,2,3}, M.-J. Sirois^{1,2,3}, M. Émond^{1,2,3} (1. *Axe Santé des populations et pratiques optimales en santé, CHU de Québec Hôpital de l'Enfant-Jésus, Québec, Canada*; 2. *Université Laval, Québec, Canada*; 3. *Centre d'excellence sur le vieillissement de Québec, Québec, Canada*; 4. *Centre Intégré de Santé et de Services Sociaux de Lanaudière, Joliette, Canada*; 5. *Centre Hospitalier Régional de Trois-Rivières, Trois-Rivières, Canada*; 6. *Centre de recherche de l'Hôpital du Sacré-Cœur de Montréal, Montréal, Canada*; 7. *Université de Montréal, Montréal, Canada*; 8. *CHUL, CHU de Québec, Québec, Canada*; 9. *Centre interdisciplinaire de recherche en réadaptation et intégration sociale, Québec, Canada*)

Background: In the fast pace of the Emergency Department (ED), clinicians are in need of tailored screening tools to detect seniors who are at risk of adverse outcomes. Seniors need more attention from ED health professionals, especially those who are frail. Frailty is characterized by a multi-systemic dysfunction associated with abnormal aging. It is linked with increased risk of adverse outcomes and can be associated with cognitive impairment, which may affect patients' ability to perform daily activities. ED-friendly tools must be developed to better fit the fast-paced ED environment. The Bergman-Paris Question (BPQ) is a one-question screening test developed by Dr Howard Bergman and involves asking a patient's close relative if they would feel comfortable leaving the patient home alone for three months if other members of the family were also away. The objective of this study was to assess the BPQ as a screening tool for three geriatric syndromes in independent or semi-independent seniors in the ED. Specifically, we sought to explore the predictive capacities of the BPQ with cognitive and functional impairments, as well as with frailty. **Method:** This multi-center prospective study included independent or semi-independent seniors (≥ 65 years old) admitted to hospital after an ED stay ≥ 8 hours and who were not delirious. Patients were assessed using validated screening tests for 3 geriatric syndromes: cognitive and functional impairment, and frailty. The Telephone Interview for Cognitive Status-modified (TICS-m) was used to assess patients' cognitive status, Functional status was evaluated using the Older Americans Resources and Services scale (OARS) and Frailty was evaluated using the Clinical Frailty Scale (CFS). The BPQ was asked upon availability of a relative at enrolment. BPQ's sensitivity and specificity analyses were used to ascertain outcomes. **Results:** A response to the BPQ was available for 171 patients, 75.4% were positive (suggesting impairment), and 24.6% were negative. To detect one of the three geriatric syndromes, the BPQ had a sensitivity of 85.4% (95% CI [76.3, 92.0]) and a specificity of 35.4% (95% CI [25.1, 46.7]). Similar results were obtained for each separate outcome. Odds ratio demonstrated a higher risk of presence of geriatric syndromes. **Conclusions:** The Bergman-Paris Question could be an ED screening tool for possible geriatric syndrome. A positive BPQ should prompt the need of further investigations and a negative BPQ possibly warrants no further action. More research is needed to validate the usefulness of the BPQ for day-to-day geriatric screening by ED professionals or geriatricians.

P72- THE LEVEL AND DIRECTION OF COGNITIVE DISTURBANCES IN PHYSIOLOGICAL AGING. N. Prokopenko (Institute of Gerontology of National Academy of Medical Sciences, Kiev, Ukraine)

Background: The process of aging is associated with various disturbances, both in intellectual and in sensorimotor function. The experience of long-living subjects shows that in old age a person must have a level of health that allows him to maintain independence at home, self-esteem and rightful place in the family and society. The preservation of psycho-physiological health of the person is the difficult problem of present-day time. The purpose of research is to evaluate the safety of cognitive functions in long-living subjects. **Method:** 75 long-living subjects aged $93,7 \pm 2,8$ years were examined. We defined systolic and diastolic arterial pressure, frequency of heartbeat at rest and after physical exercises, vital capacity of the lungs (VCL), and calculated integrative index of cardiovascular activity (ICA), body mass index (BMI) in long-living subjects. The level and direction of cognitive disturbances was determined by the MMSE test (mini mental state examination). **Results:** Cognitive function without changes were observed in 22% of long-living subjects, the age-dependent decrease of memory - 24%, mild cognitive decline - 22%, the initial stage of dementia - 25%, more expressing stages of dementia were observed in 7% of long-living subjects. On scale «Time orientation» was observed the least number of correct answers in the question «What year is this?» (61.3%), the highest - «What season is this?» (95.2%). Nearly all long-living subjects (98.4%) correctly identify the city/town where they live, the street - only 87.1% of long-living subjects. 91.7% of long-living subjects could repeat the three proposed words to them, though remember these words only every fourth long-living subjects, 40% of long-living subjects could not remember nor one word. Correctly pronounced the word with 5 letters in reverse order only 36.4% of long-living subjects. Read the text and executed the task 73.6% of long-living subjects, 3-step task executed 98.3%, written a complete sentence - 81.8%, correctly copied figure - 87.2% of long-living subjects. Average score for the MMSE test for men is $26,5 \pm 3,3$, women - $25,1 \pm 3,2$. MMSE indicators were positively correlated with BMI ($r = 0,69$, $p < 0,001$), VCL ($r = 0,50$, $p < 0,01$), education level ($r = 0,52$, $p < 0,01$). Revealed -shaped relationship between ICA and test date MMSE. Revealed a non-linear relationship between the ICA and the level of cognitive disturbances refers to the fact that diseases of the cardiovascular system are the most important factors for degenerative damage of the brain. **Conclusion:** The preservation of cognitive functions observed in long-living subjects with the reduction of the level of viability. First of all, it pertain to gnosis, praxis, speech function. The most vulnerable cognitive functions include attention and memory that is one of the first symptoms of vascular lesions of the subcortical structures of the brain. Revealed a non-linear relationship between the ICA and the level of cognitive disturbances refers to the fact that diseases of the cardiovascular system are the most important factors for degenerative brain damage.

P73- TUMOR NECROSIS FACTOR-ALPHA A RISK FACTOR FOR SARCOPENIC OBESITY IN ELDERLY MEXICAN WOMEN. C. Espinel-Bermudez^{1,2}, X. Trujillo², C. Garcia-Peña³, S. Sanchez-Garcia⁴, J.A. Robles-Cervantes¹, S. Hernández-González¹, C. Leal-Cortes⁵, B. Contreras-Haro¹, J. Anaya-Ambriz¹ (1. Epidemiological Clinical Research Unit, Mexican Institute of Social Security; 2. University Center for Biomedical Research, Universidad de Colima; 3. National Institute of Geriatrics, Mexico; 4. Epidemiologic and Health Service Research Unit, Aging Area, Mexican Institute of Social Security; 5. Biomedical Research Center of the West, Mexican Institute of Social Security)

Background: The aging process is associated with progressive and involuntary changes in body composition, manifested by a reduction of muscle mass and strength, a phenomenon known as sarcopenia. However, the body composition can undergo complex changes under the influence of stressors such as lifestyles related to the high prevalence of overweight and obesity among the population. These changes could have an impact among women in post menopause stage and exacerbate during aging, stage where to increase the adipose and visceral fat tissue added with the natural decline in muscle mass and strength is related to obesity sarcopenic, condition related with chronic inflammation of low grade and chronic diseases related aging. The purpose of this study was to analyze the Tumor necrosis factor-alpha among women of 60 years or more with obesity sarcopenic in comparison with women of similar age without this condition in Guadalajara, Jalisco. **Methods:** A case-control design of women aged of 60 years and older insurance for the Mexican Social Security Institute (IMSS) in Guadalajara, Jalisco. We analyzed phenotype of sarcopenia with Bioelectrical impedance segmental analysis, the 4-meter walk test, handgrip strength with a Jamar dynamometer and obesity as fat mass percent $>30\%$. Relation case-control 1:2. The Tumor necrosis factor-alpha was analyzed by BIO-PLEX PRO Human Citokine 1 x 96 Well, Marca Bio-Rad, No. 500039900. Statistical analysis was performed using Stata version 8 SE statistical program by StataCorp. The descriptive statistics were expressed according to variables; chi square test was performed for comparison of categorical variables. The comparison of the quantitative variables by Student T Test and ANOVA one way with Post Hoc Bonferroni by three clusters. All analyses were considered statistically significant (P values ≤ 0.05). **Results:** The sample included 123 women. The women were distributed into three clusters characterized as: 1) obesity sarcopenic 2) sarcopenia without obesity and 3) without sarcopenia and without obesity. We observed that the profile of the evaluated women was active, independent, stable comorbidities and with an average age of 70 years old. Between groups were found non-significant differences in TNF- α cytokine levels, however logistic regression adjusted (low or high at cutoff 3.72 pg/ml), showed a risk for the TNF- α 1.95 (95% CI 1.36-2.79) with the presence of sarcopenic obesity compared with sarcopenia without obesity and a risk of 1.81 (95% CI 1.23-2.67) for sarcopenic obesity compared with women without sarcopenia and without obesity. **Conclusions:** The tumor necrosis factor alpha represents a significant risk for obesity sarcopenic in Mexican women, the process of inflammation is related to age, the presence of central obesity and polypharmacy. Key words. Sarcopenia, obesity, aging, cytokines

P74- RELATIONSHIP OF INFLAMMATORY MEDIATORS IL-6 AND STN FR1 AND SARCOPENIA IN BRAZILIAN ELDERLY WOMEN. L. Paccini Lustosa,^{1,2}, P. Parreira Batista², G. Amorim Ribeiro-Samora², L. Souza Máximo Pereira^{1,2}, A. Alvim Scianni^{1,2} (1. *Physiotherapy Department, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil*; 2. *Rehabilitation Sciences Program, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil*)

Introduction: Chronic inflammation of low-intensity (inflammaging) refers to changes in the immune system associated with aging and results in elevated plasma levels of inflammatory markers, such as interleukin-6 (IL-6) and soluble TNF-alpha receptor (STNFR1). These inflammatory mediators have been related to loss of strength and muscle mass in the elderly and to the pathogenesis of several chronic diseases, such as frailty and sarcopenia. Sarcopenia is considered a geriatric syndrome, characterized by loss of mass and muscle function associated with aging, and related to several adverse health outcomes, such as falls, frailty, osteoporosis and death. The objective of this study was to evaluate the association of inflammatory mediators Il-6 and sTNFR1 with the presence of sarcopenia in Brazilian elderly women. **Methods:** Participants in this study were women, aged 65 years and over; sedentary (for three months or more); community-dwelling; without distinction of race and/or social class. It was excluded those who presented cognitive deficits detected by the Mini Mental State Exam (according to schooling); self-reported neurological/rheumatic diseases or sequelae; dependent gait; acute pain; history of arthroplasty; history of cancer in the last 5 years and use of corticoid. All subjects underwent gait velocity test (GV), hand grip strength (HGS) and muscle mass (MM) tests by dual-emission x-ray densitometry (DXA). For the diagnosis of sarcopenia, the operational criteria recommended by the European Working Group on Sarcopenia in Older People (EWGSOP) were adopted. Blood collection was performed at a same time of the day and analyzes of plasma concentrations of IL-6 and sTNFR1 were performed by enzyme-linked immunosorbent assay (ELISA) with high sensitivity kits for IL-6 (Quantikine®HS, R&D Systems Minneapolis, USA) and DuoSet ELISA kit for sTNFR1 (R&D Systems, 86 Minnesota, MN). Statistical analysis using the Chi-Square test ($\alpha = 5\%$). Study approved by the Research Ethics Committee of the Federal University of Minas Gerais (CAAE 39702014.2.0000.5149). **Results:** 32 elderly women were classified as non-sarcopenic, with mean age of 77.15 (± 6.91) years, GV of 0.70 (± 0.16) m/s, HGS of 17.99 ($\pm 4, 21$) Kgf, MM of 6.53 (± 0.77) ALM/h², BMI of 28.48 (± 5.31) Kg/h², number of comorbidities of 2.82 (± 1.59), IL -6 of 1.92 pg/ml and sTNFR1 of 2249 pg/ml. Regarding the diagnosis of sarcopenia, there were 31 elderly, mean age of 77.18 (± 5.42) years, GV of 0.83 (± 0.18) m/s, HGS of 16.36 (± 3.80) Kgf, MM of 4.97 (± 0.28) ALM/h², BMI of 21.55 (± 2.28) Kg/h², number of comorbidities of 1.94 (± 1.21), Il-6 of 1.54 pg/ml and sTNFR1 of 1844.50 pg/ml. There was a statistically significant association of plasma concentrations of IL-6 ($p = 0.008$) and sTNFR1 ($p = 0.008$) and the presence of sarcopenia, indicating that higher plasma concentrations of these mediators were associated with non-sarcopenic levels. There was no difference between groups of sarcopenic and non-sarcopenic except for BMI ($p = 0.001$) and number of comorbidities ($p = 0.015$). **Conclusion:** The results found in this study contradict the literature that indicates that high levels of inflammatory mediators are associated with several adverse health outcomes, including frailty and sarcopenia. However, the higher values of Il-6 and sTNFR1 found in non-sarcopenic elderly women in this study may be justified by the differences in relation to the high BMI and

the higher number of comorbidities in this group. In this case, one might think that the higher concentration of adipose tissue and other associated health conditions could be silently influencing the plasma concentrations of inflammatory mediators. Thus, is suggested that when analyzing this biological marker, these items should be taken into account, given the complexity of the inflammaging phenomenon. Therefore, more studies should be performed to verify the magnitude of the influence of adipose tissue and the presence of chronic diseases in sarcopenia and in the concentrations of IL-6 and sTNFR1 in Brazilian elderly women. Key-words: sarcopenia, inflammatory mediators, frailty, elderly.

P75- CORRELATION BETWEEN INFLAMMATORY MEDIATOR, GAIT VELOCITY, STRENGTH AND MUSCULAR MASS IN BRAZILIAN ELDERLY WOMEN. L. Paccini Lustosa^{1,2}, P. Parreira Batista², G. Amorim Ribeiro-Samora², L. Souza Máximo Pereira^{1,2}, A. Alvim Scianni^{1,2} (1. *Physiotherapy Department, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil*; 2. *Rehabilitation Sciences Program, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil*)

Introduction: The literature has shown that interleukin 6 (Il-6) is elevated in the elderly and participates in the inflammatory process of low intensity (inflammaging) associated with aging. Inflammaging is associated with the pathogenesis of various chronic diseases, functional disability and death. Thus, IL-6 has been associated with the decrease of physical function, strength and muscle mass, functional disability, and institutionalization in the elderly. On the other hand, the reduction in muscle performance from senescence may be aggravated by biopsychosocial factors, including increased plasma indices of inflammatory mediators, resulting in a greater vulnerability to adverse health outcomes such as sarcopenia, frailty and death. The objective of the present study was to evaluate the correlation of Il-6 plasma levels, gait velocity, strength and muscle mass in Brazilian elderly women. **Methods:** Participants in this study were women, aged 65 years and over; sedentary (for 3 months or more); community-dwelling; without distinction of race and/or social class. It were excluded elderly with cognitive deficits detected by the Mini Mental State Exam (according to schooling); self-reported neurological/rheumatic diseases or sequelae; dependent gait; acute pain; history of arthroplasty; history of cancer in the last 5 years and use of corticoids. All subjects underwent gait velocity test (GV), hand grip strength (HGS) and muscle mass (MM) tests by dual-emission x-ray densitometry (DXA). Blood collection was performed at a same time of the day and analyzes of plasma concentrations of IL-6 were performed by enzyme-linked immune sorbent assay (ELISA) with high sensitivity kits (Quantikine®HS, R&D Systems Minneapolis, USA) Statistical analysis was made through Spearman correlation coefficient. Significance level of 5%. Study approved by the Research Ethics Committee of the Federal University of Minas Gerais (CAAE 39702014.2.0000.5149). **Results:** 65 elderly women participated in this study, with mean age of 77.17 (± 6.17) years, body mass index (BMI) of 25.07 (± 5.37) Kg/h², HGS of 17.19 (± 4.07) Kgf, GV of 0.77 (± 0.18) m/s, MM average of 5.77 (± 0.98) ALM/h² and IL-6 of 2.72 (± 2.85) pg/ml. There was a significant inverse correlation between IL-6 and gait velocity ($r = -0.27$, $p = 0.03$) and a significant positive correlation between HGS and MM ($r = 0.26$, $p = 0.04$). Other associations were not significant ($p > 0.05$). **Conclusion:** elderly patients with higher gait velocity values, or in better functional conditions, demonstrated lower plasma concentrations of Il-6. This

result confirms the literature that indicates that adequate levels of IL-6 can be considered as a biological marker of healthy aging. The association between HGS and MM reinforces the current concept of sarcopenia, which considers loss of muscle mass associated with loss of function and/or muscle strength. In this case, the results reinforce the need to use both operational criteria for the diagnosis of sarcopenia. However, further studies are suggested to longitudinally investigate the behavior of IL-6 levels and the development of sarcopenia in Brazilian women.

P76- MOTORIC CONDUCTION LATENCY IS NOT ASSOCIATED WITH PHYSICAL PERFORMANCE IN OLDER ADULTS. L.A. Clark^{1,2}, S. Amano^{1,3}, S. Moskowitz¹, B.C. Clark^{1,4,5} (1. Ohio Musculoskeletal and Neurological Institute, Ohio University, Athens, Ohio, USA; 2. Department of Family Medicine, Ohio University, Athens, Ohio, USA; 3. Clinical and Translational Research Unit, Ohio University, Athens, Ohio, USA; 4. Department of Biomedical Sciences, Ohio University, Athens, Ohio, USA; 5. Department of Geriatric Medicine, Ohio University, Athens, Ohio, USA)

Background: The world population is aging rapidly. As society ages, the incidence of physical limitation is dramatically increasing, which reduces quality of life and increases health care expenditures. In western society, ~30% of the population over 55 years are confronted with moderate or severe physical limitations. These physical limitations increase the risk of falls, institutionalization, co-morbidity and premature death. The causes of physical limitations are multifactorial with age-related changes in both the nervous and muscular systems implicated. It is well recognized that the nervous system undergoes degenerative changes associated with aging. For instance, age-related alterations in the structure of myelin reduce conduction velocity (Peters, J Neurocytology, 2002). The purpose of this study was to examine the association between motoric conduction latency and measures of physical performance in older adults. **Methods:** Twenty-seven older adults (80.9±5.6 years; 55% women) were assessed for 4-meter gait speed, 5-time sit to stand time, stair climb power, 6-min walk distance, four square step test and unilateral isokinetic leg extension (60°/sec) peak torque normalized to body mass. We also quantified the latency (msec) of motor evoked potentials recorded using surface electromyography from the vastus lateralis in response to a single transcranial magnetic stimulation pulse (stimulation intensity: 130% of active motor threshold) during a volitional isometric contraction at 40% of maximal strength. The latency value was normalized for height, such that a smaller value indicated a shorter latency. To examine the association between outcomes, Pearson correlations were calculated between the measures of physical performance and motoric conduction latency. **Results:** The mean, standard deviation and range for all outcomes is displayed in Table 1. None of the physical performance measures were significantly associated with motoric conduction latency (p≥0.47). The correlation coefficients for each of the physical performance measures are displayed in Table 2. Motor conduction latency did not explain more than 2% of the variance in any of the assessed physical performance measures. **Conclusions:** These data suggest that motor conduction latency is not associated with physical function performance in older adults. **Acknowledgements:** Research reported in this publication was supported by the National Institute On Aging of the National Institutes of Health under Award Number R01AG044424. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Outcome Measure (units)	Mean (SD)	Range
Motor Conduction Latency (msec/m)	14.52±0.87	12.87 to 16.40
4-Meter Gait Speed (m/sec)	0.93±0.23	0.62 to 1.52
5-Time Chair Stand (secs)	11.66±3.02	6.56 to 20.54
Stair Climb Power (Watts)	121.65±41.85	60.76 to 206.24
6-Min Walk Distance (meters)	423.74±105.29	210 to 579
Four Square Step Test (secs)	11.19±3.99	6.53 to 22.90
Peak Torque (N*m/kg)	1.07±0.36	0.23 to 1.76

	4-Meter Gait Speed	5-Time Chair Stand	Stair Climb Power	6-Min Walk Distance	Four Square Step Test	Peak Torque
Motor Conduction Latency	r = -0.01 p = 0.97	r = 0.15 p = 0.47	r = 0.14 p = 0.50	r = -0.09 p = 0.65	r = 0.17 p = 0.41	r = -0.12 p = 0.56

P77- FRAILTY AND SARCOPENIA IN PEOPLE OLDER THAN 65 IN COMMUNITY RESIDENTS. J. Nemerovsky, V. Lupidi, M. Acanfora (Instituto Universitario Barceló, Buenos Aires, Argentina)

Background: Whenever life expectancy increases, anatomophysiological and functional changes in elderly people determine the appearance of frailty. This result, associated to the lack of adaptation of the body to stressors can lead to a functional deconditioning and determine the appearance of dependence. Frailty is a widely recognized concept but it takes relevance since Fried articles in 2001. Loss of muscle mass, and its functional impact, loss of muscle strength and power are intimately linked to that concept of frailty. Frailty and dependence are determinant factors of major morbidity mortality in elderly people. **Method:** Objectives: Determine the correlation between frailty and sarcopenia. Determine if other variables (nutrition, habits, comorbidities, physical activity, etc.) are related to frailty. This study is a quantitative, descriptive and correlational study. We studied a sample of 159 individuals, older than 65, community residents. (Probabilistic sample by convenience). For the determination of sarcopenia we measured muscle mass with a Bioimpedometer, for the measurement of strength we utilized a dynamometer of palmar grip and a stopwatch for recording the walking speed as expression of the functionality. We applied functional measurement tests based on the execution: «Get up and walk test» (GUGT). For the determination of frailty we applied the Fried's criteria. Also, the following instruments were applied: Barthel's scale to evaluate functionality, Mini-Mental test (MMSE) to determine the existence of cognitive impairment, Yesavage's scale for depression, Mini Nutritional test and personal and clinical history surveys to take information about comorbidities and personal habits (smoking, physical inactivity, food, etc.). **Results:** The final sample, after exclusion (according to pre-established criteria) of people with previous muscle pathology, cognitive impairment, dependents in some of the basic activities of daily living and presence of metal prosthetics elements which difficult the application of bioimpedancimetry. The sample was composed by 119 women (74.8%) and 40 men (25.2%). The participants' average age was 75.79 (+/- 6.45) years. From the total of the sample, 82 (51.6%) subjects did not present frailty criteria (robust); 63 (39.6%) presented 1 or 2 criteria (pre-frailty) and 14 (8.8%) had from 3 to 5 criteria (frailty). We observed (Spearman's Rho correlation coefficient) a positive association between frailty and age; robust individuals presented an average of 73.3 years of age, pre-frailty people were 77.7 years and fragile individuals were 82 years (p <0.001). From the total of the sample, 54 (34%) subjects presented reduction in the strength of the palmar grip below the pre-established values. From this group, 24% were men and 76% were women. The walking speed was recorded in 36 subjects (22.6%), who showed a decrement of it below 0.8 m / sec. cutoff point. Regarding sarcopenia (according to European consensus criteria on definition and diagnosis: Report of the European Working Group on sarcopenia in older people), it was found in 8 individuals (5.1%) and severe sarcopenia in 5 (3, 1%). Although the relation between frailty and sarcopenia was weak, it was statistically significant

(Application of Somers D statistic, $p = 0.015$). We performed Chi-square test of independence between frailty and sarcopenia. We observed a statistically significant relation between both variables ($p = 0.001$). The association was moderately strong (Cramer's $V = .30$). 7.5% of the sample (12 subjects) presented decrease in walking speed and muscle strength, but no decrement was found in muscular mass. When The GUGT and frailty presence were related, we observed that there was a significant difference between the results in robust and fragile individuals ($p < 0.001$). The MMSE determined that the average robust individuals was 27 points while the average of individuals with some degree of frailty was 25 ($p < 0.001$). **Conclusion:** Comparing the results of this study with those obtained by Linda Fried (2001, 2004), we have obtained similar results because of we have used the same inclusion and exclusion criteria, although the sample of our study was significantly smaller in subjects number. Fried values identify 46% of robust individuals (vs. 51.6% in our sample), 47% (vs. 39.6%) pre-fragile and 7% (vs. 8.8%). According to the analysis of the results we can conclude that frailty and sarcopenia are related since they share diagnostic criteria. The same diagnostic criteria can determine risk factors which alter the quality of life in older adult, since the loss of palmar grip strength or decreased walking speed can determine an alteration of the quality of life, a fact observed in other previous studies as well as it. Because of the history of the studied subjects, variables approach the model of Cumulative deficits of Ken Rockwood.

P78- PLASMA TNF- α IS ASSOCIATED WITH INFLAMMATION AND NUTRITION STATUS IN COMMUNITY-DWELLING JAPANESE ELDERLY. T. Goda¹, Y. Oe^{1,2} (1. School of Food and Nutritional Sciences, University of Shizuoka, Japan; 2. Institute of Health Longevity Science and Nutrition, Watami Corporation, Ltd, Japan)

Background: Inflammation has been suggested to play an important role in age-related chronic diseases and disability, and it is associated with nutritional status including obesity and malnutrition. However, very few information is available for the factors affecting inflammatory markers especially in the elderly people in Asia. Among inflammatory markers frequently used for the studies of aging, tumor necrosis factor α (TNF- α) is produced mainly by macrophages, and contributes to production of interleukin-6 (IL-6) and C-reactive protein (CRP), thus directing chronic inflammatory process in the body. **Method:** We conducted a cross-sectional study of 390 men and women aged 70-86 y (average 73.5 y) living in a community in Japan, who participated in health check-ups. Associations between plasma TNF- α levels and several factors related to nutrition status, including BMI, albumin, and energy intake, and other clinical parameters and lifestyle factors were analyzed using Spearman's rank correlation coefficient analysis and multiple linear regression analysis. **Results:** In elderly men, plasma TNF- α level was positively associated with age, white blood cell count, monocyte count, plasma CRP level, serum creatinine, ureic acid, and triacylglycerol levels, and negatively associated with albumin/ globulin ratio, eGFR, and serum HDL- cholesterol level. In elderly women, plasma TNF- α level was positively associated with age, plasma CRP level, and serum triacylglycerol level, and negatively associated with serum albumin and HDL-cholesterol levels. **Conclusion:** The results of this study suggest that plasma TNF- α is associated with inflammation and insulin resistance in both Japanese elderly men and women, and a prominent association of TNF- α with malnutrition status was observed in elderly women.

P79- UNTANGLING THE RELATIONSHIP BETWEEN FAT DISTRIBUTION, NUTRITIONAL STATUS AND PARKINSON'S DISEASE SEVERITY. M.S. Pisciotta¹, D. Fusco¹, D.L. Vetrano^{1,2}, G. Grande^{2,3}, V. Brandi¹, M.R. Lo Monaco¹, A. Laudisio⁴, G. Onder¹, A.R. Bentivoglio^{5,6}, D. Ricciardi¹, R. Bernabei¹, G. Zuccalà¹ (1. Department of Geriatrics, Neurosciences and Orthopaedics, Catholic University of Rome, Italy; 2. Aging Research Center, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet and Stockholm University, Stockholm, Sweden; 3. Center for Research and Treatment on Cognitive Dysfunctions, Biomedical and Clinical Sciences Department, «Luigi Sacco» Hospital, University of Milan, Italy; 4. Department of Geriatrics, Campus Bio-Medico University, Rome, Italy; 5. Institute of Neurology, Catholic University of Rome, Italy; 6. "Don Gnocchi" Foundation, Milan, Italy)

Background: Parkinson's disease (PD) leads to significant changes in body composition. Here we wanted: 1) to test the association between PD severity and topology of fat distribution; 2) to investigate the potential mediating role of nutritional status in this association. **Methods:** We enrolled 195 PD subjects consecutively admitted to a geriatric day hospital. Any subject underwent comprehensive clinical evaluation, including assessment of body composition (Dual energy X-ray Absorptiometry, DXA), Body Mass Index, nutritional status (Mini Nutritional Assessment, MNA), disease severity (UPDRS III), comorbidities, and pharmacotherapy. **Results:** The fully adjusted linear regression model showed a negative association between UPDRS III and total body fat in Kg and in % (respectively, $B -0.79$; 95%CI -1.54 to -0.05 and $B -0.55$; 95%CI -1.04 to -0.05), android fat in % ($B -1.07$; 95%CI -1.75 to -0.39), trunk-legs fat ratio ($B -0.02$; 95%CI -0.04 to -0.01), trunk-limbs fat ratio ($B -0.01$; 95%CI -0.06 to -0.01) and android-gynoid fat ratio ($B -0.01$; 95%CI -0.03 to -0.01). After stratification by MNA score, all the parameters of android-like fat distribution resulted negatively associated ($p < 0.001$ for all) with UPDRS III but only in subjects with a $MNA < 23.5$ (risk of malnutrition). **Conclusion:** Our results suggest a negative association between severity of motor impairment and total fat mass in PD, especially for an android pattern of fat distribution. This association seems to be driven by nutritional status and is significant only among people at risk of malnutrition or with an overt malnutrition.

P80- FRAILTY AND LIFE SPACE: RESULTS FROM IMIAS STUDY. C.L.Curcio, Á.M.B.F. Gómez (Research Group on Geriatrics and Gerontology, Faculty of Health Sciences, University of Caldas, Manizales, Colombia)

Background: Measures of life space are unique and different from traditional measures of mobility. In addition to measuring physical mobility they take into consideration the interaction between an individual's functional ability and the greater socio-cultural, physical, and economical environments. Life-space restriction is a good predictor of mild cognitive impairment, Alzheimer's disease and mortality and has been proposed as an early marker of risk of disability and mortality and as an indicator of functional health in clinical settings. The association between frailty and life-space mobility has not often been examined. The objective of this study was to examine the association of phenotype of frailty with life-space mobility of community-dwelling older adults. **Methods:** This is a cross-sectional study using data from the International Mobility in Aging Study (IMIAS). IMIAS is a population-based prospective cohort study. The Life Space Assessment (LSA) measures an individual's pattern of mobility, across five levels of living space (from within the home to out of town), during the

month prior to assessment. The LSA total scores ranges from 0 to 120 points. Maximal Life-Space (LSM), the highest life-space level attained, range from 0 to 5, higher scores indicate greater mobility. Muscle strength was assessed by handgrip strength using a handheld dynamometer; values less than 26 kg for men and 16 kg for women were considered weak. Assessment of gait speed was done over on a 4-m course at usual walking speed. Slowness was defined as a speed lower than 0.8 m/s. Physical frailty phenotype indicators were slowness, weakness, self-reported unintentional weight loss of >5 kg in the past year, self reported exhaustion and low physical activity. Frailty status was defined as no Bfrailty (0 indicators present), pre-frailty (1–2 indicators) and frailty (≥ 3 indicators). Sociodemographic variables: These included age, sex, and years of formal education. Functional and clinical variables. These include The Short Physical Performance Battery (SPPB), The Center for Epidemiological Studies Depression scale (CES-D), The Leganés Cognitive Test (LCT). Distributions of baseline characteristics were compared between frailty status using ANOVA for continuous variables and chi-square tests for categorical variables. A p-value of less than 0.05 was considered statistically significant. **Results:** Of the analytic sample (n = 366), 50,3% was female, and the participants' mean age was $71,4 \pm 3,51$ years. 51% were married, and 12,8% single. 70% were less than 5 years of education and 14% living alone. More female, more older and less educated people had lower score in LSA without statically differences. Non-frailty were 22,4, pre-frailty 62,3%, and frailty 15,3, with differences by sex ($p=0.008$). The LSA average total score was 68 (SD: 16,9). In the more restricted life-space (home, outside home, neighborhood) the percentage of frail people is higher than in other levels of living space. There are statistical differences between the three categories of frailty phenotype with all measures of life-space assessment (all p values less than 0.01) SPPB less than 8 were 7% Non-frailty; 31,7% pre-frailty and 60,7% frailty ($p=0.000$). Depressed 8,5% Non-frailty, 47,5% pre-frailty and 44,1% frailty ($p=0.000$). 76,1% the people with SPPB less than 8 had life-space restricted to neighborhood level or lower, and average levels of LSA scores were higher in those with better functional performance. The LCT average total score was 27.5 (SD 4.1), the proportion of those screening positive for dementia was 7.7% without differences with LSM. There are statistical differences with LSA total scoring, participants with better cognitive function had higher scoring in total life-space ($p=0.001$) and the elderly who have life-space restricted, 79.5% had probable dementia ($P=0.002$). The average total score CES-D was 7.7 (DS 8.9). LSA scores showed significant correlations with depression. 26% the people with depression had restricted life-space ($p=0.000$) **Conclusions:** Our results confirm that elderly with frailty have more restricted life space. Previously a slightly constricted life space could be a marker and/or risk factor for the development of frailty has been suggested. Mobility limitation is a key component of frailty and our results emphasizing Life Space Assessment, as a direct assessment of enacted function in the real world, could be an important support to develop early interventions in pre-frail elderly to avoid more mobility limitation. Constriction of life space itself could lead to deconditioning and augment the risk of prefrailty and frailty. The finding of association between frailty and life space deserve further analysis to identify possible causal pathways. Associations of cognitive impairment and depression with constriction of life space should be included in these pathways between frailty and life space assessment. Moreover, LSA may prove useful as a screening tool or a target of intervention. Further study is warranted to determine the causal association between life space and frailty.

P81- RELATIONSHIPS BETWEEN PHYSICAL FATIGUE AND FATIGUE PERCEPTION IN OLDER ADULTS UNDERGOING ELECTIVE ABDOMINAL SURGERY.

M. Alturki^{1,2}, I. Beyer^{1,2,3}, C. Simoens⁴, I. Bautmans^{1,2,3}
(1. Gerontology Department (GERO), Faculty of Medicine and Pharmacy, Vrije Universiteit Brussel, Brussels, Belgium; 2. Frailty in Aging Research Group (FRIA), Faculty of Medicine and Pharmacy, Vrije Universiteit Brussel, Brussels, Belgium; 3. Department of Geriatrics, Universitair Ziekenhuis Brussel, Brussels, Belgium; 4. Department of abdominal surgery, Universitair Ziekenhuis Brussel, Brussels, Belgium)

Background: Older adults show an increased susceptibility and higher risks for muscle fatigue and weakness after elective abdominal surgery; which can exacerbate sarcopenia and frailty. Here we aim to investigate the relationship between muscle endurance and subjective fatigue perception one day preoperatively in 30 elective abdominal surgery patients aged 62–86 years. **Methods:** Each patient was assessed one day before the surgical intervention including: the maximal handgrip strength (GS), muscle fatigue resistance (FR, time for GS to drop to 50% of its maximum during sustained contraction) and grip work (GW, integrating GS and FR), fatigue subscales of the Profile of Mood State (POMS) and visual analogue scale (VAS) for pain and fatigue. **Results:** Thirty patients (female = 10, male = 20) were recruited. FR and GW negatively correlated ($p < 0.05$) with fatigue subscales of the POMS ($r = -0.547$ and $r = -0.592$, all $p < 0.05$). Moreover, a positive correlation has been found between POMS fatigue and VAS for Fatigue ($r = 0.369$, $p < 0.05$), as well as with VAS for Pain ($r = 0.405$, $p < 0.05$). **Conclusions:** Overall, we have noted that lower muscle endurance was significantly related to higher self-perceived fatigue in older elective surgery patients. Prospective studies should confirm whether pre-operative fatigue is predictive for post-operative recovery.

P82- DEVELOPMENT OF A COMPREHENSIVE MEASURE OF FRAILTY IN A MULTI-ETHNIC ASIAN POPULATION.

R. Malhotra^{1,2}, C.-L. Chei^{1,2}, J. Carson Allen³, A. Chan^{1,2}, C.H. Wong⁴, Y. Saito⁵, T. Østbye^{1,5}, D.B. Matchar¹
(1. Health Services and Systems Research, Duke-NUS Medical School, Singapore; 2. Centre for Ageing Research and Education, Duke-NUS Medical School, Singapore; 3. Centre for Quantitative Medicine, Duke-NUS Medical School, Singapore; 4. Geriatric Medicine, Khoo Teck Puat Hospital, Singapore; 5. University Research Center, Nihon University, Japan; 6. Duke Global Health Institute and Community and Family, Duke University, USA)

Background: Recognition of vulnerable elderly, at risk of adverse outcomes, is a priority for Singapore, a rapidly-aging multi-ethnic Southeast Asian nation. Frailty is an appropriate indicator of vulnerability. Key limitations of existing frailty measures are their disproportionate focus on physical frailty and that most have been developed in non-Asian populations. We aim to develop a comprehensive frailty measure (Singapore Assessment for Frailty in Elderly-Physical, Psychological and Social [SAFE-PPS]) for elderly Singaporeans. Initially a basic frailty measure that includes only physical frailty (SAFE-P) was developed and assessed for its accuracy in predicting a composite future health outcome (up to 6 years from baseline). We hypothesized that the SAFE-PPS measure which also incorporates psychological and social frailty is more accurate than SAFE-P measure in predicting the composite health outcome. **Method:** Data from a longitudinal (three waves: 2009, 2011-2012, 2015) survey of elderly (aged ≥ 60 years) Singaporeans combined with information on date of death, until end-December

2015, of Wave 1 participants from the national Registry of Births and Deaths was utilized. A total of 4990 elderly Singaporeans were interviewed face-to-face at their residence at Wave 1. Of these, 3103 and 1575 respondents were re-interviewed at Waves 2 and 3, respectively. Those without any activity of daily living (ADL) limitation in Wave 1 (n=4564) were included in the analytical sample. Frailty factors and variables: A total of 12 variables assessed in Wave 1, representing 9 distinct frailty factors from 3 frailty domains were considered. Each variable was dichotomized, the dichotomization based on the extant literature, to represent frailty in the variable. For physical frailty, 5 frailty factors, represented by 6 variables, were considered: 1) Nutritional status ("Body mass index (BMI)" ["underweight/obesity" indicating frailty], and "Waist circumference" ["abdominal obesity" indicating frailty]); 2) Physical activity ("Frequency of 'Going out for a walk for exercise'" ["<once a month" indicating frailty]); 3) Mobility ("Nagi's index of physical performance" ["difficulty in >1 upper/lower extremity functions" indicating frailty]); 4) Strength ("Hand grip strength" ["dominant hand value <age and sex specific 20th percentile" indicating frailty]); and 5) Energy ("Frequency of 'I felt that everything I did was an effort' and 'I could not get going'" ["response of often for frequency in past week for either item" indicating frailty]). For psychological frailty, 2 frailty factors, represented by 3 variables, were considered: 1) Mood ("Pearlin's Personal Mastery scale" ["score <25th percentile" indicating frailty], and "11-item Centre for Epidemiological Studies-Depression (CES-D) scale" ["score >7" indicating frailty]) and 2) Cognition ("Short Portable Mental Status Questionnaire (SPMSQ)" ["score ≥ 3 " indicating frailty]). And, for social frailty, 2 frailty factors, represented by 3 variables, were considered: 1) Social contacts ("Living arrangement" ["living alone" indicating frailty], and "3-item Loneliness scale" ["score <25th percentile" indicating frailty]) and 2) Social support ("Lubben's revised social network scale" ["score <25th percentile" indicating frailty]). Composite health outcome (Yes/No): This was defined as death or incident ADL limitation or hospitalization (last 6 months) or emergency room visit (last 6 months) over the 6-year follow-up. All-cause mortality till end of 2015 was assessed primarily from de-identified matched mortality data from the national registry, supplemented by survey data from Waves 2 and 3. ADL limitations, hospitalization and emergency room visit was assessed using survey data from Waves 2 and 3. Statistical analysis: A logistic regression model for the composite outcome considering only covariates (age, gender and number of chronic conditions) was developed (Base Model). Univariate association between the 12 dichotomized variables and the composite outcome was assessed using logistic regression analysis. Then, variables representing the physical frailty factors, with $p < 0.20$ in the univariate analysis, were added to the Base model – only those significant ($p < 0.05$) were retained for inclusion in the SAFE-P measure (SAFE-P Model). Finally, variables representing the psychological and social frailty factors, with $p < 0.20$ in univariate analysis, were added to the SAFE-P model – only those significant were retained for inclusion in the SAFE-PPS measure (SAFE-PPS Model). Receiver Operating Characteristic analysis was used to compare the predictive ability of the Base, SAFE-P, and SAFE-PPS models for the composite health outcome at 6 years. **Results:** There were 1141 cases with the composite health outcome observed at any point during the 6-year follow-up. BMI, physical activity, mobility, strength and energy were selected for inclusion in the SAFE-P measure. Depression, cognition and social support were added to the SAFE-P measure to arrive at the SAFE-PPS measure. The predictive ability of the SAFE-P model (Area under the Curve [AUC]=0.7323) and the SAFE-PPS model (AUC=0.7359) were comparable, and only marginally better relative to the Base model (AUC=0.7174). **Conclusion:** We provide a comprehensive frailty

measure, encompassing physical, psychological and social frailty, developed in a multi-ethnic Asian population. However, its predictive ability for a composite health outcome is not indistinguishable from either a simpler physical frailty only measure or an even simpler combination of age, gender and number of chronic conditions.

P83- HANDGRIP STRENGTH, MINI NUTRITIONAL ASSESSMENT AND SWALLOWING: COMPARISON BETWEEN YOUNG AND OLD. T. Magalhães de Almeida¹, G.I. de Mendonça², A. Santos Monteiro³, F. Cassulo Amparo³, C. Kovacs³, A. Massamitsu Kambara², C.D. Magnoni³, J.Á. França⁴, A. Moraes Rego Sousa⁵ (1. *Department of Speech Therapy, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil;* 2. *Department of Radiology, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil;* 3. *Department of Nutrition, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil;* 4. *Department of Statistics, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil;* 5. *Director General, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil*)

Background: Primary sarcopenia has been considered an independent risk factor in dysphagia in elderly individuals. The objective of the study was to evaluate the strength of handgrip, conduct nutritional screening and assess swallowing in the elderly without swallowing complaints and compare with group of young. **Methods:** group A: included 15 elderly individuals 60 to 79 years (mean age of 69.26 years) without swallowing complaints, group B: 15 adults 18 to 50 years (mean age of 34.2 years) without swallowing complaints. Excluding neurological disorders, cognitive deficits and/or head and neck sequela. Nutritional risk evaluation was carried out through mini nutritional assessment (MNA), assessment of handgrip strength through isokinetic dynamometer and assessment of swallowing by videofluoroscopy, which included thin, nectar-thick, honey-thick, pudding-thick, soft solid and dry solid consistencies. **Results:** As for MNA values, 13.3% of the group A showed risk of malnutrition and 1 individual (6.6%) was considered malnourished. No patient in group B showed a risk of malnutrition. The mean hand grip strength found was 11,73 kg/f for the left in group A and 18.5 kg / f in group B ($p = 0.032$). No statistical significance for the right. In relation to swallowing, there was no statistical significance between groups in some aspects due to sample size, but some deficits were found only in group A: lip sealing deficit (group A: 6.7%), chewing deficit (group A: 20%) and laryngeal penetration (group A: 13.3%). The group A presented the highest frequency of individuals with reduction of laryngeal elevation. (Group A: 33.3%, group B: 6.7%). Statistical significance was also found regarding the need for multiple swallows in group A in relation to group B ($p = 0.021$). Of the elderly who had natural dentition (40%) 66.7% had dental problems compared to 13.3% in the young group ($p = 0.031$). In relation the residue in the hypopharynx region, two groups presented, but group A presented more residue in relation to group B, the value was close to significance ($p = 0.084$). **Conclusions:** In aging, there is a risk for sarcopenia, with reduced muscle mass and elastic connective tissue, these changes occur in all organic structures, including orofacial muscles and can therefore directly influence swallowing. Deficits in lip sealing, increase of residues in the region of hypopharynx with need for more swallows for compensations and laryngeal penetrations with risk of tracheal aspirations have been observed. Structural modifications such as loss of dentition also impact the functionality of chewing. It is necessary to look the modifications due to age and manage their impacts reducing the chances of complications.

P84- ASSOCIATION BETWEEN CAROTID ARTERY STENOSIS AND COGNITIVE IMPAIRMENT IN MEMORY CLINIC PATIENTS. J. Knasiene, G. Nekrosiute, A. Seskevičius (Lithuanian University of Health Science)

Background: Impairment of cognitive functions, which are related to orientation in time, space and focus became one of the most important problems for the elderly. Cognitive disorders are often associated with cerebrovascular disease, strokes and dementia develop as a problem, they have become a significant modifiable risk factor. In Trumse's study there were a control group of patients, who had no carotid artery stenosis, and they were compared with patients that have severe carotid artery stenosis. Those with carotid artery stenosis had much worse cognitive functions. Mini mental state examination (MMSE) could be used as a tool to diagnose mild cognitive impairment (MCI) in elderly patients. We assess MCI disorder as a starting neurodegenerative dementia (Alzheimer's disease) phase. In addition, cerebrovascular disorders can quickly worsen cognitive functions, because of a progressive neurodegenerative process a focal vascular pathology is added. Dementia can be a combination of neurodegenerative and vascular processes, that is why an early diagnosed carotid artery stenosis and its treatment could help reduce cognitive disorder symptoms and progression. The aim of our study was to establish a link between cognitive dysfunction and carotid artery stenosis. **Methods:** From 2015 December to 2016 February 124 patients were investigated in Kaunas Clinical Hospital Memory Clinic. The study used Mini Mental State Examination (MMSE) to distinguish organic mental disorders from functional psychiatric disorders and also to quantify the level of cognitive disorder severity, process and results of treatment. Orientation of time, space, focus, word registration, memory, speech, the ability to react and to copy is researched by MMSE examinations. In addition, carotid artery stenosis and plaque state were measured during neck ultrasound examinations. Results were divided into 3 groups according to stenosis level (mild <50%, moderate >50-69%, severe >70%). During ultrasound examinations, both sides of carotid artery intima-media thickness (mm), atherosclerotic plaque size (%) and the maximum blood vessel blood stream velocity (m/s) were registered. The results were analyzed using a SPSS 22.0 version software package. The program calculated averages and standard deviations of sample characteristics and two variable dependence if a variable is used to assess the homogeneity criteria χ^2 . «Pearson Chi square test» was used to measure the correlation between cognitive function disorders and carotid artery stenosis. Data differences are considered statistically significant if the significance level of $p < 0.05$. **Results:** The study population consisted of 44 men (35.5%) and 80 women (64.5%). The average age - 76.7 ± 10.0 years. MMSE scores average - 21.2 ± 5.8 . According to the survey data MMSE 34.7% of the subjects there was no cognitive disorder found, 26.6% of the subjects were found to have mild cognitive disorder, 30.6% had a moderate cognitive disorder, 8.1% had severe cognitive disorders. Estimated carotid stenosis degree: 80.6% of the subjects had mild right carotid artery stenosis, moderate - 15.5% and severe - 4.8%. 78.2% of the subjects had mild left carotid artery stenosis, moderate - 16.1% and severe - 5.6%. There was established a statistically reliable relationship between cognitive dysfunction and clinically relevant right ($p = 0.012$) and left ($p = 0.023$) carotid artery stenosis - the higher the cognitive disorder, the more often carotid artery stenosis was established. **Conclusions:** 65.3% of subjects were established to have a cognitive disorder, 38.7% of them had a moderate or severe illness. Clinically significant right carotid artery stenosis was found in 19.3% of the subjects, left carotid artery stenosis was found in 21.7% of the subjects. There was established a statistically reliable relationship between cognitive

dysfunction and clinically significant carotid stenosis.

P85- PREVALENCE AND EFFECTS OF FRAILTY IN PATIENTS UNDERGOING CARDIAC SURGERY: PRELIMINARY RESULTS OF AN ELDERLY COLOMBIAN COHORT. G.A. Lemus¹, C.L. Curcio², J.M. Cárdenas¹, G.A. Moreno¹ (1. Internal Medicine Department, Technological University of Pereira, Colombia; 2. Geriatric and Gerontology Research Program, University of Caldas, Colombia)

Background: The frailty is a condition characterized by a state of vulnerability to adverse health outcomes including the ones caused by cardiac surgery. Principal risk prediction models, such as EuroSCORE II and Society Thoracic Surgeons (STS) not include objective measures for frailty. Few studies have been conducted on the impact of preoperative impact of frailty on outcomes in patients undergoing cardiac surgery. This is the first prospective study in Colombia that assesses frailty and effects in patients undergoing cardiac surgery. **Methods:** This Prospective study include elderly people (> 60 years) undergoing elective Coronary Artery Bypass Grafting (CABG) and/or valve surgery patients in a reference center for cardiac surgery in Pereira, Colombia. Exclusion criteria includes cases designated as emergent, or emergent salvage case (defined by STS), any procedure other than valve or CABG, and unable to perform functional measures due to physical, mental, or emotional impairment. Patients were assessed using Cardiovascular Health Study (CHS) Frailty Index criteria: weight loss, exhaustion, physical activity, gait speed, and handgrip strength (HGS). Weight loss was defined as unintentional weight loss of > 10 pounds within the year preceding surgery. Exhaustion was determined from self-report on two items taken from the Center for Epidemiologic Studies Depression Scale (CES-D). Physical activity was calculated from exercise scale to measure function at the Advanced Activities of Daily Living (AADL). The HGS cut points to define weakness were based on the Foundation for the National Institutes of Health (FNIH) criteria. HGS values under 26 kg for men and 16 kg for women were considered weak. Gait speed was done over on a 3-m course at usual walking speed from a standing position and assessed twice for each participant, and the average was calculated in meters per second. Slowness was defined as a speed lower than 0.8 m/s. This cut point was used based on International Mobility in Aging Study (IMIAS). Data on preoperative, clinical and demographic patient characteristics as surgical outcomes was obtained with our local database based on medical records. The data on survival from cardiac surgery patients up to 1 month after surgery was obtained from phone calling. All postoperative outcomes were defined according to STS definitions. Primary outcome was defined as a composite of any cause of mortality (<30 days) and the ones as following: postoperative myocardial infarction, re-operation (any cause) and re-hospitalization for myocardial infarction or heart failure. Secondary outcome included the following events: permanent stroke, postoperative renal failure, prolonged ventilation (>24 hours), vasoplegic syndrome, postoperative transfusion of red blood cells, nosocomial pneumonia and urinary tract infection, postoperative atrial fibrillation, days on critical care unit and days on the hospital. Additionally we evaluated the body mass index (BMI), EuroSCORE II and Minimental test in all patients. **Results:** 21 patients were eligible and two patients were excluded because surgery was cancelled. The mean age of the patients was 71.4 ± 5.1 years old, and 36.8% were female. Frailty was identified in 9 patients (47.4%) with the CHS Frailty Index Criteria. The handgrip strength (Frail 19.6 ± 5.6 ; non-frail 28.9 ± 4.7 ; $p=0.001$) and gait speed ($0.67 \text{ m/s} \pm 0.26$; non-frail 0.79 ± 0.29 ; $p=0.18$) was lower in frail patients. The patients classified as frail were not significantly different from the nonfrail patients on age

(Frail 73.3 ± 5.7 years old and non-frail 69.8 ± 4.2 years old $p=0.14$), BMI (Frail 25.2 ± 5.9 ; non-frail 27.5 ± 3.4 $p=0.32$) and EuroSCORE II (Frail $6.23\% \pm 8.6$; non-frail $3.65\% \pm 2.6$ $p=0.36$) but they were different on Minimental test (Frail 22.4 ± 3.8 ; non-frail 25.9 ± 2.6 $p=0.03$). Primary outcome was present on 6 patients, 2 non-frail (33%) and 4 frail (66.7%) but the difference was not significant. Mortality was present in 5 patients: 1(20%) nonfrail and 4(80%) frail. There were no reinterventions. In the secondary outcomes, postoperative atrial fibrillation was high in all patients (46%; 4 non-frail and 5 frail). No statistical differences were found in the other secondary variables. **Conclusions:** In this preliminary study, we evaluated the potential impact of frailty on patient outcomes after cardiac surgery by using the CHS Frailty Index. We observed high prevalence of frailty. Except postoperative atrial fibrillation, the primary and secondary outcomes were higher in frail patients but the difference was not significant. New analyzes with a larger sample are necessary to be clear about it.

P86- SERUM URIC ACID AND IMPAIRED COGNITIVE FUNCTION IN COMMUNITY-DWELLING ELDERLY IN BEIJING. B. Shuangling Xiu^{1,3}, Z. Zheng^{2,3,5,6,7}, S. Guan⁸, J. Zhang^{2,3}, J. Ma⁴, P. Chan^{2,3,5,6,7} (1. Department of Endocrinology, Beijing Institute of Geriatrics, Xuanwu Hospital of Capital Medical University, Beijing, China; 2. Department of Neurobiology, Beijing Institute of Geriatrics, Xuanwu Hospital of Capital Medical University, Beijing, China; 3. Department of Geriatrics, Beijing Institute of Geriatrics, Xuanwu Hospital of Capital Medical University, Beijing, China; 4. Department of Neurology, Beijing Institute of Geriatrics, Xuanwu Hospital of Capital Medical University, Beijing, China; 5. Parkinson's Disease Center of Beijing Institute for Brain Disorders, Beijing, China; 6. Key Laboratory on Neurodegenerative Disease of Ministry of Education, Beijing, China; 7. Beijing Key Laboratory for Parkinson's Disease, Beijing, China; 8. Evidence-Based Medicine Center, Xuanwu Hospital of Capital Medical University, Beijing, China)

Background: The relationship between serum uric acid (sUA) and cognitive function is contradictory. This study assessed the association between sUA and cognitive impairment in 10,039 community-dwelling subjects aged ≥ 55 years living in Beijing, China. **Method:** Participants underwent determination of sUA and an evaluation of cognitive function using the scholarship-adjusted Mini-Mental State Examination (MMSE): MMSE ≤ 17 for illiterates; MMSE ≤ 20 for primary school graduates (≥ 6 years of education); and MMSE ≤ 24 for junior school graduates or above (≥ 9 years of education). **Results:** Among the 10016 persons with valid MMSE scores, the prevalence of cognitive impairment was 9.14%. A multivariate logistic regression model including demographic, clinical and genetic parameters was performed to assess the relationship between sUA and cognitive impairment. Persons with cognitive impairment had lower sUA levels than those with normal cognitive function: (302.30 ± 82.80 vs. $312.20 \pm 84.01 \mu\text{mol/L}$, $p=0.001$). After adjusting for age, sex, lifestyle, relevant diseases and the apolipoprotein E (APOE) $\epsilon 4$ allele, stepwise logistic regression showed that participants with higher levels of sUA had a lower risk of cognitive impairment (hazard ratio (HR): 0.78; 95% confidence interval (CI): 0.62-0.96; $p=0.022$). **Conclusion:** In this baseline cross-sectional population-based sample, high levels of sUA were associated with a decreased risk of cognitive impairment.

P87- PREVALENCE OF SARCOPENIA IN COMMUNITY-DWELLING OLDER PEOPLE OF MEXICO CITY USING THE EGWSOP (EUROPEAN WORKING GROUP ON SARCOPENIA IN OLDER PEOPLE) DIAGNOSTIC CRITERIA.

M.C. Espinel-Bermúdez¹, E. Ramírez-García², C. García-Peña³, A. Salvà-Casanovas⁴, L. Ruiz-Arregui⁵, Á. Cárdenas-Bahena², S. Sánchez-García² (1. Unidad de Investigación Médica en Epidemiología Clínica, Unidad Médica de Alta Especialidad, Hospital de Especialidades, Centro Médico Nacional de Occidente, Instituto Mexicano del Seguro Social, Guadalajara, México; 2. Unidad de Investigación Epidemiológica y en Servicios de Salud, Área de Envejecimiento, Centro Médico Nacional Siglo XXI, Instituto Mexicano del Seguro Social, Mexico City, México; 3. Instituto Nacional de Geriátrica, Institutos Nacionales de Salud de México, Secretaría de Salud, México City, México; 4. Fundació Salut i Envel·liment, Universitat Autònoma de Barcelona, Barcelona, España; 5. Instituto Nacional de Ciencias Médicas y Nutrición «Salvador Zubirán». Institutos Nacionales de Salud de México, Secretaría de Salud, México City, México)

Background: The aim of this study is to determine the prevalence of sarcopenia in community-dwelling older people living in Mexico City using the EGWSOP (European Working Group on Sarcopenia in Older People) diagnostic criteria that include muscle mass, muscle strength and physical performance. **Method:** The sample population was based on older people (≥ 60 years) affiliated with the Mexican Institute of Social Security in Mexico City. Data were derived from the database of the "Cohort of Obesity, Sarcopenia and Frailty of Older Mexican Adults" (COSFOMA). Sarcopenia was diagnosed using the EGWSOP criteria: gait speed (4 m) < 0.8 m/s; handgrip strength (using a dynamometer) < 20 kg in females or < 30 kg in males, and muscle mass index (MMI) < 6.1 kg/m² in females or < 8.5 kg/m² in males (using bioimpedance analysis). **Results:** Thousand hundred seventy-seven subjects were included (median age 68.4 years, 60.2% females). 20.5% had low gait speed (19.1% females and 22.6% males); 62.4% had low handgrip strength (69.9% females and 51.2% males) and 12.3% had low muscle mass (9.9% females and 16.0% males). Only 9.9% of older people with sarcopenia (9.0% females and 11.1% males): 1.9% with severe sarcopenia (1.4% females and 2.6% males) and 8.0% with moderate sarcopenia (7.6% females and 8.5% males). **Conclusions:** Sarcopenia is present in one of ten community-dwelling older people residing in Mexico City. According to what has been reported in the literature, the prevalence of sarcopenia in older Mexican adults is similar to the community-dwelling population.

P88- COMPARISON OF QUALITY OF LIFE AMONG COMMUNITY-DWELLING OLDER ADULTS WITH THE FRAILTY PHENOTYPE. S. Sánchez-García¹, K. Gallegos-Carrillo², M.C. Espinel-Bermudez³, S.V. Doubova⁴, R. Sánchez-Arenas¹, C. García-Peña⁵, A. Salvà-Casanovas⁶, S.C. Briseño-Fabian⁷ (1. Epidemiological Research Unit and Health Services, Aging Area, XXI Century National Medical Center, Mexican Social Security Institute, Mexico City, Mexico; 2. Epidemiological Research Unit and Health Services, Mexican Social Security Institute, Morelos, Mexico; 3. Medical Research Unit in Clinical Epidemiology, Medical Unit of High Specialty, Specialty Hospital, National Medical Center West, Mexican Social Security Institute. Guadalajara, Mexico; 4. Epidemiological Research Unit and Health Services, XXI Century National Medical Center, Mexican Social Security Institute, Mexico City, Mexico; 5. National Institute of Geriatrics, National Institutes of Health of Mexico, Ministry of Health, Mexico City, Mexico; 6. Fundació Salut i Envel·liment, Autonomous University of Barcelona, Barcelona, Spain; 7. Family Medicine Unit No.14, North Delegation, Mexican Social Security Institute, Mexico City, Mexico)

Background: To compare the perception of the quality of life (QOL) of community-dwelling older adults with the phenotype of frailty. **Method:** Cross-sectional analysis of baseline data of the «Cohort of Obesity, Sarcopenia and Frailty of Mexican Older Adults» (COSFOMA). Operationalization of frailty was carried out using the phenotype as follows: weight loss, self-report of exhaustion, low physical activity, slow gait and weakness. QOL was measured using two scales: World Health Organization Quality of Life of Older Adults (WHOQOL-OLD), which is a specific instrument for the elderly population, and Short Form-36 Health Survey (SF-36), a generic instrument to evaluate the QOL related to health. One-way analyses of variance were conducted to assess the differences among the three phenotypes of frailty and QOL perception. **Results:** There were 1252 older adult participants who were analyzed; 11.2% (n = 140) had frailty, 50.3% (n = 630) pre-frailty and 38.5% (n = 482) were not frail. The mean (\pm SD) total score of the WHOQOL-OLD according to the phenotype of frailty was 60.3 (13.9) for those with frailty, 67.4 (12.7) pre-frailty and 74.4 (18.0) not frail (ANOVA, $p < .001$). The mean (\pm SD) of the SF-36 of the physical and mental component measures the sum, 38.9 (9.9) and 41.9 (11.3) with frailty, 45.7 (9.1) and 46.6 (9.8) pre-frailty and 49.6 (7.3) and 49.4 (7.9) not frail, respectively (ANOVA, $p < .001$). **Conclusions:** Frailty is observed in 1/10 community-dwelling older adults. Those with frailty and pre-frailty had a lower perception of QOL compared with those who were not frail.

P89- FRAILTY IN COMMUNITY-DWELLING OLDER ADULTS: ASSOCIATION WITH ADVERSE OUTCOMES. S. Sánchez-García¹, C. García-Peña², A. Salvà-Casanovas³, R. Sánchez-Arenas¹, V. Granados-García¹, J. Cuadros-Moreno⁴, L. Bárbara Velázquez-Olmedo⁵, Á. Cárdenas-Bahena¹ (1. Unidad de Investigación Epidemiológica y en Servicios de Salud, Área de Envejecimiento, Centro Médico Nacional Siglo XXI, Instituto Mexicano del Seguro Social, Ciudad de México, México; 2. Instituto Nacional de Geriátrica, Institutos Nacionales de Salud de México, Secretaría de Salud, Ciudad de México, México; 3. Fundació Salut i Envel·liment de la Universitat Autònoma de Barcelona, Barcelona, España; 4. Coordinación de Educación en Salud, Instituto Mexicano del Seguro Social, Ciudad de México, México; 5. División de Estudios Profesionales, Facultad de Odontología, Universidad Nacional Autónoma de México, Ciudad de México, México)

Background: The study of frailty is important from identifies the needs for additional medical care along with adverse outcomes. This

study was to determine the prevalence of frailty and its association with adverse outcomes in community dwelling older adults. **Method:** Operationalization of the phenotype of frailty was performed using the criteria of Fried et al. (weight loss, self-report of exhaustion, low physical activity, slow gait and weakness). Adverse outcomes studied were limitation in basic activities of daily living (ADL), falls and admission to emergency services in the previous year and low quality of life (WHOQOL-OLD). **Results:** Frailty was identified in 20.6% (n=258), pre-frailty 57.6% (n=721) and not frail 21.8% (n=273). The association between frailty and limitations in ADL OR=2.3 (95% confidence interval [CI] 1.7-3.2) and adjusted OR=1.7 (95% CI 1.2-2.4); falls OR=1.6 (95% CI 1.2-2.1) and adjusted OR=1.4 (95% CI 1.0-1.9); admission to emergency services OR=1.9 (95% CI 1.1-3.1) and adjusted OR=1.9 (95% CI 1.1-3.4); poor quality of life OR=3.4 (95% CI 2.6-4.6) and adjusted OR=2.1 (95% CI 1.5-2.9). **Conclusions:** Approximately 2/10 older adults demonstrate frailty. This is associated with limitations in ADL, falls, and admission to emergency rooms during the previous year as well as poor quality of life.

P90- THE ROLE OF PREVIOUS MOBILITY AS A PREDICTOR OF DISABILITY AND DEATH AFTER A FIRST STROKE IN GERIATRIC PATIENTS WITH DEMENTIA AN OBSERVATIONAL STUDY BASED ON THE SWEDISH DEMENTIA AND STROKE QUALITY REGISTERS. B. Contreras-Escamez¹, E. Zupanic², D. Religa³, I. Kåreholt⁴, M. von Euler⁵, B. Winblad⁶, M. Eriksdotter⁷, S. García-Ptacek⁸ (1. Department of Geriatrics, Getafe University Hospital, Madrid, Spain. Division of Neurogeriatrics, Karolinska Institutet, Stockholm, Sweden; 2. Department of Neurology, University Medical Centre, Ljubljana, Slovenia and Department of Neurobiology, Care Sciences and Society, Division on Neurogeriatrics, Karolinska Institutet, Stockholm, Sweden; 3. Karolinska Institutet, Department of Neurobiology, Care Sciences and Society, Center for Alzheimer Research, Division for Neurogeriatrics, Huddinge, Sweden, Geriatric Clinic, Karolinska University Hospital, Stockholm, Sweden; 4. Institute of Gerontology, School of Health and Welfare, Aging Research Network Jönköping (ARN-J), Jönköping University, Jönköping, Sweden Aging Research Center (ARC), Karolinska Institutet and Stockholm University, Stockholm, Sweden; 5. Associate professor of Neurology Head, Karolinska Institutet Stroke Research Network at Södersjukhuset; 6. Aging Research Center, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet and Stockholm University, Stockholm, Sweden, Alzheimer's Disease Research Center, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden; 7. Geriatric Clinic, Karolinska University Hospital, Stockholm, Sweden, Karolinska Institutet, Department of Neurobiology, Care Sciences and Society, Center for Alzheimer Research, Division of Clinical Geriatrics, Stockholm, Sweden; 8. Geriatric Clinic, Karolinska University Hospital, Stockholm, Sweden, Karolinska Institutet, Department of Neurobiology, Care Sciences and Society, Center for Alzheimer Research, Division of Clinical Geriatrics, Stockholm, Sweden)

Background: Ischemic stroke and dementia are highly prevalent among geriatric populations, being both major causes of disability. Frailty is a geriatric syndrome consisting in vulnerability to develop dependency and higher risk of hospitalization and mortality when exposed to a stressor, for example stroke. Impaired mobility is a main contributor to frailty, and predicts adverse health outcomes in the older adult. Our aim is to assess the role of mobility as an independent determinant of functional impairment after stroke in patients with preexisting dementia. **Methods:** Longitudinal cohort

study using the Swedish Dementia Registry, SveDem and the Swedish Stroke registry to identify individuals suffering stroke after dementia diagnosis. A total of 1689 cases of dementia suffered a first stroke between 2007 and 2014 and were matched for age, sex, year of stroke and region with 7973 controls (individuals without dementia who also suffered a first stroke). Information on use of prescription medications was obtained from the Prescribed Drug registry (coded according to the Anatomical and Therapeutical Classification with coverage near 100%). Comorbidities were obtained from the National Patient registry (diagnoses coded according to the ICD-10). Date and causes of death were included from the Death Registry. The ability to move independently inside and outside the individual's home was used as an indicator of previous mobility. The main outcomes were 1. inhospital death, 2. accommodation at discharge, 3. death at 3 months, and 4. accommodation, mobility and help with toilet and clothing at 3 months. Data on demographics, stroke severity and care were obtained from the routine registration in SveDem and Riksstroke. Follow-up information was collected by forms filled by patients or caregivers. Continuous not normally distributed variables were described with medians and interquartile range (IQR), using Mann Whitney-U tests for p-values. For categorical variables, percentages are shown, and p-values from Pearson Chi-square with 95% confidence intervals (CI) were calculated. The significance level was set at $p < 0.05$. Logistic regressions were performed for death at discharge and at 3 months follow up, and for accommodation and mobility at 3 months, and results are shown as odds ratios (OR) with 95% CI. **Results:** Demographics and data of basal situation for cases (patients with dementia who suffered a first stroke) and controls (people without dementia who suffered a first stroke) are shown in Tables 1 and 2. Data at discharge are presented in Table 3. Death during hospitalization was greater within the groups who moved only indoors and who needed some help. Controls were more likely to die in them: 26% of controls died compared to 19% of cases in the group who moved independently only indoors; and 28% of controls and 19% of cases died in the group of those who needed some help. There was no statistically significant difference between cases and controls in the group previously independent to move. Accommodation at discharge is also shown in Table 3. Cases and controls who moved independently prior to stroke were more likely to return to home or undergoing geriatric rehabilitation than those who had an impaired mobility. A lower percentage of cases reached these outcomes. Cases were more likely to be institutionalized at discharge, and this worsened with previous mobility impairment. Outcomes at 3 months are presented in Table 4. Only the group who moved independently prior to stroke shown differences between cases and controls for death at 3 months (9.5% of cases compared to 7.3% of controls). No differences were found between cases and controls within the groups with previous impaired mobility, although they were more likely to die than the independent group. Accommodation, mobility and help with toilet and with clothing at 3 months follow up are also recorded in Table 4, with a similar pattern of results to the described for death at 3 months. OR for death at discharge, and for death, accommodation and mobility at three months are presented in Table 5. After adjustment, there were no differences between cases and controls of the same mobility group for death at discharge and at 3 months; and the OR for both outcomes were similar within same mobility group. Regarding accommodation and mobility at 3 months, OR for institutionalization and for becoming dependent were greater for cases than for controls in all groups, worsening with previous disability. Table 6 shows how, after undergoing geriatric rehabilitation, cases and controls don't differ on their probability of returning home; but cases are more likely of becoming institutionalized. **Conclusion:** Patients with dementia who suffer a first stroke did not present higher inhospital or 3 months

mortality than controls, once previous mobility was accounted for. However, institutionalization and disability after stroke were worse in patients with dementia. Their results on home discharge after a geriatric rehabilitation are promising, as they suggest that certain dementia patients benefit from rehabilitation. Previous mobility is an important prognostic marker in stroke.

Table

		Controls independent to move	Dementia patients independent to move	Controls independent only indoors	Dementia patients independent only indoors
Death at 3 months		Ref	0.98 (0.83-1.16)	1.94 (1.61-2.33)	1.84 (1.48-2.29)
Accommodation at 3 months	Home no help	Ref	Ref	Ref	Ref
	Home with help		2.68 (2.14-3.36)	2.84 (1.83-4.41)	4.95 (2.46-9.98)
	Institution		5.79 (4.53-7.41)	3.71 (2.28-6.03)	12.57 (6.22-25.40)
Mobility at 3 months	Moves outdoors	Ref	Ref	Ref	Ref
	Moves indoors		1.96 (1.58-2.43)	3.53 (2.42-5.15)	4.77 (2.91-7.81)
	Needs help to move		2.56 (2.05-3.20)	4.02 (2.74-5.90)	6.75 (4.18-10.89)

P91- ASSOCIATIONS BETWEEN HEALTH-RELATED QUALITY OF LIFE, PHYSICAL FUNCTIONING AND FALLS EFFICACY IN OLDER FALLERS RECEIVING HOME HELP SERVICES: A CROSS-SECTIONAL STUDY IN SIX NORWEGIAN MUNICIPALITIES. M. Bjerck, T. Brovold, A. Bergland (*Faculty of Health Sciences, Oslo and Akershus University College, Norway*)

Background: Falls and fall-related injuries are common in older adults and are associated with substantial economic costs that are borne by individuals, the community, and the medical system as a whole (1). An understudied group of older adults who have fallen are those receiving home help services (2). Frail elderly receiving home care are a steadily growing group in society, and can be seen as an especially vulnerable group among the older population. They have shown to fall more frequently and have a higher level of fear of falling than independent home-dwelling older adults (3). Low functional level and high level of health problems have been independently associated with the risk of falling. Previously, it has been shown that elderly home help receivers in Sweden have a lower quality of life compared to those without help, and that quality of life was negatively correlated with the amount of help needed (4). Research findings on health-related quality of life (HRQOL) in this group of fallers is lacking. HRQOL is of great interest both with respect to individuals themselves as well as a primary concern of public health administrations and professionals. The remarkable increase in life expectancy in the twentieth century implies a need to focus on factors capable of promoting a high level of HRQOL into old age. The aim of this study is to describe quality of life, physical function and falls efficacy in older adults receiving home help services, as well as examine the associations between these outcomes. **Methods:** The study is part of a project comprising a randomised controlled trial on a falls prevention programme for older fallers receiving home help services. It is carried out in six municipalities in Norway, where local physiotherapists provide the programme. In this study, baseline registrations are reported which represents a cross sectional design. Participants are recruited in cooperation with health executive officers in each

municipality. The participants are older adults, above the age of 67, receiving home help services from the primary health care sector, having experienced at least one fall during the last 12 months, are able to walk with or without walking aids, and having a Mini Mental State Examination score of 23 points or above. Outcomes measured in this study are health-related quality of life, measured by the 36-item Short Form Survey (SF-36), falls efficacy measured by Falls Efficacy Scale-International, leg strength measured by 30 seconds sit to stand test, balance measured by Bergs Balance Scale, walking speed four meter, walking habits within a week, nutritional status measured by Mini-Nutritional-Assessment and activities of daily living measured by Lawton and Brody instrumental activities of daily living scale. All measurements are performed at baseline, but also at follow-ups in the larger trial. **Results:** Data collection started in March 2016 and is finished by March 2017. A total number of 150 participants are expected to be included. In November 2016, 110 participants were included already. Results from baseline testing of older adults receiving home help services can be presented in April 2017. These results will include the baseline registrations of health-related quality of life, physical functioning, including nutritional status, and falls efficacy. Descriptive statistics and associations between the different measurements, including tests of relationships between HRQOL and physical function, and between HRQOL and falls efficacy, will be presented. Providing descriptive information on this group of elderly and analysing the associations is an important first step before assessing the effect of the intervention. It will generate information on an understudied group of frail elderly, which is important for clinical practice and future clinical research. **Conclusion:** This research project with its baseline measurements will generate new knowledge on this group of older fallers receiving home help services. New knowledge about this understudied group of frail elderly will be useful for clinicians, for health managers in the primary health care service and for policy makers. References: 1. Vieira ER, Palmer RC, Chaves PH. Prevention of falls in older people living in the community. *bmj*. 2016;353:i1419. 2. Vikman I. Falls, perceived fall risk and activity curtailment among older people receiving home-help service: Luleå tekniska universitet; 2011. 3. Meyer C, Dow B, Bilney BE, Moore KJ, Bingham AL, Hill KD. Falls in older people receiving in home informal care across Victoria: Influence on care recipients and caregivers. *Australasian journal on ageing*. 2012;31(1):6-12. 4. Fletcher PC, Hirdes JP. Restriction in activity associated with fear of falling among community-based seniors using home care services. *Age and Ageing*. 2004;33(3):273-9.

P92- GAIT SPEED AND SARCOPENIA. S. Fien¹, T. Henwood^{1,2}, M. Climstein³, E. Rathbone¹, J.W.L. Keogh^{1,4} (1. Faculty of Health Science and Medicine, Bond University, Robina, Australia; 2. School of Human Movement & Nutrition Sciences, The University of Queensland, Brisbane, Australia; 3. Exercise, Health and Performance Faculty Research Group, The University of Sydney, Australia; 4. Human Potential Centre, AUT University, Auckland, New Zealand; 5. Cluster for Health Improvement, Faculty of Science, Health, Education and Engineering, University of the Sunshine Coast, Sippy Downs, Australia)

Background: Chronic diseases are the leading cause of illness, disability and death in Australia, accounting for 90% of all deaths in 2011 (AIHW 2011b). One of the most common behavioural risk factors is physical inactivity, whereby the majority of older Australians, especially nursing home residents, have decreased physical activity thus leading to poor physical function and performance such as reduced gait speed, strength and balance (Peel, 2013). Currently, little is known in relation to the physical

determinants or risk factors for low gait speed in low-functioning older adults and those living in nursing home facilities. The aim of this study was to objectively quantify the gait speed and spatio-temporal determinants of gait among nursing home residents and to determine if the spatio-temporal determinants may predict their gait speed. **Methods:** A total of 100 nursing home residents (85.6 ± 6.7 years, range 66-99 years, 66 females) provided informed consent. Participants completed three trials of their gait speed over the 3.66 m long Gaitmat II pressure mat system. The Gaitmat II allowed calculation of gait speed as well as many spatio-temporal gait parameters (such as step length, support base, single step time, etc), which were inputted into univariable and multivariable regression analyses to predict gait speed. **Results:** The multivariable linear regression involving all independent secondary spatio-temporal outcomes identified the following factors (stride length, support base and step time) that predicted walking speed ($r^2 = 0.89$). Stride length was the strongest predictor with each 0.1m increase in stride length resulting in an average 0.09m/s (95% CI 0.06 – 0.13) faster preferred gait speed. **Conclusion:** Preliminary evidence suggests that three spatio-temporal parameters (stride length, support base and step time) predict gait speed in nursing home residents. A greater understanding of nursing home residents' gait spatio-temporal determinants may inform physical therapy and rehabilitation programs for this population. (Sterke et al, 2012). Therefore, interventions focusing on improving these spatiotemporal parameters may increase gait speed as data could assist allied health professionals in the development of more specific resistance and balance exercise prescriptions, as well as enhance the ability of clinicians to supply task relevant augmented feedback during the exercise sessions to their at-risk patients. By improving their gait speed, nursing home residents may become more physically active, which may improve their overall health, quality of life and minimise the progression of chronic disease. References: AIHW. Key indicators of progress for chronic disease and associated determinants: data report. Cat. No. PHE 142. Canberra: AIHW. Peel NM, Kuys SS, & Klein K. Gait speed as a measure in geriatric assessment in clinical settings: a systematic review. *J Gerontol A Biol Sci Med Sci*. 2013;68(1):39-46. Sterke CS, van Beeck EF, Loonman CWN, Kressig RW, van der Cammen TJM. An electronic walkway can predict short-term fall risk in nursing home residents with dementia. *Gait and Posture*. 2012;36:95-101.

P93- PREVALENCE OF FRAILTY IN RURAL LEBANON. H. Ghun¹, N. Nassif², H. Kiwan² (1. Faculty of Medicine, Lebanese University; and Geriatric Department Ain Wazein Hospital, Lebanon; 2. Geriatric Department; Ain Wazein Hospital, Lebanon)

Background: The prevalence of frailty among elders living in rural Lebanon is unknown. Frailty is an important medical syndrome associated with advancing age, dependency, disability, hospitalization and increased mortality. The aim of our study is to determine the prevalence of frailty in rural areas of Lebanon, and to identify risk factors associated with frailty in this vulnerable population. **Method:** A cross-sectional study was conducted among rural, community-dwelling elders, living in a main province of Lebanon (Shouf district). Socio-demographic characteristics, data related to geriatric health characteristics (self related health status, co-morbidities, polypharmacy, visual and hearing impairment, dental and chewing problems, urinary and stool incontinence, falls, hospitalization in the preceding year, pain assessment and lifestyle habits) were collected. Functional status was assessed using activity of daily living (ADL) and instrumental activities of daily living (IADL) scales. Multiple assessment scales were utilized including mini mental state exam (MMSE) for cognitive status, geriatric depression scale

(GDS) for psychological well being, and mini nutritional assessment scale (MNA) for their nutritional status. Frailty was assessed using Fried Phenotype criteria. Descriptive statistics were carried out on demographic and health characteristics. Chi square testing and Pearson correlation analysis were used to ascertain relationships between frailty and other independent variables. **Results:** The Shouf district has 166140 inhabitants. A total of 340 older adults (132 men (38.9%) and 208 women (61.1%)) were randomly invited from all the towns and villages to participate in the study. The mean age of the participants was 76.2 ± 7.6 yrs. Most of the male participants were married (88.6 %) whereas 50% of women were widowed. 50.6 % of seniors rated their health as good, 44.3% rated it poor. 84.7% of the elders reported the presence of chronic illness: cardiac diseases (42.9%), diabetes (32.4%), and musculoskeletal diseases (26.8%). The majority were either frail 164 (48.2%) or pre-frail 131 (38.5%), and only 45 (13.3%) were determined to be robust. Frail elders were more likely to be older (78.2 ± 7.4 years), of female gender (72%) or being married than non frail elders. They were more likely to be uneducated, never performed any work prior to retirement (57.9%), and currently not working (94.5%). Frail elders were more likely to lack a monthly income, and totally dependent on their family members (57.3%). Frail participants perceived their health status as being worse (53%) than that of others, had significantly more comorbidities (92.1%), experienced cardiac diseases (52.4%), diabetes (39%), osteoporosis (26.8%) and suffered from cerebrovascular accidents (12.2%). They were prescribed numerous medications (5.1 ± 3.5), suffered very often from hearing impairment (65.2%), swallowing problems (15.2%), urinary incontinence (47.6%), had fallen frequently during the preceding year (51.2%) and suffered from chronic pain (60.4%). Moreover, frail participants reported more hospitalization and longer length of stays than robust elders. Furthermore, frail elders were more dependent in their ADL (2.5%) and IADL (15.9%); and a higher number suffered from cognitive impairment (40.2%), experienced more depression (65.2%), and were malnourished (32.3%) than did their non frail counterparts. **Conclusion:** Frailty is highly prevalent among elders living in rural Lebanon. Frailty among Lebanese elders is associated with advancing age, female gender, being married and illiterate. It is associated with the absence of a regular income, financial dependency and with worsening reported health status. Frailty status was significantly associated with impaired cognition, low ADL and IADL, presence of depressive symptoms and malnutrition. Further studies are needed to determine whether improving those variables will decrease the prevalence of frailty among Lebanese elders living in rural communities

P94- EFFECTS OF ANTI-INFLAMMATORY PRODUCING DRUGS ON SKELETAL MUSCLE AND INFLAMMATION: A SYSTEMATIC LITERATURE REVIEW. M. Alturki^{1,2}, I. Beyer^{1,2,3}, I. Bautmans^{1,2,3} (1. Gerontology Department (GERO), Faculty of Medicine and Pharmacy, Vrije Universiteit Brussel, Laarbeeklaan 103, B-1090 Brussels, Belgium; 2. Frailty in Aging Research Group (FRIA), Faculty of Medicine and Pharmacy, Vrije Universiteit Brussel, Brussels, Belgium; 3. Department of Geriatrics, Universitair Ziekenhuis Brussel, Brussels, Belgium)

Background: Age-related disturbances in immune function induce a chronic low-grade inflammatory profile (CLIP), which aggravates sarcopenia and frailty. The aim of this study is to investigate the influence of drugs with anti-inflammatory effects (AID) on CLIP, muscle mass and muscle performance. **Methods:** PubMed and Web of Science were systematically screened for articles reporting interactions between AID and muscle mass, muscle strength and/or inflammatory markers. Studies were excluded when dealing with

food supplements not registered as drugs, specific chronic diseases (e.g. cachexia, Duchene muscular dystrophy) or dementia. Effect sizes (ES) were calculated to standardise the interaction effects, classified as small ($ES < 0.2$), medium ($0.2 \leq ES \leq 0.5$) or large ($ES > 0.5$). **Results:** Fourteen relevant studies were identified, of which only 5 were performed on older animals (1 study) and humans (2 in healthy volunteers and 2 in geriatric hospitalised patients). For those 5, AID (Ibuprofen, Acetaminophen, Celecoxib and Piroxicam) showed a general attenuation in most inflammatory markers, accompanied by improvements in muscle mass (medium to large effect for Quadriceps muscle volume ($P < 0.05$) and muscle growth regulator MuRF-1 ($P < 0.05$)), as well as improvement in muscle performance (large effect for fatigue resistance, grip work, quadriceps muscle strength, gastrocnemius, EDL, tibialis anterior, and medium effect for EMS). **Conclusions:** Our results showed that AIDs can improve muscle mass and muscle performance. However, data for older persons are scarce and beneficial effects may depend on the clinical context. Therefore, these findings highlight the elements of our ongoing research which will promote our understanding of their favourable mechanisms on elderly.

P95- LOW-MAGNITUDE HIGH-FREQUENCY VIBRATION ENHANCED OSTEOPOROTIC FRACTURE HEALING IN SENESCENCE ACCELERATED MOUSE. N. Zhang, K.-S. Leung, S. Kwoon-ho Chow, W.-H. Cheung (Department of Orthopaedics and Traumatology, Faculty of Medicine, the Chinese University of Hong Kong, Hong Kong)

Background: Sarcopenia is an age-related geriatric syndrome characterized by loss of muscle mass and muscle function. As a major risk factor of fall-induced osteoporotic fracture, the prevalence of sarcopenia is very high in fragility fracture patients¹. However, no study has investigated the relationship between sarcopenia and osteoporotic fracture healing and the current clinical practice basically does not consider sarcopenia in the treatment or rehabilitation. Low-Magnitude High-Frequency Vibration (LMHFV) is a non-invasive biophysical intervention which is proven to be efficient for normal and osteoporotic fracture healing, bone formation and remodeling in our previous studies². We also validated a new animal model of osteoporotic fracture with sarcopenia in our previous data³. In this study, we evaluated the efficacy of LMHFV on osteoporotic fracture healing in the presence of sarcopenia. We hypothesized LMHFV could enhance the osteoporotic fracture healing in the presence of sarcopenia. **Method:** Senescence-accelerated mouse prone 8 (SAMP8) was used as the sarcopenia animal model based on our previous report^{3,4} and senescence-accelerated mouse Resistant 1 (SAMR1) as control. Closed fracture was created at the right femur of 8-month-old SAMP8 ($n=50$) and SAMR1 ($n=50$). Radiographs were taken weekly post-fracture. The fractured SAMP8 or SAMR1 mice were randomized to either control (SAMP8 $n=25$ and SAMR1 $n=25$) or LMHFV (SAMP8-V $n=25$ and SAMR1-V $n=25$) groups. The mice in control groups received no treatment; those in LMHFV groups were given daily LMHFV treatment (35Hz, 0.3g) 20min/day and 5 days/week starting at day 3 postoperatively. Micro CT, microarchitecture and histology of the fractured femora were performed at week 2, 4, 6 post-fracture. 3-point bending mechanical test of the fractured and contralateral femora were performed at week 4 and 6 post-fracture. Data were presented as mean \pm SD. One-way ANOVA and post-hoc Bonferroni multiple tests were used for comparing the above-mentioned parameters among groups at all the time points. Significant level was set at $p \leq 0.05$. **Results:** At week 2 post-fracture, callus size of SAMP8 group was significantly smaller than SAMR1 group which was also reflected by the bone microarchitecture and the

histomorphometry of callus site. Callus formation was enhanced in SAMP8-V group than SAMP8 group, based on the histomorphometry and microarchitecture results, despite no significant difference of the callus measurement. On the other side, the callus formation was also significantly enhanced in SAMR1-V group as compared to SAMR1 group. At week 4 post-fracture, the callus size showed no difference between groups. However, SAMP8 group showed significantly poorer mechanical properties including ultimate load, stiffness, and energy to failure than SAMR1 group but the mechanical properties were significantly enhanced in SAMP8-V groups at week 4; micro CT data also showed better mineralization in SAMP8-V group than SAMP8 group at week 4. At week 6 post-fracture, bigger callus size of SAMP8 than SAMR1 group indicated a slower and poorer bone remodeling in SAMP8; the callus size also increased in SAMP8-V groups as compared to SAMP8 group despite not significant; however, the mechanical testing showed no difference between all the groups. **Conclusion:** Significantly higher callus area of SAMR1 at week 2 post-fracture indicated a better callus formation at the reparative phase than SAMP8. LMHFV could enhance the callus formation of SAMP8 but more efficient on SAMR1 mice, which was also supported by the 3D microarchitecture data and histology data of callus. Significantly lower callus area of SAMR1 at week 5 and 6 also indicated a faster and better bone remodeling than SAMP8. The difference between SAMP8-V and SAMR1-V at week 6 became insignificant, which also indicated that LMHFV might enhance the remodeling of SAMP8 at the later phase of fracture healing. Better mechanical properties at week 4 post-fracture showed a better healing status of the callus of SAMP8-V and groups than SAMP8 group. Micro CT data also showed a better mineralization which indicated that after LMHFV treatment, the healing process was accelerated to remodeling phase in SAMP8-V group. In conclusion, osteoporotic fracture healing was impaired in sarcopenic SAMP8 mice than normal SAMR1 mice, however, LMHFV could partly enhance the impaired osteoporotic fracture healing in the presence of sarcopenia. References: (1) Chen, et al. *J Am Med Dir Assoc*. 2014. (2) Shi, et al. *Bone*. 2010. (3) Zhang, et al. 15th Biennial Conference of the ISFR. 2016 (4) Guo, et al. *Rejuvenation research*. 2015. Acknowledgements: OTC Research Grant (Ref. No. 2014-WHKS)

P96- PREVALENCE OF LOW GRIP STRENGTH IN MIDDLE-AGED AND OLDER CHINESE PEOPLE: A PUBLIC HEALTH APPROACH FOR SARCOPENIA PREVENTION IN COMMUNITY. R. Yu¹, S. Ong², O. Cheung¹, J. Leung³, J.Woo¹ (1. *Department of Medicine & Therapeutics, the Chinese University of Hong Kong, Hong Kong*; 2. *Friesland Campina Development Center AMEA, Singapore*; 3. *The Jockey Club Centre for Osteoporosis Care and Control, the Chinese University of Hong Kong, Hong Kong*)

Background: This study aimed to evaluate the prevalence of low grip strength in middle-aged and older Chinese, to examine the reliability of a digital dynamometer, and to explore the potential of implementing grip strength assessment into routine practice. **Method:** A cross-sectional survey of Chinese volunteers (667 men and 3841 women) aged 40+ was undertaken in different community settings in Hong Kong. Grip strength was measured with Grip-D digital dynamometer. Low grip strength was defined as grip strength 2SD or more below the mean for young men and women in this study (i.e., a T-score approach). The reliability of Grip-D in relation to a hydraulic dynamometer was evaluated using intra-class correlation coefficient (ICC) and Bland-Altman plots. The effects of body position on grip strength values were also examined. **Results:** The prevalence of low grip strength was 1.6% in men and 2.8% in women aged 40-49y, and the rates increased to 16.5% in men and 20.6% in women aged

65+. ICC showed high concordance between the grip strength values measured by the two dynamometers (range 0.83-0.94). Substantial agreement also existed between the two dynamometers. However, grip strength values differed with respect to different posture and elbow position ($p < 0.05$). **Conclusion:** The prevalence of low grip strength was low among middle-aged, but common in older Chinese. Grip strength values measured by Grip-D dynamometer were reliable; however, measurements should be interpreted with caution, as grip strength values can be affected by body position. Our study also demonstrated the feasibility of the use of Grip-D dynamometer in different community settings, supporting the potential of implementing grip strength assessment into routine practice.

P97- EFFECTS OF MULTI-DOMAIN INTERVENTIONS IN (PRE)FRAIL ELDERLY ON FRAILTY, FUNCTIONAL AND COGNITIVE STATUS: A SYSTEMATIC REVIEW. L. Dedebye¹, M. Deschodt^{2,3,4}, S. Verschueren⁵, J. Tournoy^{1,3}, E. Gielen^{1,3} (1. *KU Leuven – University of Leuven, Department of Clinical and Experimental Medicine, Leuven, Belgium*; 2. *KU Leuven – University of Leuven, Department of Public Health and Primary Care, Leuven, Belgium*; 3. *University Hospitals Leuven, Department of Geriatric Medicine, Leuven, Belgium*; 4. *University of Basel, Department of Public Health, Institute of Nursing Science, Basel, Switzerland*; 5. *KU Leuven – University of Leuven, Department of Rehabilitation Sciences, Heverlee, Belgium*)

Background: Frailty is an aging syndrome caused by exceeding a threshold of decline across multiple organ systems leading to a decreased resistance to stressors. Frail elderly may show losses on several domains such as the physical, cognitive, psychological or social domain. Treatment should focus on multi-domain interventions to target multiple affected functions in order to decrease the adverse outcomes of frailty. No systematic reviews exist on the effectiveness of multi-domain interventions in a well-defined frail population. This systematic review aims to determine the effect of multi-domain interventions (≥ 2 interventions) on frailty status and score, cognition, muscle mass, strength and power, general physical functioning, specific functional tasks (e.g gait speed) and social outcomes in (pre)frail elderly aged 65 years or more. **Methods:** We searched the databases PubMed, EMBASE, CINAHL, PEDro, CENTRAL and the Cochrane Central register of Controlled Trials from inception until September 14th 2016. Additional articles were searched by citation search, author search and reference lists of relevant articles. The protocol for this systematic review was registered on PROSPERO (CRD42016032905). We included interventions targeting two or more domains (physical exercise, nutritional, pharmacological, psychological or social interventions) in participants defined as (pre)frail by an operationalized frailty definition. **Results:** Twelve studies were included, reporting a large diversity of interventions in terms of content, duration and follow-up period. Overall, multi-domain interventions tended to be more effective than mono-domain interventions on frailty status or score and general physical functioning. Physical exercise seems to play an essential role in the multi-domain intervention, with frequently improvements by an additional intervention. More specifically, the combination of a physical exercise and a nutritional intervention yielded a more positive result on frailty status or score compared to a single physical exercise or nutritional intervention. Similarly, an additional benefit in general physical functioning was found when a physical exercise intervention was added to a nutritional intervention. Muscle mass and strength also tended to improve more by multi-domain interventions compared to mono-domain interventions. Results were inconclusive for specific functional tasks and cognitive and social outcomes. **Conclusions:**

Overall, multi-domain interventions were found to be more effective than mono-domain interventions for improving frailty status, general physical functioning and muscle mass and strength. Physical exercise could be seen as the standard frailty intervention, optimally combined with at least a nutritional intervention. Evidence of beneficial effects of multi-domain compared to mono-domain interventions is limited but promising. Additional studies are needed, focusing on a well-defined frail population. Also, a core outcome set for these types of studies should be developed to improve interpretability of the heterogeneous results. Lastly, attention must be paid to the design of, the compliance to and the individual contribution of mono-domain interventions. Understanding the contribution of each mono-domain intervention will contribute to the development of more effective interventions for frail elderly.

P98- CO-APPLICATION OF LMHFV AND HMB SUPPLEMENT IMPROVES MUSCLE FUNCTION AND FIBER COMPOSITION IN SARCOPEMIC SAMP8 MICE. J. Wang, K.S. Leung, S.K.H. Chow, W.H. Cheung (*Department of Orthopaedics and Traumatology, Faculty of Medicine, the Chinese University of Hong Kong, Hong Kong*)

Background: Sarcopenia is a syndrome characterised by progressive loss of skeletal muscle mass and strength, which can lead to physical disability and poor quality of life. Pathogenesis of age-related sarcopenia include physical inactivity, malnutrition and increased oxidative stress, etc. It is recommended that resistance exercise and protein supplements can retard the progression of sarcopenia. Low Magnitude High Frequency Vibration (LMHFV) is a non-invasive biophysical intervention providing systemic cyclic mechanical stimulation to musculoskeletal system. Our previous studies have proven that LMHFV was beneficial in improving muscle strength and balancing ability. β -hydroxy- β -methylbutyrate (HMB) is a metabolite of the essential amino acid leucine, which is used to promote muscle hypertrophy and functional performance in recent years. **Method:** Animal Experimentation Ethics Approval (ref: 15-200-MIS) was obtained from The Animal Experimentation Ethics Committee of The Chinese University of Hong Kong for this research. A total of 32 7-month senescence-accelerated mouse P8 (SAMP8) male mice were randomly divided into 4 groups including no-treatment Control (CTL), LMHFV treatment only (VIB), HMB only (HMB) and combined treatment (COM) group. LMHFV (35Hz, 0.3g; 20min/day) and HMB (500mg/kg/day, 5days/week) were given to the corresponding groups at month 7 of age. Muscle mass, grip strength, muscle fiber typing and functional assessment at 3 months post-intervention (equivalent to age month 10) were compared among groups. Muscle functional assessments were done with ex vivo muscle functional test system (800A, Aurora Scientific Inc). Immunofluorescence of Myosin Heavy Chain (MHC) was performed for muscle fiber typing. Grip strength was measured by force gauge (Mark-10 Corporation, USA). Data analysis was done with one-way ANOVA and independent t-test; the significant level was set at $p \leq 0.05$. **Results:** The VIB group showed higher specific twitch force (month 10, $p=0.047$, one-way ANOVA) when compared with CTL group. The twitch force, tetanic force, specific twitch force and specific tetanic force in the COM group were all higher than that in CTL group at month 10 ($p=0.021$; $p=0.015$; $p=0.039$; $p=0.038$ respectively, one-way ANOVA). The grip strength of VIB group and COM group were significantly higher than the CTL group ($p=0.016$ and 0.000 respectively, one-way ANOVA). The type I muscle fiber of CTL group was significantly higher than the HMB group, VIB group and the COM group ($p=0.000$; $p=0.000$; $p=0.000$ respectively, one-way ANOVA). No significant difference of type IIa and type IIb fibers

were found among groups. The difference of muscle mass was not significant among groups at month 10. **Conclusion:** The present study showed that both LMHFV alone and co-application of LMHFV and HMB improved muscle function in SAMP8 mice. As recommended by EWGSOP, resistance exercise and good nutrition had good effects on sarcopenia. Similarly, the long-term combined treatment also had positive effects on muscle function, hence retarding the progress of sarcopenia in SAMP8 mice. HMB, LMHFV and the combined treatment also had positive effects on muscle fiber composition. As type IIa muscle fiber could switch into type I fiber during ageing, the percentage of type I fiber increases with age. The decrease of type I muscle fiber percentage in HMB, LMHFV and combined treatment groups suggested that the interventions could reduce the switching between type II fibers and type I fibers, thus retarding the process of sarcopenia. Insignificant muscle mass may be due to insensitive wet weight measurement, which will be improved by DXA measurement. In conclusion, the co-application of LMHFV and HMB could improve both muscle function and muscle fiber composition in SAMP8 mice, which suggested this treatment could be recommended as a potential intervention for the community elderly with sarcopenia. Acknowledgment: CUHK Direct grant (Ref: 4054238)

P99- MALNUTRITION AND INCIDENCE OF SARCOPEMIA IN CHILEAN OLDER PEOPLE. L. Lera, C. Albala, B. Angel, H. Sánchez, C. Marquez, R. Saguez, J.M. Aravena (*Public Health Nutrition Unit, INTA, University of Chile*)

Background: Sarcopenia is a syndrome characterized by a progressive loss of skeletal muscle mass and strength associated with mortality and severe adverse events on health. It is well known the importance of nutrition as a determinant of the Syndrome. The two forms of MNA-SF are widely used to assess malnutrition in older adults. The objective of this study was to determine if the risk of malnutrition at baseline, as determined by the short-form of the MNA (MNA-SF), predicts incident sarcopenia in older Chileans and to determine if calf circumference is a better predictor of incident sarcopenia than BMI. **Methods:** Follow up of 1052 community dwelling people 60y and older (mean \pm SD: 66.5 ± 4.3 years; 70.1% female), from the ALEXANDROS cohort, designed to study disability associated with obesity in Chilean older people, followed during 5-15 years, in Santiago Chile. Anthropometric measurements, handgrip strength, physical performance tests and MNA-SF were performed. Appendicular skeletal muscle mass index (SMI), was calculated as the ratio of appendicular skeletal lean mass (ASM) and height² (kg/m²). Nutritional status was defined according the following BMI categories: undernutrition BMI <20 kg/m², normal status BMI 20-24.9 kg/m², overweight BMI 25-29.9 kg/m² and obese BMI ≥ 30 kg/m². Sarcopenia was defined using a Chilean population prediction model based on the European Working Group on Sarcopenia in Older People (EWGSOP) algorithm, with cut-off points of Appendicular Skeletal Muscle Mass Index validated for the Chilean population (men: ≤ 7.45 kg/m²; women: ≤ 5.88 kg/m²). Low muscle strength was defined by a hand dynamometry ≤ 25 percentile of the Chilean older population: men ≤ 27 kg; women ≤ 15 kg. Physical performance was assessed by the combination of 3 m walking speed, five chair-stands and timed get up and go test (TUG). Undernutrition or risk of malnutrition was determined by short-form of the Mini Nutritional Assessment (MNA-SF) validated in Chile. Results: At baseline 1052 people were free of sarcopenia. After 6268 persons years of follow up, 146 new cases of sarcopenia were identified (incidence density rate = 2.3 per 100 persons/years). According MNA-SF, the proportion of undernutrition at baseline was 2.2%, lower in men than in women (1.4% and 2.6%,

respectively), and the proportion of risk of malnutrition was 33.3%. According BMI 0.4% people had undernutrition, 12.2% had BMI 20-24.9, 45.6% were and 40.8% obese. Calf circumference < 31 cm was identified in 2% of the people (mean \pm SD: 36.8 \pm 3.3). The Crude relative risk of sarcopenia in people at Risk of malnutrition was RR = 1.54; $p < 0.0001$. After age and sex adjusted logistic regression analysis the incidence of sarcopenia was strongly associated with risk of malnutrition (RR = 3.1; 95%CI: 1.4-6.6; $p < 0.01$). When BMI is included in the model the association with MNA-SF was high (RR = 2.9; 95%CI: 1.3-6.0; $p < 0.01$) being overweight (RR = 0.54; 95%CI: 0.30-0.98; $p < 0.05$) and obesity (RR = 0.15; 95%CI: 0.07-0.31; $p < 0.001$) at baseline protective factors. However when calf circumference, is added to the model only persists the association of Calf circumference with sarcopenia (RR = 0.78; 95%CI: 0.7-0.8; $p < 0.0001$). **Conclusion:** The results demonstrate that the risk of malnutrition according the MNA-SF is an important risk of incident sarcopenia. From the components of MNA-SF, calf circumference is the strongest risk factor, being the higher the calf circumference, the lower the risk of sarcopenia. **Keywords:** Incidence of sarcopenia, MNA-SF, calf circumference, older adults, Chile. **Funding:** FONDECYF 15110053 and Fondecyt Grant 1130947

P100- RELATIONSHIP BETWEEN RISK OF DYSPHAGIA AND FUNCTIONAL OUTCOMES IN COMMUNITY-DWELLING OLDER PATIENTS. S. Tagliaferri¹, L. Gionti², F. Lauretani², A. Ticinesi¹, T. Meschi², G.P. Ceda¹, M. Maggio¹ (1. Department of Clinical and Experimental Medicine, University of Parma, Parma, Italy; 2. Frailty and Multimorbidity Lab Geriatric Clinic Unit University Hospital of Parma, Parma, Italy)

Background: Oropharyngeal dysphagia (OD), defined as a swallowing disorder arising from muscle or nervous dysfunction, is a highly prevalent condition among older patients, especially when institutionalized. Its prevalence is around 13% among the total population aged 65 years and older, peaking 51% among nursing home residents. OD is frequently associated with chronic neurological diseases, including dementia, and frailty and represents a determinant of dehydration and malnutrition, and aspiration pneumonia. In spite of the severity of these complications, OD is often not detected, not explored as integrated part of comprehensive geriatric assessment and thus not promptly treated. Moreover, the independent potential contribution of OD to the decline in physical performance and low muscle function has not been investigated. The aim of the present study was to assess the risk of dysphagia in older outpatients and to investigate the relationship between the risk of dysphagia and functional outcomes, cognitive status and number of medications. **Methods:** The screening tool used for the subjective evaluation of dysphagia was the 10-item Eating Assessment Tool (EAT-10). It is a validated, self-administered, symptom-specific outcome tool commonly used in clinical practice, and useful in documenting initial symptom severity and in monitoring treatment efficacy. It includes 10 questions, with a maximum total score of 40 points; a score equal or greater than 3 points suggests a potential swallowing problem. Metabolic and nutritional outcomes considered as covariates were the Body Mass Index (BMI, kg/m²), calculated as the ratio between body weight and the squared height, and the risk of malnutrition evaluated through the MNA-SF score. The physical performance outcomes considered were the Short Physical Performance Battery (SPPB) and the muscle strength, measured at both arms with a dynamometer (mean hand-grip value, kg). We evaluated the cognitive status of subjects through MMSE and considered the number of chronic medications, with polypharmacy defined as ≥ 5 drugs. The relationship between EAT-10 and nutritional, physical, cognitive and

motor performance outcomes was first estimated through a univariate analysis model, sex- and age-adjusted. Second, a multivariate linear regression approach was used to evaluate the role of all variables at the same time. To identify most predictive factor for presence of dysphagia risk, a logistic regression analysis was run. **Results:** The community-dwelling older population evaluated at Frailty and Multimorbidity Lab Geriatric Clinic Unit University Hospital of Parma in 2016 and considered in the study was composed of $n=228$ subjects (39.9% males, 60.1% females), with a mean age of 81.3 years. In the univariate model, sex and age-adjusted, EAT-10 score was significantly and negatively correlated with SPPB score ($\beta = -0.18 \pm 0.04$, $p < 0.0001$), mean hand-grip strength ($\beta = -0.35 \pm 0.11$, $p = 0.001$) and MNA-SF score ($\beta = -0.43 \pm 0.07$, $p < 0.0001$). EAT-10 was instead not significantly correlated with MMSE ($\beta = -0.07 \pm 0.04$, $p = 0.11$). The strength of the association between EAT-10 and SPPB score and handgrip strength ($\beta = -0.29 \pm 0.10$, $p = 0.003$ and $\beta = -0.12 \pm 0.05$, $p = 0.02$, respectively) was even increased or slightly attenuated. The relationship between the risk of dysphagia and MNA-SF was not independent of the other potential confounders (age, sex, BMI, MMSE, number of medications) introduced in the multivariate model where SPPB was the only factor significantly associated with the risk of dysphagia (OR=0.82; 95%CI=0.70-0.96). **Conclusion:** In a group of community-dwelling older individuals consecutively admitted to outpatient geriatric clinic, the risk of dysphagia, investigated with the EAT-10 tool, was significantly correlated with measures of physical performance (SPPB) and muscle function (handgrip strength). The screening of OD together with a confirmatory tests, when necessary, should thus be implemented in the geriatric setting. The physiopathological association between dysphagia and physical function requires further investigation.

P101- DYNAPENIA IS AS IMPORTANT AS AT LEAST SARCOPENIA IN OLDER ADULTS: A NEW GERIATRIC SYNDROME. P. Soysal¹, E. Ates², S. Kocyigit², A. Turan Isik² (1. Kayseri Education and Research Hospital, Geriatric Center, Kayseri, Turkey; 2. Department of Geriatric Medicine, Dokuz Eylul University, Faculty of Medicine, Izmir, Turkey)

Background: Sarcopenia has been related to several adverse outcomes such as disability, falls, depression, cognitive dysfunction and mortality. Current researches show that dynapenia has critical effect on general health status like sarcopenia. The aim of this study is comparison of the effects of dynapenia, presarcopenia and sarcopenia in older adults according to comprehensive geriatric assessment (CGA) parameters and to highlight the clinical importance of dynapenia in geriatric population. **Method:** CGA including demographic characteristics, comorbid diseases, number of drugs used, cognitive functions, evaluation of mood, nutritional states, hospitalization length, basic and instrumental activity of daily living (ADL) indexes, frailty status and laboratory values were recorded in 336 consecutive geriatric patients. Cognitive functions and mood was observed via Mini Mental State Examination (MMSE), Clinical Dementia Rating (CDR), Yesavage Geriatric Depression Scale (YGDS). Frailty was evaluated according to Fried criteria including weight loss, exhaustion, low energy expenditure, slowness and weakness. 3 or more of the criteria were accepted as frail, and 1 or 2 criteria was accepted as pre-frail. Skeletal muscle mass (SMM), as well as muscle strength and gait speed (GS) were assessed by bioimpedance analysis (MC-780U Multi Frequency Segmental Body Composition Analyzer), hand dynamometer (Jamar), and the 4-meter walk test, respectively. Sarcopenia was diagnosed based on the European Working Group on Sarcopenia in Older People criteria. Sarcopenia was accepted low SMM with low handgrip strength or low

physical performance. Dynapenia was defined as handgrip strength <30kg (men) and <20kg (women) without low skeletal muscle mass. Presarcopenia was identified if patient had only low skeletal muscle mass. **Results:** In total 336 patients, 107 (31.8%) were dynapenic, 56 (16.7%) were presarcopenic, 84 (25%) were sarcopenic, and 89 (26.5%) were robust. The mean age of patients was 73.30 ± 7.51 years and 66.7 % were female. The mean age was higher and level of education is lower in dynapenia group compare to presarcopenic group ($p<0.05$). Dynapenia was tended to be higher in patients with amnesia, urinary incontinence, fall, balance problem, dementia, depression, frailty than presarcopenia ($p<0.05$). In addition to these findings while frailty scores, number of drugs used, YGDS and CDR scores, Charlson Comorbidity Index, Timed Up and Go were higher in dynapenia group; vitamin D, serum calcium level, Tinetti Performance-Oriented Mobility Assessment (balance/gait/total), basic ADL, instrumental ADL, MMSE scores were lower than presarcopenia group ($p<0.05$). Furthermore, comparison of the sarcopenic and dynapenic patients was demonstrated no difference in the CGA and laboratory parameters mentioned before ($p>0.05$). **Conclusion:** Compared to presarcopenia, dynapenia is more relevant to clinical outcomes such as cognition, falls, mood, balance and gait functions. It might be a new geriatric syndrome that is as important as at least sarcopenia in older adults. Therefore, dynapenia should be kept in mind, whatever the muscle mass is, in sarcopenia practice. Our results may open new horizons about dynapenia. Dynapenia might be the first criteria of sarcopenia or it might be accepted as a new geriatric syndrome.

P102- ORTHOSTATIC HYPOTENSION IS NOT ASSOCIATED WITH SARCOPENIA AND FRAILTY IN OLDER ADULTS.

E. Ates¹, S. Emre Kocyigit¹, P. Soysal², O. Dokuzlar¹, A.E. Aydin¹, A. Turan Isik¹ (1. Department of Geriatric Medicine, Dokuz Eylul University, Faculty of Medicine, Izmir, Turkey; 2. Kayseri Education and Research Hospital, Geriatric Center, Kayseri, Turkey)

Background: Sarcopenia and frailty are two geriatric syndromes that lead to falls, gait and balance problems in older adults. Orthostatic hypotension (OH) is a prevalent geriatric syndrome but may be overlooked despite numerous complications such as mortality, ischemic stroke, falls, gait and balance problems, cognitive deficit, and depression, too. Although, all these three syndromes might be cause falls and gait and balance problems, the interrelation between sarcopenia, frailty and OH is not detailed, to date. In addition, previous studies suggest that the pump activity of the muscle mass in the calf region is involved in the etiopathogenesis of OH by affecting the venous return. Therefore, in this study, it is aimed to evaluate whether the relationship between OH and sarcopenia or frailty in older adults. **Methods:** 325 older adults were included in this prospective study. Comprehensive Geriatric Assessment (CGA) was performed to each participant. The diagnosis of sarcopenia was made according to EWGSOP criteria. We used the presence of both low muscle mass and low muscle function (strength and performance) for the diagnosis sarcopenia. Skeletal muscle mass (SMM), as well as strength and gait speed (GS) were assessed by bioimpedance analysis (MC-780U Multi Frequency Segmental Body Composition Analyzer), hand dynamometer (Jamar), and the 4-meter walk test, respectively. Sarcopenia was diagnosed based on the European Working Group on Sarcopenia in Older People (EWGSOP) criteria. Sarcopenia was accepted low SMM with low handgrip strength or low physical performance. Criteria created by FRIED were used for the diagnosis of frailty. We asked whether weakness, shrinking, slowness, low activity, exhaustion. Participants presenting with 0 criteria were described as robust, those with 1 or 2 as prefrail and those with 3 or more as frail. The OH is defined as drop a systolic

blood pressure > 20 mmHg or a diastolic blood pressure > 10 mmHg. In our study, groups of systolic and diastolic OH were evaluated separately, according to both subgroups of frailty and sarcopenia. Also according to body composition parameters, both diastolic and systolic OH groups were examined separately. **Results:** 66% of the 325 participants were female, and the mean age 73.22 ± 7.14 . While the prevalence of robust, prefrail and frail were 27.1%, 46.5% and 26.5%, respectively; the prevalence of robust, presarcopenia and sarcopenia were 58.0%, 16.9%, and 25.1%, respectively. Compared to all these subgroups, there were no difference between the prevalence of OH, systolic OH (SOH), and diastolic OH ($p>0.05$). In addition, it was demonstrated that there were not any relationship between OH and body composition parameters including lower and upper extremity muscle mass as well as muscle strength ($p>0.05$). **Conclusion:** In this cross-sectional prospective study, it was demonstrated that sarcopenia and frailty might not be at risk for orthostatic hypotension in older adults. However, this finding should be supported by further longitudinal studies.

P103- ASSOCIATIONS BETWEEN BODY MASS INDEX, SARCOPENIA AND HEALTH-RELATED QUALITY OF LIFE IN A HOSPITALIZED OLDER PEOPLE.

E.L. Jacobsen¹, T. Brovold¹, A. Bergland¹, A. Bye^{2,3} (1. Department of Physiotherapy, Oslo and Akershus University College of Applied Sciences, Norway; 2. Department of Nursing and Health Promotion, Oslo and Akershus University College of Applied Sciences, Norway; 3. Regional Centre for Excellence in Palliative Care, Department of Oncology, Oslo University Hospital, Norway)

Background: Geriatric patients are a high-risk population for malnutrition, muscle loss and decreased muscle strength. Both malnutrition and sarcopenia predispose for falls, injuries and disability, which may lead to acute hospitalization. All of these factors may affect Health-Related Quality of Life (HRQoL) in a negative way. Hence, the aim of this study is to explore the association between sarcopenia, malnutrition and HRQOL. **Method:** Acute geriatric patients recruited from two hospital wards in Norway were included. The inclusion criteria were: ≥ 70 years and admitted to an acute geriatric ward. The exclusion criteria included terminal illness, Mini-Mental State Examination <23 . Sarcopenia was diagnosed using the mid-arm muscle circumference, gait speed and grip strength, in accordance with the European Working Group on Sarcopenia in Older People (EWGSOP) algorithm. BMI (kg/m²) was used to define malnutrition by using cut-offs in accordance with the Norwegian Directorate of health for elderly ≥ 70 years; BMI < 21 ; underweight indicating malnutrition, BMI 22-27; normal weight and BMI >27 ; overweight. HRQOL was measured with The Medical Outcome Study 36-item Short Form (SF-36). The SF-36 consists of 36 items, grouped into eight multi-item scales measuring: mental health (MH), vitality (VT), bodily pain (BP), general health (GH), social functioning (SF), physical functioning (PF), role limitations due to physical problems (RP) and role limitations due to emotional problems (RE). All the scales goes from 0-100, whereas zero indicate a poor HRQoL and 100 indicate a good HRQoL. To investigate if any clinically or statistically significant differences existed between the different BMI, sarcopenia and the SF-36 domains, ANOVA with Bonferroni corrections and independent t-test's were employed. Differences on SF-36 subscales that exceeded \pm five points were considered as clinically relevant. **Results:** One hundred and eleven patients (64% females) were included with a mean age of 83.8 years (95% CI: 82.4-85.1). There was a high proportion of underweight (37%), while 17% were overweight. Sarcopenia was present in one out of three patients. No statistical significant differences were detected between sarcopenic

and non-sarcopenic patients concerning HRQoL. Regarding the BMI groups and HRQOL, the respondents with malnutrition scored clinically relevant lower than the respondents with normal BMI on VT, MH and RE. Moreover, the respondents with BMI > 27 scored lower than the respondents with normal BMI on the following scales: RP, SF and RE. However, there were no statistically significant differences between the different groups and the HRQoL domains after applying Bonferroni correction. **Conclusion:** Both underweight and sarcopenia was prevalent in the sample. BMI seemed to have an impact on the HRQOL. Both respondents with low BMI indicating malnutrition and those with overweight appeared to have a lower mean score on all the SF-36 domains than respondents with normal BMI. However, there were no statistically significant differences. These results may have several reasons; first, there may be a lack of statistical power, particularly in the overweight group with only 19 respondents. Secondly, potential confounders were not included in the present analysis, e.g. gender, reason of hospitalization and diseases. The sample may have a high burden of comorbid conditions, which may have a larger impact on the HRQoL, than BMI and sarcopenia. In further analysis, these confounders will be included.

P104- IMPACT OF DIETARY PROTEIN DISTRIBUTION ON MUSCLE FUNCTION IN ELDERLY MEN. V. Marcangeli^{1,2,3}, G. El Hajj-Boutro^{1,2,3}, L.P. Carvalho^{1,2,3,6}, M.D. Dulac^{2,3}, C.H. Pion^{2,3}, M. Belanger^{1,2,3}, G. Gouspillou^{1,2,3}, P. Gaudreau⁴, S. Chevalier⁵, J.A. Morais⁵, M. Aubertin-Leheudre^{1,2,3} (1. Department of Exercise Science, Université du Québec à Montréal, Montreal (Qc), Canada; 2. Groupe de recherche en activité physique adapté (GRAPA), Université du Québec à Montréal, Montreal (Qc), Canada; 3. Centre de Recherche de l'Institut Universitaire de Gériatrie de Montréal, Montreal (Qc), Canada; 4. Centre de Recherche du Centre Hospitalier Universitaire de Montréal and Département de médecine, Université de Montréal, Montreal (Qc), Canada; 5. The Research Institute of the McGill University Health Centre Division of Geriatric Medicine, McGill University, Montreal (Qc), Canada; 6. Department of Physical Therapy, Federal University of Sao Carlos, Sao Carlos, Brazil)

Background: Aging is associated with a decline in muscle function, in other terms muscle mass, strength and quality, which leads to an increased risk of developing physical disabilities. Actually, a daily protein intake at least 0.8 g/kgBW/day is recommended to prevent muscle loss, and which has been shown to be beneficial to enhance performance in activities of daily living. However, in addition to the protein quantity, it would seem that the protein distribution is equally essential to prevent muscle deterioration (Paddon-Jones et al., 2009). In this sense, 20g of protein per meal would be the minimum amount required to optimize muscle protein synthesis in adults (Moore et al., 2009) and thus, to prevent muscle mass loss. However, although it is recognized that muscle strength and quality are more related to physical disabilities than muscle mass itself, in our knowledge, no studies have investigated the impact of protein intake distribution according to the 20g-per meal cut point on muscle function in healthy elderly men. Thus, the aim of this study was to determine the impact of dietary protein intake distribution on muscle function (muscle mass, strength, power, quality) and functional capacities in independent inactive elderly men who ingested at least the recommended dietary allowance (RDA) of protein. We hypothesized that elderly men who ingested at least 20g of protein per meals (P20+) would present a better muscle function and functional capacities than those consuming less than 20g of protein in at least one meal. (P20-) Methods Forty-six sedentary (<7500 steps per day) elderly men (age: 72±4 yrs), were recruited and divided according their nutritional status in 2 groups: P20- who ingested <20g of protein in at least one meal (n

=25) versus P20+ who ingested at least 20g of protein in each meal (n=21). Self-reported nutritional intake (ingested total kcal; protein, carbohydrates, lipids, essential amino acids quantities) was obtained by a 3-day food diary (3 consecutive days: 2 week days and 1 week-end day). Body mass index (BMI), body composition (lean and fat masses by DXA), handgrip (hand-dynamometer) and lower limbs (isometric knee extension strength) strengths, and functional capacity (unipodal balance, normal 4m-walking speed, chair test and stair tests) were assessed. Physical activity level was estimated using a tri-axial accelerometer (Sensewear Armband; 7 consecutive days). Parametric t-tests were used to compare both groups (SPSS 22.0). p<0.05 was considered significant. **Results:** Age (P20-:71 ± 4 vs. P20+:73 ±4 yrs), body mass index (P20-:26.4 ± vs. P20+:27 ±3 kg/m²) and physical activity levels (P20-:629±2500 vs. P20+:6983±2800 steps/day; P20-:2299 ± 311 vs. P20+:2393 ± 372 Kcal/d) were identical in both groups. By design, protein intake distribution was significantly different between groups at breakfast (P20-:14.8±5.44 vs. P20+:25.3±5.92 g; p<0.001), at lunch (P20-:27±12.0 vs P20+:37±9.5 g; p=0.02) but not at dinner (P20-:45±18.0 vs. P20+:50.1± 22.4 g; p=0.41). In addition, total protein ingestion was also significantly different (P20-:1.28±0.31 vs P20+:1.50±0.43 g/kgBW/day; p= 0.015) between groups, but both ingested more than the RDA. We observed no difference for total lean mass (P20-:53.7±5.9 vs. P20+:53.23±6.4 kg), handgrip strength (P20-:40±6.3 vs. P20+:42 ±7.6 kg), lower limbs strength (P20-:518±113 vs. P20+:465 ± 154 N) between the 2 groups. Regarding the functional capacities, normal 4-m walking speed (P20-:1.9±0.3 vs P20+:1.9±0.4 m/sec), unipodal balance (P20-:41±22 vs P20+:35±18 sec), chair test (P20+:20±5 vs P20-:19 ± 6 numbers) and step test (P20-:32±4 vs P20+:30±4 numbers) were also similar in both groups. **Conclusion:** Surprisingly, according to our results, having at least 20gr of protein across meals do not improve muscle function and functional capacities in sedentary elderly men compared to those who have a more skewed protein distribution. Thus, ingesting more than 1.2g/kgBW/d of protein seems to be more important than to ingest at least 20gr/meal in healthy elderly men. Further studies, controlling diet, with different populations and larger sample sizes are needed to confirm our results and to explore 1) whether a 20g dose is essential to be consumed only at breakfast or at all meals; 2) if the protein distribution (>20g/meal) would affect muscle adaptations following physical activity interventions and; 3) the mechanisms underlying these adaptations, if positive results are observed.

P105- SARCOPENIA IN OLDER ADULTS WITH HIV AND ITS ASSOCIATION WITH FRAILTY STATUS. T. Levett, J. Wright (Department of Academic Geriatrics, Brighton and Sussex Medical School, UK)

Background: The use of effective antiretroviral therapy (ART), and consequent improved survival is driving the global ageing of the HIV-positive cohort. This demographic shift has been accompanied by an increase in non-infections comorbidities (NICM) alongside the premature occurrence of 'geriatric syndromes' such as frailty, falls and functional decline. Sarcopenia may contribute to these but has been less well described than other changes related to body composition seen in PLWH including loss of bone mineral density and lipodystrophy. We therefore aimed to describe the prevalence of sarcopenia and its associations, including frailty, in a British cohort ageing in the presence of HIV. **Methods:** 253 PLWH aged >50 using HIV clinics in the South East of England were recruited to a prospective observational study of frailty in older adults with HIV. 108 individuals underwent whole body DXA, using a GE full-body iDEXA with Lunar iDXA. Sarcopenia was defined by the European Working Group on Sarcopenia in Older People (EWGSOP) criteria,

with skeletal mass index <5.45kg/m² for women and <7.26kg/m² for men considered low. Frailty was assessed using an adapted frailty phenotype, comprising five criteria: low activity, exhaustion, weight loss, weak grip and slow walking speed. 3 or more of these defined frailty, 1-2 prefrailty and 0 robustness. The timed walk (slow ≤0.8m/second) and hand-held dynamometer grip strength (weakness based on predefined gender and BMI based cut-offs) were used in defining sarcopenia. Sarcopenia was absent or present, and categorised into pre-sarcopenia (low muscle mass), sarcopenia (low mass and reduced grip/speed) or severe sarcopenia (low muscle mass, weakness and slowness), with reference group of normal muscle mass. Data on sociodemographic, HIV, comorbidity, and functional parameters were collected at baseline and examined for association with sarcopenia. Appropriate parametric and non-parametric tests and logistic regression techniques were applied using STATA version 12. **Results:** The median age was 59.6 (IQR 54.8-66.4), with 89% male and 88.3% white ethnicity. 22/108 met sarcopenia criteria, giving a prevalence of 20.3%, including 6/108 (5.6%) with severe sarcopenia. 30.6% (33/108) were presarcopenic and 49.1% had normal muscle mass. Sarcopenic individuals were all white males and were significantly older (63.6 +/-7.0 vs. 60.0 +/-6.6; p=0.03). They were more likely to be retired or out of work (95.5% vs. 62.8%; p=0.003) with no other predictive sociodemographic or behavioural factors. Those with sarcopenia had a significantly lower mean body weight (71.5 vs. 82.6kg; p=0.003) and body mass index (24.0 vs. 27.1; p=0.008). They had higher median numbers of NICMs (3 vs. 2; p=0.015) but not non-ART medications. Additionally, they reported lower scores on the Physical Activity Scale for the Elderly (88 vs. 146; p=0.002), greater mobility problems (63.6% vs. 31.4%; p=0.005), but not falls and there were higher levels of impairment in activities of daily living (ADLs) if sarcopenic, but only significantly so for instrumental over personal ADLs (p-values 0.001 and 0.065 respectively). With regard HIV factors, sarcopenic participants were older at HIV diagnosis (47.6 vs. 42.5; p=0.042), with a non-significant trend towards diagnosis aged >50 (p=0.095) and shorter HIV duration. Nadir CD4 count was significantly lower (110 vs 174; p=0.032) with a borderline association with current CD4 <350 (p=0.05) but not actual CD4 count (p=0.14). Table 1 shows the relationship between sarcopenia and frailty. Around 50% of individuals in each frailty category had normal muscle mass, with no sarcopenia seen if robust. Sarcopenia was present in 45.1% of those with frailty, who showed low levels of presarcopenia (6.5%). All five frailty criteria were significantly more common in those with sarcopenia (p ≤0.012). Compared to normal muscle mass, an increase in level of sarcopenia (pre-, sarcopenia, severe sarcopenia) was associated with an 83% increase in odds of frailty in univariate analysis, which strengthened to a 3.4-fold increase after adjusting for age and BMI (aOR 3.42, 95% CI 1.79-6.56; p<0.001 for trend). **Conclusion:** In this group of older PLWH, sarcopenia was prevalent at 20.3% and although increasing sarcopenic states predicted frailty, it was not essential, as around 50% of those deemed frail or pre-frail had normal muscle mass. Age, NICM and low body mass were associated with sarcopenia, which when present was linked to markers of impaired physical functioning. The related HIV factors may suggest sarcopenia to be more common in those acquiring HIV later in life where age-related muscle loss may have already commenced and in those with more marked immunosuppression, both of which warrant further evaluation in larger longitudinal studies.

Table 1
Relationship between frailty and sarcopenia

N=108 (%)	Robust	Prefrail	Frail
Normal muscle mass	17 (51.5)	21 (47.7)	15 (48.4)
Presarcopenia	16 (48.5)	15 (34.1)	2 (6.5)
Sarcopenia	0 (0.0)	8 (18.2)	14 (45.1)

□² p<0.001

P106- PHYSICAL ACTIVITY AND FUNCTIONAL CAPACITY IN CHRONIC RENAL DISEASE PATIENTS UNDERGOING HEMODIALYSIS. R.L. Mór Fukushima¹, J.L. Riani Costa¹, F. de Souza Orlandi² (1. Physical Education Department, Universidade Estadual Paulista «Júlio de Mesquita» (UNESP); 2. Gerontology Department, Universidade Federal de São Carlos (UFSCar))

Background: Chronic Kidney Disease (CKD) is recognized as a serious public health problem, with increasing incidence and prevalence. It is characterized by progressive and irreversible loss of kidney function. The diagnosis of CKD associated with hemodialysis treatment may cause substantial impairments in quality of life (QOL). There is evidence in the literature that regular practice of physical activity tends to alleviate the symptoms and contribute to the attenuation of possible physical and psychological changes, improving patients' functional capacity. In this context, the main of this research was to correlate the level of physical activity and functional capacity of renal patients undergoing hemodialysis. **Method:** Cross-sectional study with a quantitative approach. A total of 84 patients in hemodialysis were enrolled from two different Renal Replacement Therapy Unit in São Paulo, Brazil. The instruments used were: the International Physical Activity Questionnaire (IPAQ) to assess the level of physical activity and the SF-36 Health Survey to evaluate the functional capacity. Spearman's correlation coefficient (r) was calculated between the total IPAQ and SF-36 scores. All ethical precepts have been respected. **Results:** The majority of participants were male (69%), mean age was 52,6 (±14,3) years. According to IPAQ, of 84 patients, 51 were considered active. The mean score of patients' functional capacity was 77,5 (±23,6) points, ranging from 0 to 100. As for the Spearman's Correlation Test between the level of physical activity and functional capacity, a direct and significant correlation was observed with r=0,411 and p-value: 0,001. This suggests that physical activity is directly related to functional capacity of renal patients in hemodialysis. **Conclusion:** Due to the increasing prevalence and incidence of people with CKD, the encouragement of regular and guided practice of physical activity is suggested in order to mitigate possible reduced functional capacity and functionality and to optimize the QOL of this population.

P107- PHYSICAL ACTIVITY AND COGNITIVE FUNCTIONING IN HEMODIALYSIS PATIENTS. R.L. Mór Fukushima¹, J.L. Riani Costa¹, F. de Souza Orlandi² (1. Physical Education Department, Universidade Estadual Paulista «Júlio de Mesquita» (UNESP); 2. Gerontology Department, Universidade Federal de São Carlos (UFSCar))

Background: Chronic Kidney Disease (CKD) is an increasingly worldwide problem. End-stage renal disease patients are, commonly, treated with hemodialysis. However, hemodialysis patients are at higher risk for frailty, physical and cognitive decline and this may be an important determinant in their quality of life (QoL). Therefore, the main of this study was to investigate the relationship between physical activity and cognitive functioning in renal disease patients undergoing hemodialysis. **Method:** Cross-sectional study with a quantitative approach. 84 hemodialysis patients were enrolled from Renal Replacement Therapy Units in São Paulo, Brazil. The

International Physical Activity Questionnaire (IPAQ) was used to assess the level of physical activity. Cognitive function was measured using the Addenbroke's Cognitive Examination Revised (ACE-R). The Mann Whitney U Test was used to determine whether there was any difference between the active and insufficiently active groups and ACE-R scores. All ethical precepts have been respected. **Results:** There was a higher prevalence of male participants (69%), mean age was 52,6 ($\pm 14,3$) years. Based on IPAQ, of 84 individuals, 51 were active. The mean score of patients' cognitive functioning was 68,6 ($\pm 14,5$) points. The score ranges from 0 to 100 points, and the cut score <78 demonstrated high sensitivity and specificity for the diagnosis of Alzheimer's disease at a mild stage. The Mann Whitney U Test showed that the active group had higher scores (69,7) than the insufficiently active group (67,0) but no statistically significant difference was found (p-value: 0,715). Thus, this results shows that the active group revealed higher scores on cognitive function. **Conclusion:** Given the high prevalence and incidence of CKD, the encouragement and emphasis on maintaining physical activity are applicable and suggested to people diagnosed with chronic renal disease in order to mitigate possible physical and cognitive decline and to optimize the QoL of this population.

Fried Frailty Phenotype	Frail (%)	Pre-Frail (%)	Robust (%)
Adults	39,70	51,37	8,82
Elderly	63,84	31,91	4,25

P108- FRAILTY OF ADULTS AND ELDERLY WITH CHRONIC KIDNEY DISEASE ON HEMODIALYSIS: APPLICATION OF THE FRIED FRAILTY PHENOTYPE. G. Dutra Gesualdo¹, J. Gomes Duarte², F. de Souza Orlandi³ (1. Ribeirão Preto College of Nursing, University of São Paulo, Brazil; 2. Department of Gerontology, Federal University of São Carlos, Brazil; 3. Department of Gerontology, Federal University of São Carlos, Brazil)

Background: Chronic diseases such as hypertension and diabetes mellitus become more prevalent, these are the main causes of Chronic Kidney Disease (CKD), so it is understandable that in recent years there is a greater demand for renal replacement therapy. The hemodialysis CKD feels threatened and insecure, which generates disorganization in their sense of identity and corporate image. The organic changes resulting from the disease, these factors may interfere with their quality of life. The objective was to assess the fragility of adults and the elderly with chronic kidney disease on hemodialysis, with application of the Fried Frailty Phenotype. **Method:** This is a descriptive, cross-sectional study developed in a Renal Replacement Therapy Unit of a municipality in the interior of State of São Paulo, Brazil. The sample met the following inclusion criteria: being 20 years old or older; Have a diagnosis of CKD; Be in hemodialysis treatment and agree to participate in the research with the signature of the Free and Clarified Consent. We evaluated 68 adults and 47 elderly people through the Instrument of Characterization of Participants and the Fried Fragility Phenotype whose classification is given by: 0 robust individuals, 1-2 individuals pre-fragile and 3, 4 or 5 indicate fragility. **Results:** Of the 68 chronic renal adults, 63,24% were male, with mean age of 43.74 (± 9.89) years, the majority of ethnic white (42.65%), with time of hemodialysis mean was 53.44 (± 56.99) months. The 47 elderly patients with chronic renal failure had a mean age of 68.08 (± 5.98), the majority (78.72%) were males and white (78.72%), with a mean hemodialysis time of 46.87 (± 46.81) months. Fragility data are described in the table below. **Conclusion:** The importance of assessing the fragility not only of the elderly, but also of the advanced chronic

renal adults, since it is difficult to face and compromises physical, psychological, social and even family aspects. In view of this, we intend to follow up this study by identifying the factors that are contributing to the syndrome, with the future intention of minimizing these factors and consequently the fragility conditions..

P109- PREDICTORS OF FRAILTY IN THE ELDERLY WITH CHRONIC KIDNEY DISEASE ON HEMODIALYSIS. G. Dutra Gesualdo¹, J. Gomes Duarte², F. de Souza Orlandi³ (1. Ribeirão Preto College of Nursing, University of São Paulo, Brazil; 2. Department of Gerontology, Federal University of São Carlos, Brazil; 3. Department of Gerontology, Federal University of São Carlos, Brazil)

Background: Frailty is more common among patients with chronic kidney disease (CKD) than among individuals without this disease, due to factors associated with the disease such as protein waste, anemia, inflammation, acidosis and hormonal disorders. The objective was to identify sociodemographic, clinical, cognitive and functional factors of elderly patients with CKD undergoing hemodialysis. **Method:** This is a cross-sectional, cross-sectional study developed in a Renal Replacement Therapy Unit of a municipality in the interior of the state of São Paulo. The sample met the following inclusion criteria: Be 60 years old or older; Have a diagnosis of CKD; Being on hemodialysis for at least 6 months and agreeing to participate in the research with the signing of the Informed Consent Term. Forty-five individuals were evaluated through the Participants Characterization Instrument and the Tilburg Frailty Indicator, whose classification is given by: 0-4 non-fragile individuals and 5-15 fragile individuals. Logistic regression analysis was used to identify the associated factors. **Results:** Of the 45 elderly people evaluated, 73.33% were male, with a mean age of 68.44 (± 6.34) years, with a mean per capita income of 2.05 (± 2.40) minimum wages. The mean time of hemodialysis was 48.91 (± 46.81), ranging from 6 to 264 months. The majority (48.89%) described their health as being good. With regard to fragility, 73.33% were fragile and 26.67% were healthy. Fragility was associated with health status, elderly individuals with regular or poor health presented higher levels of fragility (OR = 0.67, 95% CI 0.005-0.87, p = 0.039). **Conclusion:** The identification of fragility and its associated factors in patients with chronic kidney disease should receive special interventions aimed at preserving the independence, quality of life and survival of patients.

P110- IMPACT OF A 12-WEEK MIXED POWER TRAINING ON BODY COMPOSITION AND FUNCTIONAL CAPACITY IN ELDERLY MEN WITH OR WITHOUT TYPE 2 DIABETES. G. El Hajj Boutros^{1,2,3}, C.H. Pion^{1,2,3}; L.P. Carvalho^{1,2,3,6}, M.-N. Beaulieu^{1,2,3}, J.A. Morais⁴, P. Gaudreau⁵, A. Karelis^{1,2,3}, M. Aubertin-Leheudre^{1,2,3} (1. Department of Exercise Science, Université du Québec à Montréal, Montreal (Qc), Canada; 2. Groupe de recherche en activité physique adapté (GRAPA), Université du Québec à Montréal, Montreal (Qc), Canada; 3. Centre de Recherche de l'Institut Universitaire de Gériatrie de Montréal, Montreal (Qc), Canada; 4. The Research Institute of the McGill University Health Centre- Division of Geriatric Medicine, McGill University, Montreal (Qc), Canada; 5. Centre de Recherche du Centre Hospitalier Universitaire de Montréal and Département de médecine, Université de Montréal, Montreal (Qc), Canada; 6. Department of Physical Therapy, Sao Carlos (SP), Brazil)

Background: Type 2 diabetes (T2D) in older adults is associated with unfavorable changes in body composition, which may increase their risk of cardiovascular diseases, and functional disabilities, which

often leads to loss of autonomy. Emerging evidence has shown that power training may be more efficient in improving functional capacities and muscle mass and strength than endurance training. Therefore, the aim of this study was to examine the impact of 12 weeks of a mixed power training (MPT) on body composition, strength and functional capacities in normal (NT2D) and in pre-diabetes (PT2D) and T2D elderly men. As T2D elderly people have lower functional capacities and muscle strengths than healthy elders, we hypothesized that MPT would improve more body composition, strength and functional capacities in PT2D/T2D group than in NT2D group. **Methods:** Forty-four elderly men (age 70±4 y) were recruited to participate and completed the exercise intervention. They were divided into two groups according to ATPIII and ADA glucose cut-points: Individuals without diabetes (n=24) (NT2D; fasting glucose <6.1 mmol/l and PT2D or T2D participants (PT2D/T2D; n=20) (fasting glucose ≥6.1 mmol/l or use of antidiabetic medication). Diastolic and systolic blood pressure, body mass index (BMI), body composition (DXA, fat mass [FM] in %; lean mass [LM] in kg), muscle strength (MS; leg press and chest press: 1- Repetition Maximum [1-RM]), muscle quality (MQ, 1RM leg press/Leg-LM;), functional capacities (Timed up and go (TUG) test at fast and self-paced walking speed, stair steps, chair stand and balance tests), fasting insulin and glucose, as well as insulin sensibility (QUICKI) were measured before and after a 12-week of MPT (3 times/week; 1h/session; tempo: 1-0-2-0). MPT consisted of 4 high-velocity resistance exercise comprising major muscle groups and 6 functional exercises comprising balance and functional tasks. Groups were compared at baseline (mean±SD) and after the intervention (delta changes (%)) with parametric t-tests. Effects of MPT were observed within group using paired-t test. Significant set at p-value<0.05. **Results:** At baseline (T0), no differences on age (NT2D:70±4.5 vs. PT2D/T2D: 68.6±7.4 yrs; p=0.95) , BMI (NT2D:27.0±2.4 vs. PT2D/T2D: 27.9±2.3 kg/m²; p=0.63), functional capacity tests, body composition (total LM (kg): NT2D:51.7±4.5 vs. PT2D/T2D: 54.8±5.1; p=0.38; Total FM (%):NT2D:30.4±3.9 vs. PT2D/T2D: 30.4±4.8; p=0.43), muscle strengths (Leg press (kg): NT2D:139.0±38.5 vs. PT2D/T2D: 155.3±55.0 ;p=0.13; Chest press (kg): NT2D:77.8±19.1 vs. PT2D/T2D: 82.5±27.7; p=0.51) and quality (Leg press/Leg-LM (kg/kg): NT2D:1.7±.4 vs. PT2D/T2D: 1.8±0.5; p=0.11) were observed between the both groups. After the intervention, FM (NT2D:29.7±4.3, p=0.14; PT2D/T2D: 29.2±3.5, p=0.003) and diastolic blood pressure (NT2D:73.2±5.4, p=0.05; PT2D/T2D: 73.8±7.1, p=0.002) significantly decreased, whereas total LM (NT2D:52.3±4.5, p=0.01; PT2D/T2D: 55.9±5.4, p=0.004), MS (NT2D:197.2±74.0, p=0.0001; PT2D/T2D: 197.6±68.9, p=0.0001) and MQ (NT2D: 2.4±0.8, p=0.0001; PT2D/T2D: 2.3±0.7, p=0.0001) significantly increased in both groups. Moreover, performance in the functional capacity tests significantly improved for the normal TUG (NT2D:9.1±1.4, p=0.001; PT2D/T2D: 8.9±1.2, p=0.05), fast TUG (NT2D:6.4±1.1, p=0.0001; PT2D/T2D: 6.2±0.8, p=0.001) and number of steps in the stair test (NT2D:34.6±7.0, p=0.0001; PT2D/T2D: 33.8±4.7, p=0.0001) in both groups. In addition, only T2D group significantly decreased systolic blood pressure (T0: 131.4±9.8 vs. T12: 123.1±9.0 mmhg, p=0.004) as well as legs (T0:23.8±4.8 vs. T12: 22.7±4.9%, p=0.001), and trunk (T0:38.2±3.5 vs. T12: 37.0±3.6 %, p=0.01), FM (p<0.05). Furthermore, insulin (T0:65.9±47.6 vs. T12: 50.8±31.5 mmol/L, p=0.02), and QUICKI (T0: 0.33±0.03 vs. T12: 0.35±0.04; p=0.05), significantly improved (p<0.05) in T2D group. No significant group effect was observed. **Conclusion:** MPT was associated with favorable changes in body composition, strength and functional capacities independently of T2D status. Therefore, healthcare professionals should recommend this type of exercise training in clinical settings as a promising physical intervention to prevent or delay the development

of metabolic and cardiovascular disorders in the elderly, especially in those with T2D.

P111- RAPID COGNITIVE SCREEN: TRANSLATION AND ADAPTATION IN THE BRAZILIAN CONTEXT. F. de Souza Orlandi¹, R. Brochine Lanzotti² (1. Department of Gerontology, Federal University of São Carlos, Brazil; 2. Department of Gerontology, Federal University of São Carlos, Brazil)

Background: The screening of cognitive alterations in the elderly using easy-to-apply instruments becomes relevant, especially in developing countries such as Brazil. In this context, the objective of this study was to translate and adapt the Rapid Cognitive Screen (RCS) to the Brazilian context. **Method:** This is a methodological study of translation and adaptation of the RCS, which is present in the Rapid Geriatric Assessment, for the Brazilian context. All ethical precepts have been respected. All steps were adopted in the international literature. **Results:** The translation was done by two bilingual translators with experience in the translation of health texts. Later, the consensus version was established, between translators and researchers. The instrument was then back-translated by two others who were unaware of the purpose of the study and who had English as the mother tongue. Subsequently the instrument was evaluated by a committee of experts composed of six judges. After the evaluation of said committee, a version was created for the pre-test, which will be applied to elderly people in the community and elderly people with chronic kidney disease, to verify if it is adapted for the target population. **Conclusion:** The RCS instrument is translated and adapted until the stage of the committee of experts. After the instrument adaptation is finalized, the validation stage will be developed, for further dissemination for use in Brazil.

P112- SIMPLIFIED NUTRITIONAL ASSESSMENT QUESTIONNAIRE: TRANSLATION AND ADAPTATION IN BRAZIL. F. de Souza Orlandi¹, R. Brochine Lanzotti² (1. Department of Gerontology, Federal University of São Carlos, Brazil; 2. Department of Gerontology, Federal University of São Carlos, Brazil)

Backgrounds: Nutritional assessment of the elderly through easy-to-apply instruments becomes relevant, especially in developing countries such as Brazil. In this context, the objective of this study was to translate and adapt the Simplified Nutritional Assessment Questionnaire (SNAQ) to the Brazilian context. **Method:** This is a methodological study of translation and adaptation of the SNAQ, which is present in the Rapid Geriatric Assessment, for the Brazilian context. All ethical precepts have been respected. All steps were adopted in the international literature. **Results:** The translation was done by two bilingual translators with experience in the translation of health texts. Later, the consensus version was established, between translators and researchers. The instrument was then back-translated by two others who were unaware of the purpose of the study and who had English as the mother tongue. Subsequently the instrument was evaluated by a committee of experts composed of six judges. After the evaluation of said committee, a version was created for the pre-test, which will be applied to elderly people in the community and elderly people with chronic kidney disease, to verify if it is adapted for the target population. **Conclusion:** The SNAQ instrument is translated and adapted until the stage of the committee of experts. After the instrument adaptation is finalized, the validation stage will be developed, for further dissemination for use in Brazil.

P113- RISK OF FALLS AND FRAGILITY IN ELDERLY PEOPLE WITH CHRONIC RENAL DISEASE ON HEMODIALYSIS TREATMENT. J. Gomes Duarte¹, F. de Souza Orlandi² (1. Department of Gerontology, Federal University of São Carlos, Brazil; 2. Department of Gerontology, Federal University of São Carlos, Brazil)

Background: Population aging is a worldwide reality that demands more and more efficiency in the care of the elderly. Chronic diseases such as hypertension and diabetes mellitus become more prevalent, these are the main causes of Chronic Kidney Disease (CKD), so it is understandable that in recent years there is a greater demand for renal replacement therapy for Elderly patients. The person with CKD on hemodialysis feels threatened, insecure which causes disorganization in their sense of identity and body image due to the organic changes resulting from the disease, these factors can interfere in their quality of life and can make the patient fragile. The objective of the study was to evaluate the fragility and risk of falls of chronic renal elders in hemodialysis treatment, with application of the Fried Fragility Phenotype and the Fall Risk Score. **Method:** This is a cross-sectional, cross-sectional study developed in a Renal Replacement Therapy Unit of a city in the interior of the state of São Paulo, southeastern Brazil. The sample met the following inclusion criteria: Be 60 years old or older; Have a diagnosis of CKD; Be in hemodialysis treatment and agree to participate in the research with the signing of the Term of Free and Informed Consent. We evaluated 4 elderly people through the Participants Characterization Instrument, the Fried Fragility Phenotype and the Fall Risk Score. **Results:** Of the 47 elderly individuals evaluated, 78.7% were male and 21.3% female, the age comprised was 60 to 83 years, with a mean of 68.1 (± 6.0) years, being the White majority (78.7%). The mean time of hemodialysis was 41.0 (± 44.1) months, most 61.7% (n = 29) presented arterial hypertension as the underlying disease. Regarding nutritional evaluation, 27.6% were underweight. Regarding the fragility, 65.9% (n = 31) were fragile, 29.8% (n = 14) were pre-fragile and 4.3% (n = 2) were robust. Regarding the risk of falls, 83.33% had a high risk of falls, 87.5% fell from height, 75% caused by extrinsic factors and 79.3% fell at home. **Conclusion:** In view of the above, it is important to evaluate the fragility of elderly patients with advanced chronic kidney disease, since this is difficult to cope with and compromises physical, psychological, social and even family aspects. It should be noted that 65.9% of the participants presented fragility and 29.8% were pre-fragile. In view of this, we intend to follow up this study by identifying the factors that are contributing to the syndrome, with the future intention of minimizing these factors and consequently the fragility conditions.

P114- CHRONIC RENAL DISEASE: APPLICATION OF DUAL ENERGY X-RAY ABSORPTIOMETRY IN PATIENTS UNDERGOING HEMODIALYSIS TO IDENTIFY SARCOPENIA AND RISK OF FRACTURES. J. Gomes Duarte¹, F. de Souza Orlandi² (1. Department of Gerontology, Federal University of São Carlos, Brazil; 2. Department of Gerontology, Federal University of São Carlos, Brazil)

Background: Sarcopenia is a chronic condition associated with the physiological process of aging and is defined by the reduction of muscle mass, strength and function. In chronic kidney disease (CKD), sarcopenia is prevalent and is associated with increased morbidity and mortality and the occurrence of cardiovascular complications. The objective of this study was to evaluate patients with CKD on hemodialysis, through dual energy X-ray Absorptiometry, for the diagnosis of sarcopenia. **Method:** This is a descriptive, cross-

sectional study of 20 patients with CKD on hemodialysis in a renal replacement therapy unit in the State of São Paulo - Brazil. All ethical precepts have been respected. Patients were assessed using dual energy X-ray Absorptiometry (Hologic's DEXA). Results: Of the 20 patients evaluated by DEXA, 60% were of the masculine sex (n = 12), with a mean age of 51.8 years (between 25 and 79 years). Of the patients evaluated, 65% (n = 13) presented medium or high risk for fracture and 65% (n = 13) were classified as sarcopenic individuals. **Conclusion:** It is concluded that the majority of patients undergoing hemodialysis had a medium to high risk for fractures and 65% were classified as sarcopenic. More studies have to be performed with this population, including the younger ones, since both sarcopenia and bone problems are prevalent in the chronic renal population..

P115- ASSOCIATIONS BETWEEN SELF-ASSESSED KYPHOSIS AND CHEWING DISORDERS IN FRAIL COMMUNITY-DWELLING ELDERLY INDIVIDUALS. M. Okura¹, M. Ogita², M. Yamamoto³, T. Nakai³, T. Numata⁴, H. Arai^{1,5} (1. Department of Human Health Sciences, Kyoto University Graduate School of Medicine, Kyoto, Japan; 2. Department of Health Science, Kyoto Koka Women's University, Kyoto, Japan; 3. Kami-cho Municipal Office, Welfare section, Hyogo, Japan; 4. Kami-cho Municipal Office, Health section, Hyogo, Japan; 5. National Center for Geriatrics and Gerontology, Aichi, Japan)

Background: Degenerative changes affecting the spine accumulate with increasing age and contribute to the development of kyphosis. In particular, hyper-kyphosis is associated with several adverse health outcomes, including thoracic pain, decreased pulmonary function, limited physical functioning, increased fall risk, decreased health-related quality of life, increased fractures, and increased mortality. Similarly, it is clear that ability to eat firm foods with the back teeth (chewing ability) has a strong influence on both the physical and mental condition of older people. However, there is no clear evidence on the associations of kyphosis and chewing ability with health outcomes among community-dwelling older people. Therefore, we investigated whether kyphosis and chewing disorders are associated with overall frailty and examined its specific domains in community-dwelling older people. **Method:** Older residents in institutions or in need of long-term care insurance services were excluded and self-administered questionnaires were sent to 5,401 older adults in 2013. The total response rate was 94.3% (mail: n=3,952; home-visit: n=1,142). Frailty was defined as a score of eight points or more on the Kihon Checklist (KCL; a 25-item self-reported screening for 6 frailty domains). We excluded data if more than half of the KCL 25 items had defective answers, or answers to both kyphosis and chewing ability were not available. Therefore, five patterns of data sets were created using Multiple Imputation (MI). Subsequently, our analysis included data from the remaining 5,083 older adults. The questionnaire included the KCL, and items on kyphosis and chewing ability. Logistic regression analysis was used to identify the effect of both "no kyphosis" and "good chewing ability" on frailty when grouped together by the two questions into three groups: no kyphosis and good chewing ability (GG), kyphosis and poor chewing ability (BB), and kyphosis and good chewing ability or no kyphosis and poor chewing ability (GB/BG). Both unadjusted and adjusted analyses were carried out. The results have been presented as odds ratios (OR) and 95% confidence intervals (CI) with reference to BB, and the ORs were adjusted for age and sex. **Results:** The number of cases with incomplete data was 1,307 (25.7%). The mean age was 75.9 years and 58.3% of the participants were female. All data have been expressed as the mean of the five patterns generated using MI. The prevalence of frailty, mobility disorder, malnutrition, oral function

disorder, isolation, cognitive impairment, and depressive mood was 32.1%, 33.3%, 1.5%, 19.7%, 12.7%, 35.0%, and 25.9%, respectively. In addition, the prevalence of kyphosis and poor chewing ability was 38.4% and 19.7%, respectively. Moreover, the prevalence of BB, BG/GB, and GG were 8.9%, 39.3%, and 50.8%, respectively. In the MI dataset, those participants who agreed with the statement, “I don’t think I have kyphosis” had significantly lower odds for being frail (OR=0.406, 95% CI=0.356–0.462). Similarly, those who had good chewing ability showed lower odds for frailty (OR=0.377, 95% CI=0.324–0.440). When the two were analyzed simultaneously, the GB/BG group (OR=0.396, 95% CI=0.315–0.498) and the GG group (OR=0.162, 95% CI=0.129–0.204) were less likely to be frail than the BB group was. We confirmed that these results were consistent with those derived from the whole data, including missing data. **Conclusion:** Based on these results, the presence of kyphosis or poor chewing ability was found to be related to frailty, and we found that these two factors had an additive effect. Because both these health issues are widely observed with ageing and are easily noticed even by older people themselves and by others around them, it is conceivable to prevent frailty through continued everyday health activities starting at the late middle age.

P116- EFFECTS OF A HOME BASED EXERCISE PROGRAM USING A GERONTECHNOLOGY VERSUS A SUPERVISED EXERCISE PROGRAM ON FUNCTIONAL CAPACITIES IN COMMUNITY-DWELLING OLDER ADULTS AFTER A MINOR INJURY. D. Martel^{1,2,3}, M. Lauzé^{1,2,3}, A. Agnoux^{1,2,3}, M.-J. Sirois^{4,5}, M. Émond^{4,5}, R. Daoust⁶, M. Aubertin-Leheudre^{1,2,3} (1. Département des Sciences de l’activité physique, Université du Québec à Montréal, Montréal (Qc), Canada; 2. Groupe de recherche en activité physique adaptée, Université du Québec à Montréal, Montréal (Qc), Canada; 3. Centre de recherche de l’Institut universitaire de gériatrie de Montréal, Montréal (Qc), Canada; 4. Centre d’Excellence en Vieillesse de Québec (CEVQ), Québec, Canada; 5. Centre de Recherche du Centre hospitalier universitaire de Québec, Hôpital de l’Enfant-Jésus, Québec (Qc), Canada; 6. Hôpital du Sacré-Coeur de Montréal, Montréal (Qc), Canada)

Background: In Canada, 16.1% of the population is 65 years old and older. Among Canadian community-dwelling older adults, 24% are considered frail while 32% are considered pre-frail. More than 20% of visits in Emergency Department (ED) are done by individuals aged 65 years old. From this number, 17% are due to minor injuries. Unfortunately, it has been demonstrated that three months post injury, autonomy in Activity Daily Living (ADL) and instrumental ADL decline (-7% and -22%, respectively) in previously independent older adults. In addition, these minor injuries can also lead to mobility limitations, sedentary lifestyle and eventually to frailty and disability. It also increases furthermore the risks of falls which is a burden on our health system, especially to the ED. Fortunately, it has been demonstrated that physical activity interventions are effective in improving or maintaining functional status in autonomous elderly individuals or to reduce the risks of major disabilities and falls in vulnerable older adults. However, more than 50% of them are inactive in their leisure time. Poor health, fear of falling and getting injured or lack of motivation are the most cited barriers. Supervised exercise programs in community centers could alleviate some of these barriers, but require lots of human resources and transportation. Home Exercise Programs (HEP) may also alleviate these problems, but do not allow for constant monitoring and close supervision. Gerontechnologies, specifically those based on exergames, can potentially overcome these limits. The aim of this study was to compare the effects and the adherence of a HEP intervention using a gerontechnology and a

supervised group intervention in a community center on functional capacities in community-dwelling older adults after a minor injury. **Method:** 44 previously independent individuals aged over 65 years old (73.7±6.6 years old) were recruited at the ED in Montréal after suffering of a minor injury. They were randomly assigned to 3 groups [Group 1: HEP using a gerontechnology (JIN; n=20); Group 2: supervised exercise program at a community center (YMCA; n=16) and; Group 3: control group (CONTR; n=8)]. Both interventions had the same form: 12 weeks, 2 sessions/week, 50-55min/session. The program itself included 8 cardiovascular and 8 resistance/flexibility exercises. No special intervention or follow-up have been done in CONTR group. Anthropometric measurements (BMI; waist circumference), body composition (muscle and fat masses (BIA)), handgrip strength and functional capacities (SPPB, TUG) were evaluated before (week 0) and after intervention (week 13) for all 3 groups. Data distribution was verified using the Kurtosis test. Groups were compared using ANOVA and Post-hoc (Bonferroni) statistical tests. P<0.05 was considered significant (SPSS 22.0). **Results:** First, no adverse events were reported. At baseline, no significant difference was observed between groups except for the JIN group who had a significantly better sit-to-stand score in the SPPB compared to the CONTR group (JIN: 2.68±1.20 vs. CONTR: 1.50±0.76 nb; p=0.49) and for the YMCA group had a higher fear of falling than the CONTR group (Y: 11.00±3.52 vs. CONTR: 7.00±0.00 FES-score; p=0.02). The JIN group completed an average of 21 out of 24 sessions planned vs 22/24 for the YMCA group resulting in an adherence rate of 88% and 90%, respectively. After the intervention, the JIN group participants significantly increased their normal walking speed (T0: 0.81±0.17 vs. T12: 0.93±0.20 m/s; p=0.007), normal TUG (T0: 10.71±3.50 vs. T12: 8.82±2.12 sec; p=0.007), unipodal balance (T0: 10.49±12.92 vs. T12: 21.24±20.62 sec; p=0.005) and SPPB total score (T0: 9.42±1.77 vs. T12: 10.50±1.32 points; p=0.006). Regarding the YMCA group, participants significantly improved their normal TUG (T0: 10.41±2.45 vs. T12: 8.73±1.76 sec; p=0.010), time to complete the chair test (T0: 14.93±5.38 vs. T12: 11.32±3.06 sec; p=0.003) and SPPB total score (T0: 9.44±1.59 vs. T12: 10.44±1.46 points; p=0.011). As expected, three months after their ED visit, all groups significantly increased their SF-36 total score (JIN: T0: 64.21±10.75 vs. T12: 80.49±12.59, p=0.001; Y: T0: 59.18±15.20 vs. T12: 79.19±13.43, p=0.002; or CONTR: T0: 69.75±13.53 vs. T12: 85.16±5.03, p=0.018). No other significant change was found in CONTR group. In addition, YMCA group significantly decreased their time to complete the chair test compared to two other groups (delta changes (ABS): YMCA: -3.61 vs. JIN: -0.71sec (p=0.039); vs. CON: +0.48sec (p=0.020)). JIN group significantly decreased its time to complete the 4m walk test compared to CON group (delta changes (ABS): JIN: -0.71 vs. CONTR: +0.16 sec; p=0.044). JIN group tended to increase its normal walking speed compared to CON group (delta changes (ABS): JIN: +0.12 vs. CONTR: -0.02 m/s; p=0.061). **Conclusion:** A HEP using a gerontechnology seems to be as effective as a supervised exercise program to increase functional capacities and more interestingly walking speed in community-dwelling older adults after a minor injury. The adherence rate shows that its feasibility and could be used to prevent functional capacities decline in elderly after a minor injury. Finally, further researches need to be realized in a larger population to validate our conclusions and in post-hospitalisation context or in alzheimer older adults to see its potential.

P117- AGE-RELATED EXTENSIONS TO THE MYOTENDINOUS JUNCTION CONTRIBUTE TO LOSS OF MUSCLE MASS AND ARE REVERSIBLE BY ENDURANCE EXERCISE. K. Nielsen, P. Sheard (*Department of Physiology, University of Otago, New Zealand*)

Background: Sarcopenia is associated with decline in muscle mass and strength, as well as an increase in adipose and fibrotic tissue deposition. In the existing literature this is largely accounted for by muscle fibre atrophy and decline in total fibre number, but little attention has been paid to the interface between muscle fibre and tendon, the myotendinous junction (MTJ). The MTJ is characterised by extensive sarcolemmal folding (Mackay, 1969), causing muscle fibres to terminate in finger-like projections that interdigitate with collagen fibrils from the associated tendon. This sarcolemmal folding increases the contact area between muscle fibre and tendon thereby allowing for more effective force transmission and reducing the stress exerted on the sarcolemma at any given point during muscle contraction (Roffino, 2006). Exercise has been shown to increase the area and complexity of MTJs (Curzi, 2016), whereas disuse causes lengthening of the MTJ with consequential decline in sarcomere number and reduced functional capacity. This study attempts to determine the effects of ageing and exercise on MTJs and muscle mass in a mouse model of sarcopenia. **Methods:** Young (4-6 months) and old (20-24 months) female C57BL/6 mice were divided into exercising or control groups. Exercisers were given access to a running disc for either 2 months (short term) or 4 months (long term), over which period amount and duration of exercise were monitored. Upon termination of the protocol soleus muscles were collected, transversely sectioned and immunohistochemically stained for dystrophin and collagen. Serial sections were used to determine individual fibre sizes, to identify and determine the length of myotendinous junctions as well as the extent of fibrotic tissue deposition in young versus old, control and exercising mice. **Results:** We found that MTJs increased in length from 40 to 80µm in an age-dependent manner, corresponding to a one-fold increase between 6 and 24 months of age. A 2-fold increase in area of fibrotic tissue deposition relative to total cross section was observed over the same time period, which was congruent with a 30% decline in total contractile tissue area. Endurance exercise resulted in reduction of this MTJ lengthening in old mice with exercisers exhibiting MTJs 25% shorter than their age matched controls, although no difference was observed between the short- and long-term exercisers. Both short and long term exercise similarly reduced fibrotic tissue deposition, but only long term exercise effectively maintained muscle fibre cross sectional area. **Conclusion:** We found that the previously undescribed lengthening of MTJs with age is a contributor to the loss of contractile mass in soleus, and that there is a positive correlation between MTJ lengthening and fibrotic tissue deposition. We also found that 2 months of endurance exercise was able to prevent or reverse MTJ lengthening, but that only after 4 months of exercise did this manifest in complete maintenance of cross sectional area comparable to that of young controls. Together these results indicate that in soleus, in addition to denervation atrophy, total contractile protein may be reduced as a result of progressive fibre shortening with age. These findings have implications for several features of sarcopenia. If MTJ extension is associated with decline in sarcomere number, as is the case in disuse models, then such a change could explain some of the commonly reported loss of force, range of movement and contractile velocity in ageing muscle. **References:** Curzi D et al (2016). Effect of different exercise intensities on the myotendinous junction plasticity. *PLoS One*. 11. e0158059; Mackay B et al (1969). The fine structure of the muscle tendon junction in the rat. *Acta Anat (Basel)*. 73. 588-602; Roffino, S et al (2006). Structural

remodelling of unweighted soleus myotendinous junction in monkey. *C R Biol*. 329. 172-179.

P118- MALNUTRITION ASSESSED BY THE NEW ESPEN CONSENSUS DEFINITION AND FRAILTY STATUS BY THE CHS CRITERIA IN JAPANESE GERIATRIC OUTPATIENTS.

K. Kinoshita, S. Satake, S. Furuzono, K. Senda, Y.-J. Hong, K. Nishihara, S. Kawashima, H. Endo, H. Arai (*National Center for Geriatrics and Gerontology, Japan; Mie Prefectural Ichishi Hospital, Japan*)

Background: Malnutrition is considered as a core pathophysiologic factor in the frailty cycle which could lead to a deterioration of physical condition in older people. Recently, European Society of Clinical Nutrition and Metabolism (ESPEN) reported a new consensus definition of malnutrition. The aims of this study were to examine the prevalence of malnutrition based on the new ESPEN definition in robust, pre-frail and frail older patients based on the Cardiovascular Health Study (CHS) criteria, and to examine the differences in older adults with or without malnutrition. **Method:** We recruited 190 older outpatients with chronic diseases who regularly visited the Hospital of the National Center for Geriatrics and Gerontology in this study. If the total Barthel Index was < 90 or 0 in any domains of the index, we considered the individual as disabled. Data from individuals with acute disease, unstable chronic diseases or cognitive impairment (Mini Mental State Examination [MMSE] < 18; more than moderate) were excluded. Based on these exclusion criteria, 17 individuals were excluded from this study. Other 36 patients were also excluded from the analysis due to missing data, leaving 137 outpatients for the analysis. The Ethics Committee of the National Center for Geriatrics and Gerontology, Obu, Japan approved the study protocol and each patient provided written, informed consent to participate in the study. We diagnosed malnutrition based on the criteria of the new ESPEN definition. The criteria have two alternative ways to diagnose malnutrition. Before the diagnosis of malnutrition is made, it is mandatory to fulfil criteria for being “at risk” of malnutrition by the Mini-Nutritional Assessment Short-Form (MNA-SF). Alternative 1: BMI<18.5kg/m². Alternative 2: unintentional weight loss >10% indefinite of time, or >5% over the last 3 months combined with either BMI <20kg/m² if <70 years of age, or <22kg/m² if ≥70 years of age, or Free Fat Mass Index <15 and 17kg/m² in women and men, respectively. Frailty status was defined based on five dimensions of frailty phenotypes, including shrinking, exhaustion, low levels of activity, weakness and slowness; 0 for robust, 1-2 for pre-frail, and 3-5 for frail, as described by Fried et al. Self-reported unintentional weight loss, > 4.5 kg within the last year, was taken as a sign of st, 1-2 for pre-frail, and 3-5 for frail, as described by Fried et al. Self-reported unintentional weight loss, > 4.5 kg within the last year, was taken as a sign of shrinking. Exhaustion was defined according to the question, “Have you felt tired or fatigued without reason during the last two weeks?” Those who answered “yes” were considered to have a low energy level (exhaustion). Daily physical activity was classified into four levels according to the results of the modified Baecke Questionnaire. The lowest quartile indicated a low activity level. Grip strength was measured twice in each hand and the maximum value was recorded. Individuals with low grip strength (< 30 kg for men; < 20 kg for women) were classified as having weakness. Usual gait speed was assessed using the five meter walk with 1 m each for acceleration and deceleration. A walking speed of 0.8 m/s or slower was considered to indicate slowness. Dependence upon others for basic activities of daily living (ADL) was assessed using the Barthel Index and the Lawton and Brody Index for instrumental ADL. Trained nurses measured

anthropometric parameters and evaluated the MNA-SF, MMSE, and the geriatric depression scale short-form (GDS-15) and the Kihon Checklist (KCL) which is a screening tool to identify frail elderly in Japan. Categorical variables were compared the chi-square test, and the Man-Whitney analysis was applied to compare the characteristics of older patients with or without malnutrition. **Results:** Of the 137 included patients (mean age 77.0 ± 8.9 years, male 63.5%), 39 subjects (28.5%) were at-risk of malnutrition by the MNA-SF and 15 (10.9%) were finally diagnosed as malnutrition by the new ESPEN criteria. The CHS criteria classified 22.6%, 59.9% and 15.3% as robust, pre-frail and frail, respectively. In patients with malnutrition defined by the new ESPEN criteria, 5 (23.8%) and 10 patients (12.2%) were frail and prefrail, respectively, while nobody was robust. The malnourished outpatients were significantly older ($p=0.003$), frailer based on both frailty assessments such as the CHS criteria ($p=0.008$) and the total KCL score ($p=0.012$) than nourished patients. Insulin-like growth factor-1 (IGF-1, $p=0.003$) and dehydroepiandrosterone-sulfate (DHEA-S, $p=0.030$) were statistically reduced in patients with malnutrition compared to nourished patients. **Conclusion:** Among Japanese geriatric outpatients, approximately 10% of them were diagnosed as having malnutrition due to the new ESPEN criteria. Those patients with malnutrition were older and frailer, and showed lower IGF-1 and DHEA-S levels.

P119- PREVALENCE OF SARCOPENIA IN ELDERLY PRIMARY CARE USERS. P. De Carli Tonial, J. Sturmer, D. D'Agostini Jorge Lisboa, E.L. Colussi, A.L. Sant'Anna Alves, L. Antonio Bettinelli (*Postgraduate Program in Human Aging, University of Passo Fundo, Passo Fundo, Brazil*)

Background: The rapid aging of the population is accompanied by an increase in the number of chronic non-communicable diseases and geriatric syndromes such as sarcopenia, which is characterized by the progressive and generalized loss of skeletal muscle mass associated with reduced strength and/or physical performance, which causes more falls, worse quality of life, functional disability and higher mortality. This study aimed to identify the prevalence of sarcopenia in elderly primary care users applying the criteria proposed by the European Working Group on Sarcopenia in Older People (EWGSOP). **Methodology:** The study was a cross-sectional study with elderly users of the primary health care network, residents in the city of Marau, Rio Grande do Sul, Brazil. A total of 148 elderly individuals aged 65 and over were interviewed in the eleven Family Health Strategies of the municipality. The elderly were evaluated for the diagnosis of sarcopenia, involving the calculation of muscle mass, whose cut-off was the lowest 20% of the study population, represented by 6.72 kg/m^2 for women and 6.85 kg/m^2 for men; handgrip strength, considering reduction of muscular strength values for men $<30\text{kg}$ and women $<20\text{kg}$; and gait speed, $<0.8 \text{ m/s}$ was considered inadequate. Also analyzed sociodemographic, anthropometric and nutritional variables. Nutritional status was evaluated through the Body Mass Index (BMI) and the Mini Nutritional Assessment (MNA). **Results:** Of the elderly evaluated ($n=148$), 72.3% were female, mean age was 73.6 years ($SD=5.5$), ranging from 65 to 89 years; 60.1% having a conjugal life; there was predominance of whites, 82.4%, and 58.1% studied until elementary school; 23.6% lived alone and 85.8% lived in their own homes. The prevalence of sarcopenia was 14.2%; 47.3% of the elderly had low manual grip strength and 53.7% had an inadequate walking speed. Regarding BMI, 10.8% of the elderly were classified as underweight and 75% of these were diagnosed as sarcopenic. Sarcopenia was significantly associated with the highest age group ($p=0.046$) and BMI ($p<0.001$). **Conclusions:** Sarcopenia is more prevalent among older people and the elderly of low BMI had a higher

percentage of sarcopenia, these results highlight the importance of the diagnosis of sarcopenia in basic care, together with the evaluation of the nutritional status of the elderly who use the public health system.

P120- THE EFFECT OF INTRADIALYTIC EXERCISE ON DAILY PHYSICAL ACTIVITY AND SLEEP QUALITY IN MAINTENANCE HEMODIALYSIS PATIENTS. J.C. Kim, J.-H. Cho (*Department of Internal Medicine, CHA Gumi Medical Center, CHA University, South Korea*)

Background: Physical inactivity and sleep disturbances are frequently observed and shown to relate with poor quality of life (QoL), higher rates of hospitalization and mortality in dialysis patients. We aimed to investigate the effect of intradialytic exercise (IDE) on daily physical activity (DPA) and sleep quality measured by accelerometer in maintenance hemodialysis (MHD) patients. **Method:** This study randomly assigned ambulatory MHD patients aged ≥ 20 years on dialysis ≥ 6 months, without hospitalization history for the previous 3 months to 4 groups: aerobic (AE), resistance (RE), combination exercise (CE), and control. Stationary bike was used for AE and TheraBand®/theraball for RE. Twelve-week IDE program (3 times/week) was completed in AE ($n=11$), RE ($n=10$), and CE ($n=12$). The control group ($n=13$) received warm-up stretching. At baseline and 12-week follow up, DPA and sleep quality were measured by a 3-axis accelerometer (wActiSleep-BT, ActiGraph LLC) during continuous 7-day wear period. **Results:** Patients were 55 ± 12 years of age (mean \pm SD) on MHD for 64 ± 72 months, 50% female, 44% diabetic. We observed a significant increase of MET (Metabolic Equivalent; kcal/h/kg) in AE (1.02 ± 0.03 vs 1.04 ± 0.04 , $P=0.04$) and CE (1.06 ± 0.05 vs 1.09 ± 0.08 , $P=0.003$) at 12-week compared with baseline. When comparing between-group changes to MET there was a significant increase in CE (0.03 ± 0.03 vs -0.01 ± 0.04 , $P=0.014$) compared with control group. The total number of sedentary bouts (per week) decreased significantly in AE (200 ± 37 vs 174 ± 36 , $P=0.016$) and CE (180 ± 45 vs 152 ± 46 , $P=0.031$) at 12-week compared with baseline. The average sleep fragmentation index indicating poor sleep quality decreased significantly at 12-week compared with baseline in AE (51.4 ± 8.0 vs 44.5 ± 9.6 , $P=0.041$) and RE (52.3 ± 7.3 vs 40.0 ± 15.4 , $P=0.017$). **Conclusion:** These findings suggest that IDE may play a significant role in the improvement of DPA and sleep quality in MHD patients, although future studies with more study subjects and longer intervention duration are needed to confirm our findings and if this would also lead to improvement of clinical outcomes, such as QoL, hospitalization, and mortality.

P121- HOW MUCH LEUCINE IS IN YOUR FOOD? S.N. Stastny (*North Dakota State University, Fargo, ND, USA*)

Background: Worldwide, the number of people aged 65 and older is projected to triple by mid-century. The growth of this population is a major public health concern because an unfortunate aspect of aging is the onset of sarcopenia and dynapenia, which are the medical terms used to describe the progressive loss of lean muscle mass and strength (Clark, 2010). Although it is clear that strategies to prevent muscle and strength loss cannot exclusively target one issue, there is a strong theoretical link between dietary protein and muscle mass (Paddon-Jones, 2009). Currently, the Recommended Dietary Allowance for protein in the United States is 0.8 g per kg. The quantity of protein per kg matters but the quality of protein is also critically important. Specifically, high quality proteins from a diet comprised of foods such as beef (which contain all of the essential amino acid (aa) needed as the primary substrates for muscle maintenance, growth and health (Paddon-Jones, 2009) are key to muscle maintenance with aging.

Leucine prominent in animal-based foods directly activates muscle protein synthesis (MPS) through cell-signaling (example- mammalian target of rapamycin complex) (Drummond, 2009). In other words, leucine has been shown in a number of studies to be the aa that starts MPS. How large should the dose of leucine be to see a positive response in humans and what foods contain the needed amount of leucine? Studies seem to point to approximately 2-3 grams of leucine per meal, likely at higher end of range of older adults (Burke, L., Australian Institute of Sport, 2016). Given beef's high leucine content, we hypothesized that dietary beef protein intake would be positively associated with delayed onset of sarcopenia with aging. To estimate beef protein intake, we planned to analyze food diaries and food frequency questionnaires, to measure consumption in grams of protein, beef protein and leucine per meal, per day, and on average over a 3-month time frame. However, there are many missing values for leucine in the data bases. The purpose of this poster is to share recommended methods to estimate leucine content of food. **Method:** Primary electronic search engines utilized included Web of Science, ProQuest, and Google Scholar. These databases were searched for any food intake studies involving leucine-relevant literature. From here, data bases reportedly used were contacted. Queries included: (1) how were leucine values obtained and (2) if leucine values were estimated, what is the process? If articles did not state methods for determination of leucine, authors were contacted. Lastly, lead authors were contacted and were queried about scientific methods for determination of actual leucine content in foods. **Results:** There were very no articles found that reported estimated dietary intake for humans that included specific aa and none for leucine. However, many studies have used formulated leucine supplementation interventions to support introductory hypothesis that leucine is needed for MPS especially with aging. One contacted lead author stated that plant-based protein contains approximately 6.5-7.5% leucine, meats (including fish) 8.5-9.0%, eggs 8.8%, milk 9.0% and whey protein 11%. Further, to get the needed 2-3 g leucine at one meal, one would need about 25 g whey protein or up to 40 g protein of plant-based foods, and other range of g of protein in-between for meats, eggs, and milk. Fao.org published information regarding leucine in the late 1960's for beef, pork, chicken, elephant, rat, etc. but amount of leucine per 100 g of meat was not differentiated among the various cuts of meat (e.g. 100 g of bacon would be assumed same leucine as 100 g lean pork). One article detailed aa content of 27 fishes using high-performance liquid chromatography. The University of Missouri Chemical Lab will complete aa estimated in food samples for a fee. One of the chemical tests that can be used to estimate specific aa is high-pressure liquid chromatography. Digestible indispensable aa score is another method to test for protein quality. Two common methods among protein intake studies include used of the food frequency questionnaire and 3-day food diary with nutrient analysis software used to estimate food intake. Both reportedly use the USDA FNDDS database (n=7,254 foods) but many of these foods have missing leucine values. However, if a similar food has an assigned value, that value is used for the food category, per both companies. **Conclusions:** With aging, we may need a kick-start for MPS, and leucine seems to be important for this role. In order to assist older adults in strategic identification of leucine-rich foods, we need to develop better chemically-tested data bases with true leucine values. Meanwhile, it may be prudent to recommend animal-based protein as part of a balance diet, especially for those at risk for sarcopenia.

P122- FEASIBILITY AND EFFECTS OF A PHYSICAL ACTIVITY PROGRAM USING A GERONTECHNOLOGY IN NURSING HOMES. M. Lauzé^{1,2,3}, D. Martel^{1,2,3}, S. Ratsimbazafy^{1,2,3}, M. Aubertin-Leheudre^{1,2,3} (1. Département des Sciences de l'activité physique, Université du Québec à Montréal, Montréal (Qc), Canada; 2. Groupe de recherche en activité physique adaptée, Université du Québec à Montréal, Montréal (Qc), Canada; 3. Centre de recherche de l'Institut universitaire de gériatrie de Montréal, Montréal (Qc), Canada)

Background: Life expectancy has increased significantly in the last decades. However, nowadays people can expect to live about ten years with some functional limitations, which lead to loss of autonomy. To get assistance, older adults relocate in living environments where various services are available. In Canada, 30% of adults aged 80 and over live in collective dwelling. Even at this age, physical activity (PA) interventions are effective in maintaining functional capacities and reducing the risk of major mobility disabilities. However, in collective dwelling environments such as nursing homes, less than 10% of residents are physically active and spent most of their day in sedentary activities, which are known to increase the risks of health problems. Poor health, fear of getting injured and lack of motivation are the most important barriers of physically active life. Supervised PA programs may alleviate some of these barriers. However, one-on-one exercising requires significant resources and group exercises are not always adapted to each person's needs. Gerontechnologies, such as exergames, allowing for individualized settings and distance supervision and can potentially overcome these limits. The aim of this project was to assess the feasibility of a PA program using a motion capture gerontechnology called Jintronix and its effects on physical functions in older adults living in NH. **Method:** A total of 46 older adults (JIN:80.1±6.7 vs. JIN2+:80.6±7.4 vs. CONTR:84.3±6.7 years old) living in four different NH were recruited to participate in this study. After obtaining consent, participants were randomly assigned to a PA group required to exercises with Jintronix twice a week (JIN; n=16), another PA group required to exercises with Jintronix at least twice a week but free to do it everyday (JIN2+; n=16) or a control group (CONTR; n=14). The PA program included a warm-up, 7 aerobic exercises, 8 resistance&balance exercises and a cool down. Each session lasted 40-45 minutes. Level difficulty of each exercise (speed, range of motion, precision of movement, number of repetitions) was individually adapted throughout the 12-week program. Among 24 sessions, 6 sessions were directly supervised by a kinesiologist and assistance was available in person or by phone the rest of the time. The novelty of this technology used in this project allowed distance supervision, follow-up and provides adherence and quality of movements through its reports. Body composition, handgrip muscle strength, functional capacities and quality of life (SF-36) were measured pre and post intervention. Non-parametric paired t-tests were realized to examine the effect of the intervention within groups. Non parametric Man-Witney tests delta were used to compare delta changes between groups. **Results:** At baseline, no differences were observed between JIN2+ and the two other groups, but significant differences were observed between JIN and CONTR groups in quality of life (SF-36 total score: JIN:80.3±11.0 vs. CONTR:65.5±20.6; p=0.03), chair test (JIN:13.9±2.4 vs. CONTR:16.8±3.4; p=0.04) and physical performance test (SPPB total score: JIN:9.0±2.1 vs. CONTR:7.0±1.8 p=0.03). Preliminary results indicate that among the 46 participants, 36 of them completed the 12-week study (JIN=13, JIN2+=12 and CONTR=11). Moreover, 22/25 completed 80% of prescribed PA sessions; JIN=12 vs. JIN2+=10). In the PA groups, participants completed an average of 23.5±7.2 sessions over the 12 weeks (JIN=22.1±3.2 vs. JIN2+=25.1±9.8) with an average of

6.4±1.6 sessions directly supervised (JIN=6.2±1.6 vs. JIN2+=6.8±1.5). Thirty-three % of the JIN2+ group (n=4/12) performed more than two sessions/week. Overall, participants reached 88±6% in quality of movements for the resistance&balance portion of the program. First, we observed that both JIN and JIN2+ groups significantly improved their walking speed on 4 m (JIN: 0.88±0.15 to 1.08±0.28m/s and JIN2+: 0.75±0.15 to 0.95±0.13m/s; p=0.012 for both groups). The JIN group also significantly improved its relative upper limbs strength (hand grip/body weight: 0.32±0.11 to 0.34±0.11 kg/BWkg; p=0.012) and SPPB total score (9.4±2.0 to 10.6±1.5 out of 12 points; p=0.03). JIN2+ group tended to statistically improve its SPPB total score; the results indicated a clinically significant improvement (8.5±1.9 to 9.4±2.0; p=0.08). No significant changes have been observed in the CONTR group for any of the outcome measures. No significant group by time effects were observed, which could be explained by a lack of power. **Conclusion:** PA intervention using a gerontechnology seems to be feasible and acceptable for older adults living in NH. Our preliminary results indicate also that this type of PA program was effective in improving walking speed, which is the best predictor of mobility decline and disability. It seems that prescription of two sessions/week was sufficient and appropriate for this population. In fact, no difference was observed between the 2 groups, most of the participants completed them and only a few of those who had the opportunity to voluntarily do more sessions took advantage of the opportunity. Our findings support the use of gerontechnology to broaden the PA programs offered in NH and to maintain/improve their health status. Further researches are needed.

P123- DECREASE IN SERUM INSULIN AND IGF-1 LEVELS AFTER EXERCISE UNDER THE DIETARY CONDITION OF INCREASED SKIMMED MILK INTAKES. T. Yamada¹, M. Okada², M. Matsuzaki¹, A. Tanaka³ (1. Department of Nutrition and Dietetics, Kanto Gakuin University, Yokohama, Japan; 2. Department of Health and Nutrition Sciences, Komazawa Women's University, Inagi, Japan; 3. Laboratory of Clinical Nutrition and Medicine, Kagawa Nutrition University, Sakado, Japan)

Background: It is well known that branched chain amino acids (BCAA) are utilized for energy source and body protein maintenance, 3-methyl-histidine (3-MH) is a marker of muscle breakdown, insulin and insulin-like growth factor 1 (IGF-1) bring about anabolic action. On the other hand, insulin secretion is increased by BCAA intake but decreased by exercise. So, we investigated the effects of increased intakes of skimmed milk which is rich in BCAA on the levels of these indices including other parameters, and of endurance physical exercise under the dietary condition of increased skimmed milk intakes. **Method:** Eight adult female volunteers participated in a crossover trial, i.e., two experiments over five days. The first two days were an adjustment period consuming control diets (energy, 2,010 kcal; protein, 51.9 g). During the following three days as an experiment period, the participants consumed experimental diets (energy, 2,010 kcal; protein 82.3 g) which contained skimmed milk of 402 kcal, and either performed only normal daily activities (non-Ex period) or exercised on a bicycle ergometer at a target intensity of about 50 % of maximal oxygen intake expending additional energy of 402 kcal (Ex period). Fasting blood samples were collected early in the morning before and after the experiment period. Total urine samples for 24 hours were collected during day (8 am to 8 pm) and night (8 pm to 8 am). Plasma valine, leucine, isoleucine, serum urea nitrogen, creatine kinase (CK), cortisol, insulin, IGF-1 and urinary 3-MH, adrenaline, noradrenaline, free-cortisol levels were determined. **Results:** Plasma valine, leucine and total BCAA levels were significantly elevated after both the non-Ex and the Ex period,

but no differences were observed between after the non-Ex and after the Ex period. On the other hand, isoleucine level unchanged after both experiments. Serum urea nitrogen level was significantly elevated after both the non-Ex and the Ex period, and was significantly higher after the Ex period than after the non-Ex period. Serum CK level was significantly higher after the Ex period than after the non-Ex period. All of urinary 3-MH, adrenaline, noradrenaline and free-cortisol excretion levels were significantly lower during night than during day. Urinary 3-MH excretion level was significantly decreased during the non-Ex, but unchanged during the Ex period. Urinary adrenaline excretion level unchanged during the non-Ex, and was significantly increased during the Ex period. By contrast, urinary noradrenaline excretion level was significantly decreased during night on the first day of the non-Ex period, and significantly increased during the Ex period. But, urinary free-cortisol excretion level unchanged during both experiments. Serum cortisol level also unchanged after both experiments. Serum insulin level was significantly elevated after the non-Ex period, whereas unchanged after the Ex period and significantly lower than after the non-Ex-period. On the other hand, serum IGF-1 level unchanged after the non-Ex period, whereas was significantly fallen after the Ex period and lower than after the non-Ex period. **Conclusion:** First, increase in plasma valine, leucine, total BCAA, serum urea nitrogen, insulin levels, and decrease in urinary 3-MH, noradrenaline excretion levels during night are brought about by increased skimmed milk intakes. Secondly, increase in serum urea nitrogen, CK levels and urinary adrenaline, noradrenaline excretion levels, and decrease in serum insulin, IGF-1 levels are induced by endurance physical exercise under the dietary condition of increased skimmed milk intakes. Regarding the decrease in serum IGF-1 level after exercise, further investigation including dietary condition seems to be necessary in relation to anabolic effect.

P124- IMPROVEMENTS IN DYNAMIC MUSCULOSKELETAL FUNCTION IN INACTIVE MIDDLE-AGED ADULTS AFTER A 12 WEEK WHOLE BODY EXERCISE INTERVENTION, ASSESSED USING INERTIAL SENSORS. S. Raina¹, J. Ransome², M. Savic², A. Lee^{1,2} (1. MSK Metrics, Mississauga, Canada; 2. Velocity Sports Medicine and Rehabilitation, Mississauga, Canada)

Background: Poor musculoskeletal (MSK) health caused by inactivity or age increases the likelihood of injury, and can contribute to the development of dynapenia, sarcopenia, frailty, and loss of independence. A recent study demonstrated that mobility is one of the strongest predictors of mortality. "MSK Fitness" refers to not just muscle mass, but also the function of the neuromuscular system. It has been documented that neck/spine kinematics and lower body muscular power decline with increasing age, and performance deterioration in health-related physical fitness measures first becomes apparent in middle age (between 40-65 years old). In order to maintain a healthy MSK system across a lifespan, it is helpful to have one's MSK fitness assessed quantitatively so that progression may be tracked. Several studies have investigated the effects of exercise programs on trunk kinematics and sit-to-stand lower body power; however, the populations in these studies were either patients suffering from pathology or elderly adults. To the authors' knowledge, there are no previously published studies that assess the effect of whole body exercise on neck/spine kinematics and lower body sit-to-stand dynamics in middle-aged adults. Understanding this cohort's response to exercise is important, since middle age is when physical performance declines are first detected, and where exercise interventions may have the most protective effects guarding against the future development of sarcopenia. As a first step in understanding the effect of whole body exercise on musculoskeletal function, we

investigated the effects of a 12 week, supervised, whole body exercise program on neck/spine kinematics and lower body power in previously inactive middle-aged adults. **Methods:** Twenty inactive healthy adults (7 males, 13 females) between the ages of 39 and 65 were recruited to take part in a supervised whole body exercise program that consisted of 3 sessions a week for 12 weeks. The program included core stability and lower body exercises such as lunges, squats, planks, push-ups, and various stretches. No external resistance (i.e. weights or bands) was used. Participants' neck and spine kinematics, and lower leg dynamics were measured at baseline, 4, 8, and 12 weeks using inertial units (IMUs) with the testing protocols described below. All participants signed a consent form and the study was approved by an independent ethics review board (CIRBI protocol #TS03032016). **Spine Motion Test:** IMUs were placed on the chest and low back and participants were instructed to flex their trunks forward and extend backward five times as far and as fast as they comfortably could. The test was then repeated in the lateral bend and twisting axes. **Neck Motion Test:** IMUs were placed on the chest and forehead and participants were instructed to flex their necks forwards and extend backwards five times as far and as fast as they comfortably could. The test was then repeated in the lateral bend and twisting axes. For the spine and neck motion tests the relative displacement and velocity between the two IMUs was calculated. **Sit-to-Stand Test:** an IMU was placed on the right hip, above the greater trochanter. Participants sat upright in a chair (height 41 cm) with their arms across their chest and were instructed to stand up from a seated position as fast as they could. The test was performed three times per assessment. Sit-to-stand duration, peak vertical velocity, and peak power were calculated from the average of the three tests. **Statistical Methods:** A one-way repeated measures Analysis of Variance with a Tukey HSD post hoc test was used to determine significant differences between assessments. **Results:** Of the 20 participants recruited, 19 completed the study with one subject lost due to drop out. The exercise class compliance rates were 94%, 89% and 84% at weeks 4, 8 and 12, respectively. Low back and Neck motion: Low back twisting ROM increased significantly over the course of the study. ROM did not significantly increase in any other low back or neck test. Peak low back velocity and peak neck velocity increased significantly from baseline in all directions (Tables 1 and 2). **Sit-to-Stand Test:** No statistically significant changes occurred in the sit-to-stand duration; however, the dynamic measures peak velocity and peak power were statistically significant at week 8 and remained elevated compared to baseline at week 12 (Figures 1 and 2). **Conclusion:** A 12 week whole body exercise intervention improved low back and neck velocity, as well as dynamic sit-to-stand measures in a group of healthy, inactive middle-aged adults. IMU-based kinematic and dynamic measures were able to quantify the progressive neuromuscular changes that occurred over a 12 week whole body exercise program, where the traditional sit-to-stand time duration measure was ineffective at identifying these changes in this age group. These results suggest that whole body exercise in middle aged adults can significantly improve MSK performance, which may have protective effects in mitigating the early development of sarcopenia and frailty.

Table 1
Angular Velocity in degrees/s of low back motion in six different directions (mean ± SD, n=19)

	Baseline	4 Weeks	8 Weeks	12 Weeks
LB Flexion	108.48± 40.65	140.11±64.45*	149.15± 63.73*	175.32± 66.18 ^{abc}
LB Extension	113.86± 42.94	134.09±62.27	151.30± 66.35*	171.47± 64.00 ^{ab}
LB Left Bend	90.92± 43.96	112.41±45.18*	119.70± 50.12*	133.83± 44.79 ^{ab}
LB Right Bend	93.07± 44.43	115.64±52.24*	125.10± 58.33*	133.54± 47.95*
LB Left Twist	186.59± 81.13	212.68±91.72	222.96± 99.89*	242.52± 97.68 ^{ab}
LB Right Twist	184.73± 79.65	209.31±88.16	218.69± 99.52*	240.36± 97.28 ^{ab}

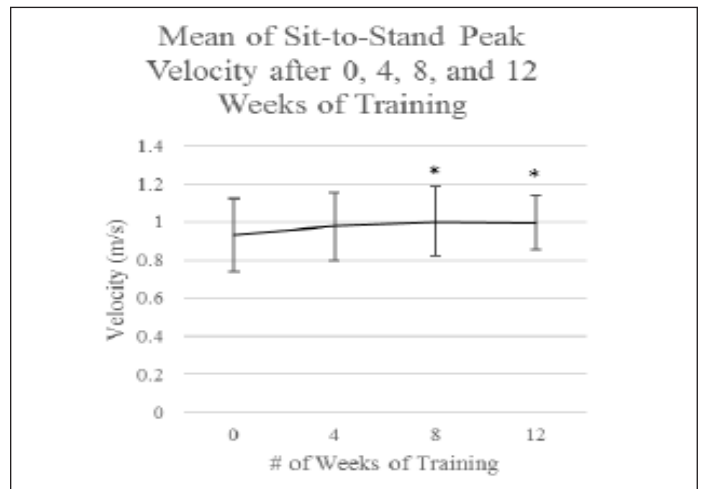
a-denotes a statistically significant difference from baseline (p<0.05) b-denotes a statistically significant difference from week 4 (p<0.05) c-denotes a statistically significant difference from week 8 (p<0.05)

Table 2
Angular Velocity in degrees/s of neck motion in six different directions (mean ± SD, n=19)

	Baseline	4 Weeks	8 Weeks	12 Weeks
Neck Flexion	288.12± 116.44	323.72± 117.72	328.07± 100.37	365.92± 133.39*
Neck Extension	271.12± 112.54	309.82± 114.88	327.07± 109.96	366.72± 133.78 ^{abc}
Neck Left Bend	138.75± 68.20	170.97± 87.28*	194.89± 107.74*	209.91± 114.71 ^{ab}
Neck Right Bend	139.27± 69.51	173.41± 86.96*	197.17± 113.22*	214.89± 114.57 ^{ab}
Neck Left Twist	355.11± 122.70	409.56± 150.70*	464.94± 167.52*	493.38± 135.48 ^{ab}
Neck Right Twist	373.25± 125.85	424.88± 159.23*	480.54± 167.33*	502.14± 144.69*

a-denotes a statistically significant difference from baseline (p<0.05) b-denotes a statistically significant difference from week 4 (p<0.05) c-denotes a statistically significant difference from week 8 (p<0.05)

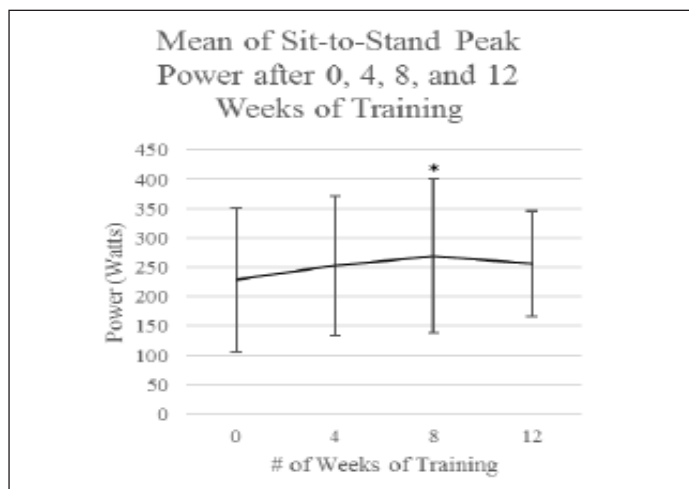
Figure 1
Mean of sit-to-stand power after 0 (baseline), 4, 8, and 12 weeks of training



*-denotes significantly different from baseline (p<0.05)

Figure 2

Mean of sit-to-stand peak velocity after 0 (baseline), 4, 8, and 12 weeks of training



*-denotes significantly different from baseline ($p < 0.05$)

P125- GAIT SPEED AND THE SPATIO-TEMPORAL DETERMINANTS OF RESIDENTS IN NURSING HOMES.

S. Fien¹, T. Henwood^{1,2}, M. Climstein³, E. Rathbone¹, J.W.L. Keogh^{1,4,5} (1. Faculty of Health Science and Medicine, Bond University, Robina, Australia; 2. School of Human Movement & Nutrition Sciences, The University of Queensland, Brisbane, Australia; 3. Exercise, Health and Performance Faculty Research Group, The University of Sydney, Australia; 4. Human Potential Centre, AUT University, Auckland, New Zealand; 5. Cluster for Health Improvement, Faculty of Science, Health, Education and Engineering, University of the Sunshine Coast, Sippy Downs, Australia)

Background: Chronic diseases are the leading cause of illness, disability and death in Australia, accounting for 90% of all deaths in 2011 (AIHW 2011). One of the most common behavioural risk factors is physical inactivity, whereby the majority of older Australians, especially nursing home residents, perform little physical activity. This contributes to their poor physical function and performance such as reduced gait speed, strength and balance (Peel, 2013). Currently, little is known in relation to the physical determinants or risk factors for low gait speed in low-functioning older adults and those living in nursing home facilities. The aim of this study was to objectively quantify the gait speed and spatio-temporal determinants of gait among nursing home residents and to determine if the spatio-temporal determinants may predict their gait speed. **Methods:** A total of 100 nursing home residents (85.6 ± 6.7 years, range 66-99 years, 66 females) provided informed consent. Participants completed three trials of their gait speed over the 3.66 m long Gaitmat II pressure mat system. The Gaitmat II allowed calculation of gait speed as well as many spatio-temporal gait parameters (such as step length, support base, single step time, etc), which were inputted into univariable and multivariable regression analyses to predict gait speed. **Results:** The nursing home residents were characterised by a mean habitual gait speed of 0.63 ± 0.19 m/s, stride length of 0.83 ± 0.15 m, support base of 0.15 ± 0.06 m and step time of 0.66 ± 0.12 s. Multivariable linear regression revealed stride length, support base and step time predicted gait speed ($R^2 = 0.89$, $P < 0.05$). Step time contributed to the largest change in gait speed with each 0.1 s decrease resulting in a 0.09 m/s (95% CI 0.08 - 0.10) faster habitual gait speed. **Conclusion:** Preliminary evidence suggests that three spatio-temporal parameters (stride length, support

base and step time) predict gait speed in nursing home residents. A greater understanding of nursing home residents' gait spatio-temporal determinants may assist allied health professionals develop more effective exercise prescriptions for enhancing gait speed in this population, as well as enhance the ability of clinicians to supply task relevant augmented feedback during the exercise sessions to their patients (Sterke et al, 2012). By improving their gait speed, nursing home residents may become more physically active, which may improve their overall health, quality of life and minimise the progression of chronic disease. References: AIHW. Key indicators of progress for chronic disease and associated determinants: data report. Cat. No. PHE 142. Canberra: AIHW. Peel NM, Kuys SS, &, Klein K. Gait speed as a measure in geriatric assessment in clinical settings: a systematic review. J Gerontol A Biol Sci Med Sci. 2013;68(1):39-46. Sterke CS, van Beeck EF, Loonman CWN, Kressig RW, van der Cammen TJM. An electronic walkway can predict short-term fall risk in nursing home residents with dementia. Gait and Posture. 2012;36:95-101.

P126- GAIT CHARACTERISTICS AND PHYSICAL OUTCOMES IN NURSING HOME RESIDENTS.

S. Fien¹, T. Henwood^{1,2}, M. Climstein³, E. Rathbone¹, J.W.L. Keogh^{1,4,5} (1. Faculty of Health Science and Medicine, Bond University, Robina, Australia; 2. School of Human Movement & Nutrition Sciences, The University of Queensland, Brisbane, Australia; 3. Exercise, Health and Performance Faculty Research Group, The University of Sydney, Australia; 4. Human Potential Centre, AUT University, Auckland, New Zealand; 5. Cluster for Health Improvement, Faculty of Science, Health, Education and Engineering, University of the Sunshine Coast, Sippy Downs, Australia)

Background: Ageing can lead to an impaired physical function, mobility and reduction in quality of life. The objective of this study was to examine the gait speed and spatio-temporal parameters and physical outcomes being physical function in residential aged care adults 65 years and older. **Methods:** A total of 100 older adults in residential aged care were randomised into the study. The following measurements were gait speed and gait spatio-temporal parameters which were assessed via the Gait Mat II system, and the following physical outcomes sarcopenia status using the SARC-F questionnaire, cognitive function using the mini COG, muscle strength assessed via sit-to-stand performance and handgrip strength. **Results:** All 100 participants (85.6 ± 6.7 years, range 66-99 years, 66 females) completed all of the baseline assessments. Eighty per cent of the residents were eligible for the study; there were 25 residents whom declined to be in the study. Measurements revealed gait speed (0.51 m/s ± 0.17), gait spatio-temporal parameters step length (0.39 ± 0.12), stride length (0.56 ± 0.15), support base (0.83 ± 0.29) and step time (0.88 ± 0.26). Physical outcomes revealed SARC-F questionnaire (12.9 ± 5.3), mini COG (0.94 ± 1.2) and muscle strength with sit-to-stand performance (0.05 ±) and handgrip strength (8.9 kg ± 5.4). **Conclusion:** Older adults in residential aged care have low gait speed and low muscle strength. We would encourage other residential aged care facilities to strongly consider implementing exercise programs to counteract the negative impacts of ageing

P127- OLDER PEOPLE'S EXPERIENCES FROM A HEALTH PROMOTING INTERVENTION COMBINING EXERCISE AND NUTRITION – A QUALITATIVE STUDY BY FOCUS GROUP INTERVIEWS. Å. von Berens¹, M. Nydahl², A. Koochek¹, T. Cederholm¹, T. Gustafsson³, D.R. Kirm⁴, K.F. Reid⁴, R.A. Fielding⁴, M. Södergren⁵ (1. Dept. of Public Health and Caring Sciences/ Clinical Nutrition and Metabolism, Uppsala University, Sweden; 2. Department of Food, Nutrition and Dietetics, Uppsala University, Uppsala, Sweden; 3. Department of Laboratory Medicine, Karolinska Institute, Stockholm, Sweden; 4. Nutrition, Exercise Physiology, and Sarcopenia Laboratory, Jean Mayer USDA Human Nutrition Research Center on Aging, Tufts University, Boston, Massachusetts, USA; 5. Dept. of Neurobiology, Care Sciences and Society/Division of Family medicine, Karolinska Institutet, Sweden)

Backgrounds: As the world's ageing population is increasing finding feasible ways to support older adults to age healthy with preserved physical function and muscle mass, and thus enabling an independent life-style is of great importance. Studies show that regular exercise can be effective in managing sarcopenia, that is age-related involuntary loss of skeletal muscle mass and strength, and that nutrition also play an important role. One aim of this study was to gain understanding of what makes older people to adhere to exercise and nutrition programs. To reach this goal we undertook a qualitative investigation of older people's experiences of participating in such an intervention. Method This qualitative study was embedded in the multicenter randomized clinical trial The Vitality and Vigor in the Elderly study, VIVE2. VIVE2 is a life-style intervention study designed to prevent sarcopenia by combining regular exercise with a nutritional supplement containing protein and vitamin D. All participants took part in a 6-month exercise program 2-3 days per week and were randomized to receive the nutritional supplement or placebo. It was a two-centre study from Boston, USA and Stockholm, Sweden. Focus group interviews were conducted with a subgroup of Swedish participants from the VIVE2 intervention. The participants were older adults; >70 years of age with some limitations in mobility. In total 8 women and 12 men were interviewed in four focus group sessions and their age ranged from 71 to 86 years (mean 77.5 y). A semi structured interview guide including open ended questions was used. The participants were encouraged to speak freely about their experiences. Manifest and latent content analysis was performed to highlight similarities and differences within codes and categories. The analysis was based on the methodological approach described by Graneheim and Lundman, taken into account the concepts of credibility, dependability and transferability. **Results:** The participants described their motives for participating in the intervention as primarily founded on concerns regarding the negative health effects of continuing with a sedentary life-style, difficulties of getting started on their own and lack of trust in accomplishing it on their own. Several participants also expressed that their main objective to participate was to lose weight by becoming more physically active. The experiences from the intervention was categorized and interpreted in one overall theme "Feeling more self-confident, joyful and safe". The theme encompasses the categories mental impact, the social support, physical impact and setting. The participants described mental, social and physical effects they experienced during their time in the intervention. The category setting refers to opinions about the importance of a custom-made setting for this target group. When discussing their experiences from the intervention almost everyone pointed out the social support as the main significant impact factor, while no one mentioned seeking the social support as a motivator for deciding to participate. Some of the participants expressed that they established a greater confidence in their own ability to continue

being active after the intervention. Others focused on barriers and expressed an absence of strategies, and also worry concerning managing being physically active on their own. Still, the majority of the participants clearly expressed a need to continue and fears about future muscle loss, impaired mobility and weight gain associated with inactivity. **Conclusion:** The result of this qualitative study captures the experiences of older adults who participated in a lifestyle intervention. The participants experienced that the intervention affected them both mentally and physically, and that the social support became a prerequisite to succeed. The discrepancy between the motives to participate and the aims the VIVE2 study, especially concerning the participants desire to lose weight, is valuable knowledge when designing interventions for this target group.

P128- CORRELATES OF SARCOPENIA IN CHRONIC KIDNEY DISEASE. S. Lai, P. Protopapa, A. Molfino, M. I. Amabile, A. Perrotta (Sapienza, University of Rome, Italy)

Introduction: Chronic kidney disease (CKD) is a common condition with a high cardiovascular mortality, associated with emerging risk factors such as sarcopenia. Several conditions can affect the muscle wasting in the CKD, such as Vitamin D deficiency, reduced protein intake, physical inactivity, metabolic acidosis, chronic inflammation, leading to a worsening of cardiovascular outcomes and cognitive function in these patients. The aim of the study was to assess the prevalence of sarcopenia, dinapenia and sarcopenic obesity in patients with CKD in conservative and replacement therapy and their association with markers of atherosclerosis, endothelial dysfunction, and cognitive tests. **Materials and Methods:** 77 patients (32 ♂, 44 ♀) with a mean age of 69.57 ± 9.84, affected by CKD (stage 3 / 5 KDOQI) in conservative or replacement therapy with hemodialysis (HD), peritoneal dialysis (PD) and renal transplantation (RT), were subjected to an assessment of anthropometric parameters (BIA and HandGrip Strength), inflammatory markers, mineral metabolism, and atherosclerotic markers (IMT, ABI and FMD), as well as an evaluation of compliance and cognitive status. **Results:** The prevalence of sarcopenia was of 49.4%, with 44.7% in HD, 10.5% in conservative therapy, and 31.6% and 13.2% for DP and RT, while the dinapenia and sarcopenic obesity of 10.4% and 2.6%. The sarcopenic patients had a significant increase in IMT values (p <0.032), a significant reduction in Total Cholesterol (p <0.006), HDL (p <0.004) and FMD (p <0.003). Inside of the groups, sarcopenic patients in conservative therapy showed a significant reduction of values of Total Cholesterol (p <0.002), Vitamin D (p <0.046) and FMD (p <0.013), whereas sarcopenic patients in HD presented an increase of TotalBodyWater (p= 0.13) and ExtraCellularWater (p = 0.28), which reflects a greater water retention. Sarcopenic Patients in DP had a reduction in the levels of Phosphorus (p <0.003) and HDL (p <0.008), whereas sarcopenic patients with RT had a reduction of FreeFatMass (p <0.029) and basal metabolism (p <0.05). No significant differences were found on cognitive tests and compliance. **Conclusions:** In our study we found a high prevalence of sarcopenia in patients suffering from CKD both in conservative and replacement therapy, with a significant change in IMT and FMD, early systemic markers of atherosclerosis and endothelial dysfunction, in addition to a reduction in the Total cholesterol and HDL, known as a negative prognostic markers. Sarcopenia is a condition underestimated, in CKD patients, therefore, the systematic assessment of the muscular component, through simple, inexpensive and non-invasive methods, it may be useful to define the prognosis and the cardiovascular risk of these patients with a high cardiovascular morbidity and mortality.

P129- GENETIC ABLATION OF 4E-BP1 AND 4E-BP2 IS ASSOCIATED WITH INCREASED MUSCLE MASS, STRENGTH AND PROTEIN SYNTHESIS IN AGED MALE-MICE. O. Le Bacquer^{1,2}, J. Salles^{1,2}, C. Guillet^{1,2}, C. Domingues-Faria^{1,2}, D. Dardevet^{1,2}, L. Combaret^{1,2}, Y. Boirie^{1,2,3}, S. Walrand^{1,2} (1. UMR 1019, Unité de Nutrition Humaine, INRA/Université d'Auvergne, Clermont-Ferrand, France; 2. Clermont Université, Université d'Auvergne, Unité de Nutrition Humaine, Clermont-Ferrand, France; 3. CHU Clermont-Ferrand, Service de Nutrition Clinique, Clermont Ferrand)

Background: The mammalian target of rapamycin (mTOR) is a multiprotein complex linking nutrient availability to cell growth and proliferation as well as numerous cellular processes. However, the key downstream targets of mTOR and their respective importance in controlling skeletal muscle function are still poorly understood. eIF4E-Binding proteins (4E-BPs) are involved in the control of translation initiation by mTOR, and are described as strong candidates linking mTOR activity and metabolism. Deletion of 4E-BP1 and 4E-BP2 in mice leads to increased sensitivity to diet-induced obesity and insulin resistance (1). On the other hand, transgenic overexpression of 4E-BP1 protects mice against obesity (2, 3). The aim of this study was to characterize the effect of 4E-BP1 and 4E-BP2 deletion on skeletal muscle function and homeostasis in aged-mice. **Methods:** 24-month old male and female wild-type (WT) and whole body 4E-BP1/4E-BP2 double knock-out (DKO) mice were used to measure forearm grip strength and wire screen holding time (n=5-6). Weight of the hindlimb muscles was measured after sacrifice. Protein synthesis was measured ex-vivo in EDL by incorporation of L-[U-¹⁴C] Phenylalanine in the presence or absence of leucine/insulin. Results were analyzed by student t-test or 2-way ANOVA. Bonferroni post-tests were used to compare replicate means by row. Results are expressed as mean±sem. **Results:** Survival rate was identical in WT and DKO mice. In males, genetic ablation of 4E-BP1 and 4E-BP2 resulted in increased lean mass (liver and skeletal muscle mass, p<0.01). The increased muscle mass in DKO mice was associated with increased mean (100.0±6.1g vs. 66.6±4.8g, p<0.01) and maximal grip strength (128.9±8.5g vs. 95.2±11.7g, p=0.06). Protein synthesis as measured by ¹⁴C-Phe incorporation into proteins was higher in both basal (0.251±0.021nmol/mg prot/h vs. 0.124±0.021nmol/mg prot/h, p<0.05) and leucine/insulin stimulated conditions (0.313±0.011 nmol/mg prot/h vs. 0.189±0.053nmol/mg prot/h, p<0.05) in DKO skeletal muscle. No difference in body composition, muscle mass, grip strength or skeletal muscle protein synthesis was observed in female DKO as compared to WT. **Discussion:** These results demonstrate that deletion of 4E-BPs might have beneficial effects on skeletal muscle mass and function in ageing mice. They also suggest that 4E-BP proteins are a gender-specific modulator of muscle homeostasis. 1. Le Bacquer, O. (2007) The Journal of clinical investigation 117, 387-396; 2. Tsai, S. (2015) The Journal of clinical investigation 125, 2952-2964; 3. Tsai, S. (2016) Cell reports 16, 1903-1914.

P130- PREDICTIVE ABILITY OF SEVEN DOMAINS IN THE KIHON CHECKLIST FOR THE NEW INCIDENCE OF 2.5-YEAR DEPENDENCY AND MORTALITY. S. Satake¹, H. Shimokata², K. Senda¹, H. Arai¹, K. Toba¹ (1. National Center for Geriatrics and Gerontology, Obu, Japan; 2. Institute of Health and Nutrition, Nagoya University of Arts and Science, Japan)

Background: The Kihon Checklist (KCL), which was developed by the Ministry of Health, Labor and Welfare in Japan, is extensively used to assess seniors' physical, mental, and social functions in daily lives and to identify at-risk of requiring support/care in the future.

The KCL consists of 25 yes/no questions regarding 7 domains such as IADL, physical, nutrition, eating, socialization, memory, and mood domains. We previously reported that the total KCL score could be a useful index to predict the new incidence of dependency and mortality. However, we did not examine which domains could relate to the new incidence of dependency and mortality. Therefore, the aim of this study was to examine which domains in the KCL could relate to the new onset of dependency and mortality in Japanese community-dwelling population. **Method:** Of all senior residents aged 65 years or older in the Higashi-ura town in April, 2010, the municipal government identified independent old persons who were uncertified by the Long-term care insurance (LTCI). The municipal government sent a KCL questionnaire to the independent seniors and asked them to return it after filling out all questions. We finally selected elderly residents who filled in all questions of the KCL questionnaire as the eligible subject in this study. Baseline characteristics and the data on KCL of the subjects were registered. Information about a new LTCI certification and death in 2.5 years was given by the municipal government. The Ethics Committee of the National Center for Geriatrics and Gerontology, Obu, Japan and Higashi-ura municipal assembly approved the study protocol. In this study, the cut-off point for physical domain (#6-10) was defined as 3 or more negative answers. The cut-off points for IADL domain (#1-5), nutrition domain (#11, 12), eating domain (#13-15), and mood domain (#21-25) were defined as 2 or more negative answers. In the memory domain, one or more scores were considered as having memory problems. The cut-off point for socialization domain was defined as an answer of "no" to question 16. If the score in each domain was higher than the each cut-off point, the subject was considered as a case having problems in the domain. The LTCI system had been introduced in Japan since 2000. In this system, the certification for the LTCI service need is separately assessed by entrusted investigators from responsible municipal governments and medical doctors in charge of the senior who applied for being certified by the LTCI. Then, based on their reports regarding dependency in the activities of daily living and comorbidities, the examining committee composed of municipal staffs, medical doctors and community health nurses who had a lot of experiences in the geriatric field decides the need of certification and its grade. In this study, dependency was defined by having the new LTCI certification. The independent rate was calculated by 1-incident rate of a new LTCI certification. Information on the LTCI certification and death of all senior residents was registered by the municipal government. Student's t test and chi-square test were used to analyze the differences between sexes in the baseline characteristics and in the incidence of dependency and mortality in 2.5years. Cox proportional hazards model regression analyses were used to estimate hazard ratios (HRs) and construct 95% confidence intervals (CIs) of case in each domain compared to control, adjusting for age and sex. A p value less than 0.05 was considered significant. **Results:** Of all residents (n=9,367) who were 65 years or older in Higashi-ura town in 2010, we excluded 1,276 seniors who had already been certified as persons of requiring care/support in their daily lives. The KCL questionnaire was sent to the remaining older residents. Although 5,638 seniors (69.7%) replied and filled in the questionnaire, 5,542 seniors (68.5%) completely filled it out and were eligible for this study. The subjects who had new certifications for LTCI service need were two or three times higher in cases having problems in each domain than controls. The Cox proportional hazard model adjusted for age and sex indicated that each case group in IADL, physical, nutrition, and mood domains significantly predicted the risk of dependency, with the HRs of 1.696 (95% CI; 1.371-2.099), 1.938 (95% CI; 1.548-2.426), 1.824 (95% CI; 1.047-3.175), and 1.892 (95% CI; 3.733-6.089), respectively, compared to each control group. Additionally, the case group in

physical, nutrition and socialization domains could significantly predict the incidence of death with the HR of 1.875 (95% CI; 1.196-2.941), 2.645 (95% CI; 1.071-6.530) and 1.843 (95% CI; 1.123-2.034), respectively. **Conclusion:** Both physical and nutrition domains showed a significant predictive ability for the incident dependency and mortality. On the other hand, IADL and mood domains indicated a significant prediction of dependency, while the socialization domain significantly predicted death.

P131- DETERMINANTS OF COGNITIVE STATUS IN NONAGENARIANS: A FOCUS ON SARCOPENIA, PHYSICAL PERFORMANCE, AND HORMONAL STATUS. E. Poggiogalle^{1,2}, K.E. Cherry³, L.J. Su⁴, S. Kim⁵, L. Myers⁶, D.A. Welsh⁷, E. Ravussin¹, S.M. Jazwinski⁵ (1. Pennington Biomedical Research Center, Baton Rouge, LA, USA; 2. Department of Experimental Medicine- Medical Pathophysiology, Food Science and Endocrinology Section, Sapienza University, Rome, Italy; 3. Department of Psychology, Louisiana State University, Baton Rouge, LA, USA; 4. Department of Epidemiology, University of Arkansas for Medical Sciences, Little Rock, AR, USA; 5. Tulane Center for Aging and Department of Medicine, Tulane University Health Sciences Center, New Orleans, LA, USA; 6. Department of Global Biostatistics and Data Science, School of Public Health and Tropical Medicine, Tulane University Health Sciences Center, New Orleans, LA, USA; 7. Department of Medicine, Louisiana State University Health Sciences Center, New Orleans, LA, USA)

Background: Alterations in different endocrine axes have been postulated to play a relevant role in age-related cognitive decline as well as in the decline of lean body mass, leading to poor physical performance. The aim of our study was to investigate the relationships linking cognitive status, sarcopenia, physical functionality and insulin-like growth factor 1 (IGF1) and testosterone levels in nonagenarians. **Methods:** Eighty one nonagenarians (34 men and 47 women) from the Louisiana Healthy Aging Study were included. The Mini Mental State Examination (MMSE), the Vocabulary-WAIS subtest and the Geriatric Depression Scale (GDS) were administered. Sarcopenia was evaluated using different criteria. The 6-minute walk test (6MWT) was performed. Plasma IGF1 and testosterone levels were measured. Participants were divided in 3 groups based on the MMSE score (≥ 24 : cognitive intact group, CI; 18-23: mild cognitive impairment group, MCI; < 18 : severe cognitive impairment group, SCI). **Results:** 85.2% of nonagenarians had normal cognitive status, 12.3% had MCI; only two women had SCI. No association was found between appendicular lean mass, or other indices of sarcopenia, and MMSE score. The distance walked at the 6MWT was not associated with MMSE score. Testosterone levels were negatively associated with MMSE score in men only ($p=0.03$), whereas IGF1 levels showed no association with MMSE score. **Conclusion:** In our cohort of nonagenarians, no association emerged between sarcopenia, physical performance and cognitive status. Our findings do not support a role of IGF1 decline in cognitive deterioration in late life. High levels of testosterone may be detrimental to cognition in the oldest old men. Keywords: cognitive status, sarcopenia, physical performance, hormones, nonagenarians.

P132- HOW IS FRAILTY MEASURED IN INDIVIDUALS WITH HEART FAILURE? A SYSTEMATIC REVIEW. J. McDonagh¹, L. Martin¹, C. Ferguson², S.R. Jha^{1,3}, P.S Macdonald³, P.M. Davidson⁴, P.J. Newton^{1,3} (1. Centre for Cardiovascular & Chronic Care, Faculty of Health, University of Technology Sydney, Australia; 2. Faculty of Health, University of Technology Sydney, Australia; 3. Heart and Lung Transplant Clinic, St. Vincent's Hospital, Sydney, Australia; 4. Johns Hopkins School of Nursing, School of Nursing, Johns Hopkins University Baltimore, MD, USA)

Background: Rates of frailty are reportedly between 15-74 % in individuals with heart failure. There has been no consensus on the most appropriate instrument for use in heart failure. One of the most well-known frailty definitions is the Fried phenotypic definition which focuses on five physical domains; exhaustion, physical inactivity, walking speed, grip strength, & weight loss. The aim of this study was to identify how frailty is measured in individuals with heart failure and to elucidate which domains of frailty are most frequently assessed. **Methods:** Key electronic databases (MEDLINE and CINAHL and the COCHRANE Central) were searched from 2001- 2016. Search terms included but not limited to 'frailty, heart failure and measurement'. Eligibility criteria consisted of; studies that included subjects with a diagnosis of heart failure and studies must have assessed frailty using a structured instrument. **Results:** Twenty-four articles were included in this review. There was a total of eight frailty instruments identified, the most commonly used instrument was Fried's Frailty Phenotype ($n= 11$), with the majority of studies using a modified version of the Fried Phenotype. The second most common instrument was the Comprehensive Geriatric Assessment ($n=6$), followed by the Deficit Accumulation Index ($n=2$). None of the instruments have been formally validated for use in heart failure. All instruments assessed physical functioning but only four instruments assessed cognition. **Conclusion:** There are a range of frailty instruments being utilised in heart failure. However, there is currently no frailty instruments validated for use in a heart failure specific population. Current data are limited by focusing primarily on a physical definition of frailty, future studies might look to incorporate cognitive and psychosocial domains as part of a multi-domain frailty assessment.

P133- PSYCHOTROPIC DRUGS CHANGE STABILITY INDEPENDENTLY OF FALLS. M.Á. Caballero Mora, C.A. Bouzon, M.C. Rodríguez, L. Rodríguez Mañas (Geriatric Department, Hospital Universitario de Getafe, Spain)

Background: Falls are a major public health problem affecting at least one third of people aged 70 and older. Earlier reviews of randomised controlled trials of fall prevention interventions concluded that several types of intervention are effective, including training in strength and balance, modification of hazards at home, and withdrawal of psychotropic drugs [Cochrane Database Syst Rev. 2003;(4):CD000340]. Falls are usual consequences of frailty. However, the high prevalence of depression, insomnia and anxiety in this population does not always make possible withdrawal of psychotropic drugs. For this reason, our objective is to analyze the association among psychotropic drugs as an independent factor for changes in stability in general population older than 70 years. For this reason, our objective is to analyze the association among psychotropic drugs as an independent factor for stability in population older than 70 years. **Methods:** Observational cross-sectional study, ISCIII PI11/01068. 120 older than 70 years subjects that live in community. The study sample had a mean age of 77.65 years, they are between 70 and 96 years of age. 86 subjects were women They were volunteers and patients of geriatric consultant. Exclusion criteria included a Mini-

Mental State-Exam <25, Barthel <85, terminal illness, unwillingness to acute medical illness in the past 3 months; neurological diseases such as Parkinson's disease, cerebellar disease, peripheral neuropathy, peripheral artery disease and coronary heart disease. 15 subjects took Inadequate Anxiolytics (Diazepam, Potassium clorazepate, Bromazepam, Alprazolam, Lormetazepam, Midazolam, Brotizolam, Loprazolam, Zolpidem, Clomethiazole), 24 Adequate Anxiolytics (Lorazepam) and 26 antidepressants (ATC code). 76 patients had polypharmacy, it was defined as taking three or more drugs. 20 patients had recurrent falls, it was defined as two or more falls in the last year. Logistic regression models were used to assess this relationship using age, sex, recurrent falls, and polypharmacy as possible confounders. **Results:** In our model, inadequate anxiolytics were associated with statistically significant changes on eyes open Foam B=0,198,(0,038-1,112), p= 0,036; adequate anxiolytics with eyes closed Foam B=0,208, (0,080-1,537) p=0,030; Right velocity of sway (RMVL) B=0,242, (0,186-2,244)p=0,021 and antidepressives with eyes closed Firm B=0,201, (0,001-0,236), p=0,049, fall eyes open foam B=0,218, (0,006-0,181) p=0,037; alignment B=0,249, (1,672-13,317) p=0,012; Front velocity of sway (FMVL) B=0,206,(0,026-1,714)p=0,043. **Conclusions:** Psychotropic drugs change stability independently of polypharmacy, recurrent falls, age and sex. This results are important in order to be able to create an specific working out program and prevent falls and frailty in patients to whom can't withdraw psychotropic drugs.

P134- BONE MINERAL DENSITY IS ASSOCIATED WITH MUSCLE MASS IN OBESE OLDER ADULTS WITH DIABETES TYPE 2. R.G. Memelink¹, A.M. Verreijen¹, M.J.J. de Bos Kuil¹, M.F. Engberink¹, S. Verlaan^{2,3}, J. de Vogel-van den Bosch², P.J.M. Weijs^{1,3} (1. Department of Nutrition and Dietetics, Faculty of Sports and Nutrition, Amsterdam University of Applied Sciences, The Netherlands; 2. Nutricia Research, Utrecht, The Netherlands; 3. VU University Medical Center, Amsterdam, The Netherlands)

Rationale: The number of obese older adults with diabetes type 2 is increasing worldwide. Weight loss treatment in this group seems beneficial for cardio-metabolic and other health outcomes, but it might reduce muscle mass and bone mineral density (BMD). The association between obesity and BMD is controversial, and the role of muscle mass and dietary protein intake is not fully clear. This study explores the association between body weight, muscle mass, dietary protein intake, and physical activity level on BMD in obese older adults with diabetes type 2. **Methods:** For this cross-sectional analysis we used baseline data of a 13-week randomized trial evaluating the effect of a multi-modal intervention on muscle preservation and insulin sensitivity during a weight loss program in obese older adults (55-80y) with diabetes type 2 (PROBE). Body weight was measured using a calibrated scale (Life Measurement), appendicular lean mass (ALM) was used as a proxy for muscle mass and was measured by dual-energy X-ray absorptiometry (DXA, Hologic Discovery A), dietary protein intake was estimated by a 3-day food record, Physical Activity Level (PAL) was estimated by a 3-day activity record, and hip BMD was assessed by DXA. After determination of Pearson's correlation coefficients for body weight, ALM, protein intake, and PAL with BMD, linear regression analysis was performed with significantly correlating determinants (body weight [kg], ALM [kg], protein intake [g/kg/d], and/or PAL [-]) and hip BMD (g/cm²) as outcome variable. **Results:** Mean age of the 122 included subjects was 67±6y, with a BMI of 33±4kg/m². 65% of subjects were male. Body weight and ALM correlated significantly with BMD (r=0.34, p<0.001; r=0.43, p<0.001) whereas protein intake and PAL did not

(r=0.02, p=0.84; r=0.005, p=0.95). Linear regression analysis with the two determinants body weight and ALM identified ALM as being significantly associated with BMD, whereas body weight was not. Beta for ALM was +0.011 g/cm² (95% CI: 0.004 – 0.017; p<0.01), meaning that a 1 kg increase in ALM is associated with a +0.011 g/cm² increase in BMD. **Conclusion:** In this explorative cross-sectional analysis appendicular muscle mass is positively associated with BMD, rather than body weight, protein intake, and physical activity level.

P135- INFLAMMATORY MEDIATORS, RISK FOR SARCOPENIA AND DISABILITY IN ELDERLY WOMEN WITH LOW BACK PAIN: BACK COMPLAINTS IN THE ELDERS-BRAZIL STUDY. B.Z. Queiroz¹, L.P. Lustosa¹, D.S. Pereira², R.A. Lopes¹, D.C. Felício¹, R.M.F.V.S. Jardim¹, J.P. Silva¹, N.M.B. Rosa¹, L.S.M. Pereira¹ (1. Universidade Federal de Minas Gerais, Belo Horizonte, Brazil; 2. Universidade Federal de Alfenas, Alfenas, Brazil)

Background: Pro-inflammatory cytokines are recognized as causes of muscular catabolism, and increases in their levels have been associated with sarcopenia. Cytokines have also been associated with pain. Low back pain (LBP) is an important complaint among the elderly because it has a significant impact on function. Pain may represent one of many age-related factors that contribute to the progression of sarcopenia. The presence of LBP in the elderly could, therefore, be another factor that contributes to changes in the regulatory process of inflammation. Considering that the origin of LBP is multifactorial, the inflammatory mediators are recognized as members of the pathophysiology of LBP and sarcopenia, and both are associated with disability, the objective of this study was to compare the intensity and qualities of LBP, plasma cytokine levels (TNF- α , sTNF-R1, IL-1 β , and IL-6), and disability in elderly women with acute low back pain who did not have sarcopenia with those at risk for sarcopenia. **Method:** The inclusion criteria were that the individual had to be a community-dwelling elderly woman at least 65 years old who experienced a new (acute) episode of LBP in which the symptoms had been occurring for fewer than 6 weeks. An episode was considered "new" if the patient had not visited a doctor or other health care provider during the preceding 6 months for the same back complaint. Exclusion criteria were: Women with cognitive impairments were excluded. Those with visual, auditory, or motor deficiencies that restricted their ability to complete mobility tests, acute inflammatory disease, neoplasia in the last 5 years, or who were using immunosuppressive drugs were also excluded from the study. 155 women were included, from the "International Back Complaints in the Elders" study, and were divided into groups: "without sarcopenia" and "at risk for sarcopenia". The EWGSOP has suggested that sarcopenia screening begin with gait speed measurement (with a <0.8 m/s cut-off point), followed by grip strength (with a 20 kg cut-off point for women). If gait speed was >0.8 m/s and grip strength was >20 kg, the subject was classified as not having sarcopenia. Risk for sarcopenia was defined as a gait speed <0.8 m/s, or gait speed >0.8 m/s and grip strength <20 kg. Inflammatory mediators were measured using enzyme-linked-immunosorbent-assays; Disability, using Roland-Morris-Disability-Questionnaire; and Pain, using McGill-Pain-Questionnaire, Numerical-Pain-Scale, and frequency. **Results:** The groups were similar on all the socio-demographic variables and clinical conditions analyzed (p > 0.05). 52.26% elderly women were "at risk" for sarcopenia and had higher levels of sTNF-R1 (p=0.037), greater LBP severity (p=0.043), frequency (p=0.037) and disability (p=0.011) than those without risk for sarcopenia. There were no significant differences in IL-6 and TNF- α levels between the groups (p >0.05). IL-1 levels were under the detection limit and were therefore

not detected in the sample. **Conclusion:** Elderly women at risk for sarcopenia had higher levels of sTNF-R1, greater LBP severity and frequency, and greater disability from LBP than those without sarcopenia. The association between loss of muscle mass and strength (including the postural muscles) and inflammation may explain the link between sarcopenia and LBP.

P136- PREVALENCE AND RISK FACTORS OF SARCOPENIA IN ELDERLY PATIENTS WITH RHEUMATOID ARTHRITIS.

M. Torii¹, M. Hashimoto², T. Fujii², M. Furu², H. Ito², A. Hana¹, M. Hamaguchi³, C. Terao², A. Yamamoto², M. Uda¹, K. Nin¹, T. Mimori², H. Arai⁴ (1. Department of Human Health Sciences, Kyoto University, Japan; 2. Department of the Control for Rheumatic Disease, Kyoto University, Japan; 3. Department of Endocrinology and Metabolism, Kyoto Prefectural University of Medicine, Japan; 4. Center for Gerontology and Social Science, National Center for Geriatrics, Japan)

Background: Sarcopenia is characterized by loss of muscle strength and muscle mass, leading to falls and adverse health outcomes. Patients with rheumatoid arthritis (RA) may have a higher risk for sarcopenia due to chronic inflammation, reduced physical ability, and concomitant treatments such as glucocorticoids (GCs). The purpose of the study was to determine the prevalence of sarcopenia in elderly RA patients and to elucidate the contributing factors for the development of sarcopenia. **Method:** We measured muscle strength, muscle mass and walking speed in 198 RA patients. Sarcopenia was defined by the diagnostic algorithm of the Asian Working Group for Sarcopenia (AWGS). We investigated age, duration of RA, stage, the RA disease activity (DAS28), concomitant treatments, Health Assessment Questionnaire Disability Index (HAQ-DI), BMI, Mini Nutritional Assessment (MNA), bone mineral density, falls and bone fractures within a year. Association between the diagnosis of sarcopenia and these factors was analyzed by univariate and multivariate logistic regression analysis. **Results:** The prevalence of sarcopenia in RA patients was 51.0% (21.7%, severe sarcopenia; 29.3%, sarcopenia and 60.1 %, low muscle mass). RA patients with sarcopenia showed a higher incidence of fall and fractures along with lower bone mineral density ($P<0.001$) than non-sarcopenic RA patients. Biologics use and high MNA had an inverse association with sarcopenia, while RA duration and Stage were positively associated with that of sarcopenia by multivariate analysis. **Conclusion:** Our study indicates that sarcopenia is associated with falls and fractures along with osteoporosis in RA patients. Longer disease duration, joint destruction and malnutrition may promote while the use of biologics may suppress the development of sarcopenia in RA patients.

P137- EFFECT OF COMPREHENSIVE REHABILITATION DURING FOUR WEEKS IN PATIENTS WITH DISUSE SYNDROME.

K. Maeda, M. Majima, H. Kurabayashi (Department of Rehabilitation, Saitama Medical University Hospital, Japan)

Background: Sarcopenia was originally proposed as an age-related decline of skeletal muscle mass by Rosenberg in 1989. EWGSOP had divided sarcopenia into two groups, one was primary, another was secondary. Disuse syndrome is muscle weakness and muscle atrophy due to immobilization in the acute phase of various diseases or in postoperative conditions. As disuse syndrome is apt to occur in the elderly, sarcopenia in the elderly due to disuse syndrome may include not only the secondary, but also the primary sarcopenia. By the way, it has been reported that protein supplementation prevent the progress of sarcopenia in the elderly. These results suggest that protein supplementation added to physical therapy may effect on

improvement of sarcopenia due to disuse syndrome, because disuse syndrome. Include both primary age-related sarcopenia and secondary disuse sarcopenia. The purpose of this study is to investigate the effect of comprehensive rehabilitation program consisted of physical therapy, exercise done with nurses, and protein supplementation on disuse sarcopenia. **Method:** Subjects were nineteen patients (8men, 11women) with disuse syndrome admitted to the rehabilitation ward In Saitama University Hospital from November in 2012 to April in 2016. Inclusion criteria of the subjects were 1) patient above 65 years old, 2) patient was not out of bed at the point of the first examination by the doctor in department of rehabilitation medicine, 3) patient was not able to walk independently at the point of admission to the department of rehabilitation medicine. Subjects were divide two groups, one was group that comprehensive rehabilitation program was performed (comprehensive rehabil group), another was control group that only usual program done in the ward of rehabilitation medicine department was performed. Comprehensive rehabilitation program consisted of physical therapy (PT), occupational therapy (OT), exercise done with nurses, and protein supplementation. PT and OT were performed forty minutes a day, five days a week, respectively. Exercise done with nurses (standing up and walking exercise) was performed twenty minutes a day, seven days a week. Protein supplementation was done once a day. Protein supplement consisted of β -Hydroxy- β -Methylbutyrate1500mg, L-glutamine7000mg and L-arginine7000mg. As subjects in control group were all suffering from chronic renal disease, protein supplement could not be described. Comprehensive rehabilitation program was continued for four weeks, and subjects in control group received PT and OT in the same contents and the same period as that of comprehensive rehabil group. Muscle mass was estimated using dual energy X-ray absorptiometry (DXA). Estimation of muscle mass was carried out at an interval of 4weeks in both groups. **Statistical analysis:** Students t-test and two way factorial analysis of variance was used. P values less than 0.05 were considered statistically significant. **Result:** Thirteen subjects were in comprehensive rehabil group, and six subjects were in control group. The average age of subjects was 78.2 ± 9.5 years in comprehensive rehabil group, and 76.0 ± 2.9 years in control group ($P=0.071$). Muscle mass before and after comprehensive program in comprehensive rehabil group was 28120g, 28940g respectively. Muscle mass before and after usual program in control group was 28640g, 27180g respectively. The difference between two groups was statistically significant ($P=0.025$). **Conclusion:** It was suggested that comprehensive rehabilitation program during four weeks was effective on improvement of disuse sarcopenia.

P138- METABOLIC SYNDROME AND SARCOPENIA IN URBAN OLDER ADULTS IN MALAYSIA.

M.A. Abdul Azis¹, N. Saedon^{1,2}, H.M. Khor^{1,2}, M.P. Tan^{1,2}, A.V. Chin^{1,2}, S. Kamaruzzaman^{1,2} (1. Division of Geriatric Medicine, Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia; 2. Ageing and Age-Associated Disorders Research Group, Health and Translational MedicineCluster, University of Malaya, Kuala Lumpur, Malaysia)

Background: Globalization in recent years has not only resulted in an increase in economical growth and development of Asia but has also contributed to internationalization; in not only the lifestyle and behavior of its people but also its foods and diets. While malnutrition remains a major issue in both developed and developing countries, obesity is on the rise. With the alarming increase in obesity rates in Southeast Asia, Malaysia is leading with the highest prevalence of obesity in this region (14%) followed by Thailand (8.8%) and Vietnam (5.7%) respectively. Metabolic syndrome (MS) that is on the rise

in Asia is commonly obesity-related and made up of a constellation of cardiovascular risk factors. Its prevalence increases with age and its links to a new geriatric syndrome called Sarcopenia needs further assessments in older populations as it can lead to higher risk for adverse outcomes. Sarcopenia in older adults is independently associated with falls, functional impairment and a higher morbidity and mortality. Associations between these two syndromes could help detect a wider net of vulnerable older individuals at increased risk of these outcomes. We examine the link between metabolic syndrome and sarcopenia in a rapidly ageing population like Malaysia. **Methods:** Secondary data obtained from 1334 participants of the Malaysian Elders Longitudinal Research (MELoR) cohort was used to define MS using IDF, AHA-NHLBI and JIS criteria and establish degree of agreement between them. Participants aged 55 years and above were examined classified to group with and without MS and differences were examined using Independent-samples T and chi-square test. Binary logistic regression was performed on multiple factors to eliminate confounding and to examine independent factors on MS. These factors if significant at $p < 0.05$, were considered for multivariate analysis. Sarcopenia was defined as having low skeletal muscle mass plus low muscle strength and/or low physical performance as defined by Asian Working Group for sarcopenia (AWGS) criteria. Muscle mass was measured using bioelectrical impedance analysis, and muscle strength was measured via handgrip strength. Gait speed of $<0.8\text{m/s}$ was used to defined low physical performance. The association of metabolic syndrome with sarcopenia was evaluated using logistic regression models. **Results:** Prevalence of MS according to AHA/NHLBI, IDF and JIS was 44.8%, 49.8% and 55.1% respectively. MS components of high triglyceride, hypertension and high waist circumference were the most frequently observed by all 3 definitions. There was better agreement between JIS and IDF criteria ($k=0.89$) followed by AHA-NHLBI vs. IDF ($k=0.68$) and AHA-NHLBI vs. JIS ($k=0.79$). Participant with MS had higher number of co-morbid diseases; adjusted OR 2.62 95% CI 1.07-6.46 ($p=0.031$), polypharmacy (adjusted OR 5.76 95% CI 1.76-18.88) ($p<0.001$), and lower grip strength; (adjusted OR 0.95 95% CI 0.92-0.98) ($p=0.003$). Prevalence of sarcopenia was 24.4%. There was an expected increase in prevalence of sarcopenia with age. Only components of Sarcopenia such as muscle strength and performance were found to be associated with MS ($p<0.001$). **Conclusion:** In conclusion, the prevalence of MS and sarcopenia is high in this older urban population in Malaysia. MS is strongly associated with reduced muscle strength, which is a strong predictor for physical disabilities in older age. Although this study could not conclude a significant relationship between MS and sarcopenia; its association with muscle strength and performance was significant. Future waves of the MELoR study may show more significant relationships between MS and sarcopenia. This would allow for early identification of those at risk to implement strategies and interventions. These should focus more on increasing muscle strength through targeted physical activity and specific dietary modifications in older adult with MS in order to achieve healthy and successful aging. Key words: metabolic syndrome, older adults, sarcopenia.

P139- QUANTITATIVE AND QUALITATIVE PROTEIN INTAKE IN ELDERLY AND THEIR DISTRIBUTION PER-MEAL. A.S. Monteiro¹, K. Gama dos Santos¹, C. Kovacs¹, A.L. Trindade¹, K. Galdino da Silva¹, C. Paiva¹, F. Amparo¹, P. Moreira¹, R. Alves¹, A. Sousa², D. Magnoni³ (1. Ambulatory of Nutrition Clinic, Institute Dante Pazzanese of Cardiology, São Paulo, Brazil; 2. Technical Director of the Health Department, Institute Dante Pazzanese of Cardiology, São Paulo, Brazil; 3. Director of Nutrition, Institute Dante Pazzanese of Cardiology, São Paulo, Brazil)

Background: The aging process is characterized by progressive and gradual loss of muscle mass and consequent reduction of strength and physical endurance. This condition, called sarcopenia, is multifactorial and one of its main causes is inadequate protein intake. Studies have shown that a pattern of protein intake distributed between the main meals and their quality can stimulate optimal muscle protein synthesis and soften the effects of sarcopenia. Protein recommendation per meal to achieve optimal muscle protein synthesis is 0.4 g high quality protein / kg of body weight / meal. Therefore, the objective of this study is to evaluate the quantitative and qualitative protein intake and their distribution per meal, in elderly patients attended at a nutrition clinic. **Method:** Cross-sectional study at an Institute of Cardiology (São Paulo, Brazil), performed with 43 elderly patients (≥ 60 years) of both genders. Clinical, anthropometric data were collected: weight, height, waist circumference (WC) and body mass index (BMI, classified according to PAHO/WHO 2002) and usual food registry. The Brazilian Food Composition Table (TBCA, USP - 4th ed.) was used to evaluate the energy-protein intake and the quality of the protein consumed. Data were tabulated and descriptive analysis performed using the Microsoft Office Excel program. **Results:** The sample was composed mainly of women (58.1%) within the average of 70 ± 7.8 years old. Of all patients, 77% were overweight and 88% at elevated WC, factors that are usually associated with insulin resistance and inflammation and that may result in anabolic resistance, that is, reduction in protein synthesis in response to ingestion of proteins. In the study population, mean protein intake was 1.2 g / kg body weight / day, but the minimum recommendation of 1.0 g protein / kg body weight / day proposed by the PROT-AGE Study Group was not achieved for 35% of patients (mean of 0.7g / kg of body weight / day). The protein intake in relation to the macronutrient distribution was 24%, over the recommendation proposed by FAO / WHO (10-15%). Although the diet was normal to hyperprotein, protein quality and its distribution during the day was inadequate. Intake of 0.4 g high quality protein / kg body weight / meal was achieved only at lunch (0.43 g / kg / day), and it was necessary to achieve this goal in the three main meals (breakfast, lunch and dinner) to optimize protein synthesis. This is justified because the dietary habits of the studied population were characterized by a low intake of high quality protein at breakfast (intake of only a portion of dairy) and the consumption of snacks in substitution of dinner (usually composed of breads or biscuits, fruits, teas and vegetable fat). **Conclusion:** Adequate protein intake is essential to promote muscle synthesis. The recommendations for the elderly are higher than the adult population, due to the inherent losses in the aging process, which is explained by the lower anabolism, inflammation and catabolism associated with acute and chronic diseases, besides the low consumption of proteins in the diet. In the present study, although the daily protein intake meets the recommendations, their distribution and quality are insufficient for optimal muscle protein synthesis. Therefore, as a nutritional intervention, according to the guidelines, we must consider the protein source, the time of ingestion / meal and if necessary the supplementation. In addition, the practice of physical activity for the prevention and recovery of sarcopenia should be encouraged

for the elderly. Therefore, it is suggested a careful analysis and adequacy in protein intake in the nutritional intervention of the elderly patient, contributing to the improvement and maintenance of muscular functionality and assurance the support of good health and quality of life.

P140- PERIPHERAL MUSCLE FATIGUE IN HOSPITALIZED GERIATRIC PATIENTS. P. Arnold¹, R. Njemini^{2,3}, S. Vantieghem^{2,3}, J. Duchateau⁴, T. Mets^{2,3,5}, I. Beyer^{2,3,5}, I. Bautmans^{1,2,3,5} (1. Stichting Opleidingen Musculoskeletale Therapie (SOMT), Amersfoort, The Netherlands; 2. Gerontology (GERO) Department, Vrije Universiteit Brussel (VUB), Brussels, Belgium; 3. Frailty in Ageing (FRIA) Research Department, Vrije Universiteit Brussel (VUB), Brussels, Belgium; 4. Laboratory of Applied Biology & Neurophysiology, Université Libre de Bruxelles (ULB), Brussels, Belgium; 5. Geriatrics Department, Universitair Ziekenhuis Brussel, Brussels, Belgium)

Background: Sarcopenia can accelerate dramatically in older patients during inflammatory conditions, which are characterised by increased catabolic processes. Previously, we have reported that older patients admitted to an acute geriatric ward with inflammation were significantly weaker and showed significantly greater levels of muscle fatigability (i.e. susceptibility to fatigue) compared to those without inflammation (Bautmans and others 2005, Journal Gerontology). However, the involvement of peripheral muscle activation deficits in inflammation-induced muscle fatigue remains unclear. Understanding these mechanisms will help to develop more targeted therapeutic interventions to counteract the inflammation-induced muscle atrophy in these patients. **Methods:** Hospitalized patients with acute infection (82±6 years, N=10, assessed within the first 3 days of admission) and community-dwelling controls (76±6 years, N=19) sustained a maximal voluntary isometric contraction of the M. Adductor Pollicis until strength dropped to 50% of its maximal value. Muscle activity was monitored using surface electromyography (sEMG). Muscle membrane excitability (M-wave amplitude) and muscle contractile properties (twitch force, rate of force development and rate of force relaxation from maximum to 50%) were calculated. Serum was collected for determination of twenty-five circulating inflammatory biomarkers. Changes from pre-fatigue to post-fatigue were analyzed by repeated measures ANCOVA with group (patients versus controls) as between-subjects factor and age as covariate. For analysis of changes within each group separately, repeated measures ANOVA was used. Partial correlations (corrected for age) were computed to analyze the relationship between different muscle parameters and levels of cyto/chemokines (for which the data were log(10) transformed). **Results:** Geriatric patients showed a significant decrease (p<0.05) in normalized sEMG activity during the fatigue test. Changes in muscle membrane excitability and muscle contractibility during the fatigue protocol did not differ between geriatric patients and older controls. However, when analysed separately these muscle parameters decreased significantly in the older controls, but not for the geriatric patients (except for the rate of force relaxation from maximum to 50%). No significant relationship between muscle membrane excitability and inflammatory markers was found. In contrast, higher levels of inflammatory markers were significantly related to worse muscle contractility. Although slower muscle contraction and relaxation were significantly related to higher levels of inflammation, no statistical difference was found between groups. **Conclusion:** Overall, the results of our study indicate that ongoing inflammation in geriatric patients with acute infection is related to substantially altered muscle performance and support the hypothesis that local processes affecting muscle excitability and contractility are involved.

P141- PROTEIN INTAKE AND INCIDENT FALLS AMONG OLDER ADULTS IN SPAIN: THE ENRICA-SENIORS COHORT. H. Sandoval-Insausti^{1,2}, R.F. Pérez-Tasigchana¹, E. López-García¹, J. Ramón Banegas¹, F. Rodríguez-Artalejo¹, P. Guallar-Castillón¹ (1. Department of Preventive Medicine and Public Health, School of Medicine, Universidad Autónoma de Madrid/IdiPaz and CIBERESP, Madrid, Spain; 2. Service of Preventive Medicine, Hospital Universitario de La Princesa, Madrid, Spain)

Background: Protein intake has been related to a decreased risk of incident frailty. Nevertheless, very few studies have examined the relationship between protein intake and falls in longitudinal studies. This study assessed the association of total, animal, and vegetable protein intake with the risk of falls and falls requiring medical attention, in a cohort of older adults from Spain. **Methods:** Prospective cohort study of 2,464 community-dwelling men and women aged ≥60, recruited in 2008-2010 in Spain. At baseline, information on socio-demographic factors, health behaviors, and morbidity was obtained. Habitual protein intake was determined with a validated computerized face-to-face diet history. Protein intake was categorized in sex-specific tertiles. Study participants were followed up through 2012. At the end of follow-up participants were asked about the number of falls they suffered in the preceding year, and their medical consequences. Analyses were performed using logistic regression. When the number of falls was considered, we used negative binomial regression producing incident rate ratios (IRR). All the analyses were adjusted for the main potential confounders. Results were combined with previous findings in the literature using fixed-effect meta-analysis. **Results:** A total of 522 participants (21.2%) had suffered at least one fall in the year before the interview, and 235 of those required medical attention (9.5%). Recurrent falls were suffered by 173 participants (7.0%), and the mean number of falls was 0.34/year. After adjustment for the main confounders, the OR (95% Confidence Interval) of risk of falling for increasing tertiles of total protein intake were 1.00, 0.87 (0.68-1.11), 0.97 (0.75-1.26); p for linear trend: 0.83. When the number of falls was considered, compared with those in the lowest tertile of total protein intake, the IRR (95% Confidence Interval) for those in the second tertile was 0.86 (0.68-1.09), and 0.94 (0.73-1.20) for those in the highest tertile; p for linear trend: 0.83. We found similar results when animal and vegetable protein intake were analyzed, when “falls requiring medical attention” was used as the outcome, and when calculating the risk associated with one standard deviation increase in protein intake. There was not statistical significance in the tests for linear trend in any of these analyses. When we replicated the analyses stratifying by unintentional weight loss, there was a protective and significant association for vegetable protein intake with the number of falls among those who unintentionally lost ≥4.5 kg in the preceding year; IRR for one standard deviation increase: 0.60 (0.38-0.92). In the meta-analysis, the pooled IRR for one standard deviation increase in the number of falls was 0.98 (0.87-1.09) for total protein intake. Results were similar for animal and vegetable protein intake. Nevertheless, the meta-analysis among those who had unintentionally weight lost ≥4.5 kg in the preceding year, showed a protective and significant association between total protein intake and the number of falls (pooled IRR for one standard deviation increase: 0.63; 95% CI: 0.41-0.98). Likewise, animal and vegetable protein intake significantly reduced the number of falls in this subgroup of older adults. **Conclusion:** There was not a protective association of protein intake with the risk of falling in older adults. However, protein intake had a protective association in those who had experienced unintentional weight loss of ≥4.5 kg in the preceding year. More studies are needed to better understand the role of protein intake in fall

prevention since specific subgroups can obtain substantial benefits. Data collection was funded by the following grants: FIS PI13/0288 (State Secretary of R+D and FEDER/FSE) Spanish Ministry of Economy and Competitiveness DEP2013-47786-R grant FEDER/FSE, the FRAILOMIC Initiative (EU FP7-HEALTH-2012-Proposal no. 305483-2), the ATHLOS project (EU H2020-Project ID: 635316), and the “Centro de Investigación Biomedica en Red” (CIBER). Instituto de Salud Carlos III. Madrid, Spain.

P142- VITAMIN INTAKE AND RISK OF FRAILTY IN OLDER SPANISH ADULTS. T. Balboa-Castillo^{1,2}, E.A. Struijk¹, E. López-García¹, J. Ramón Banegas¹, F. Rodríguez-Artalejo¹, P. Guallar-Castillón¹ (1. Department of Preventive Medicine and Public Health, School of Medicine, Universidad Autónoma de Madrid/ IdiPaz and CIBERESP, Madrid, Spain. 2. Department of Public Health. School of Medicine, Universidad de La Frontera, Temuco, Chile)

Background: There is evidence that poor nutrition is related to frailty. However, few studies have assessed the longitudinal association of vitamin intake with incident frailty in the elderly. In addition, no information has been found in the literature on the adherence to the recommended dietary allowances (RDA) for vitamins and their association with frailty. Therefore, the objective of this study was to assess the prospective association between both, dietary vitamin intake and RDAs adherence, with incident frailty in older adults from Spain. **Methods:** We analyzed data from a cohort of 1,643 community-dwelling participants aged 65 and over. The cohort recruited in 2008-2010 and followed up prospectively through 2012. Vitamin intake was assessed at baseline with a validated computer-assisted face-to-face diet history and categorized in sex-specific tertiles. The following vitamins were considered: Vitamin A, thiamine, riboflavin, niacin, vitamin B6, vitamin B12, vitamin C, vitamin D, vitamin E and folates. When studying adherence to the RAD for vitamins, those who met RDAs for the older Spanish population were considered as reference. Incident frailty was identified using the operational definition developed by Fried. Frailty was defined as having 3 or more of the following 5 criteria: (1) Unintentional weight loss ≥ 4.5 kg of body weight in the preceding year. (2) Exhaustion experienced at least 3 to 4 days a week. (3) Weakness, defined as the lowest quintile in the Cardiovascular Health Study of maximum strength on the dominant hand, adjusted for sex and body mass index. Strength was measured with a Jamar dynamometer. (4) Slow walking speed, defined as the lowest cohort-specific quintile in our study sample for the three-meter walking speed test, adjusted for sex and height. (5) Low physical activity, defined as walking ≤ 2.5 hours/week in men and ≤ 2 hours/week in women. Analyses were performed with logistic regression and adjusted for the main confounders. **Results:** During a 3.5 year follow-up, 89 participants (5.4%) developed frailty. The odds ratios OR (95% confidence interval) of incident frailty for those in the lowest versus the highest tertile of vitamin intake were: for vitamin B6 OR: 2.80 (1.38 to 5.67) p for trend: 0.004; for vitamin C OR: 1.65 (0.93 to 2.95) p for trend: 0.007; for vitamin E OR: 1.93 (0.99 to 3.83) p for trend: 0.06, and for folates OR: 2.34 (1.21 to 4.52) p for trend: 0.01. Non-adherence to the RDAs of vitamins was related to frailty for thiamine OR: 2.09 (1.03 to 4.23); niacin OR: 2.80 (1.46 to 5.38), and vitamin B6: 2.23 (1.30 to 3.83). The association was weaker and not statistically significant for vitamins A, riboflavin, vitamin B12, vitamin C, and vitamin D. When considering the 10 studied vitamins, those who met < 5 RDAs compared to those who met > 7 RDAs had a higher risk of frailty OR: 2.84 (1.34 to 6.03). **Conclusion:** A lower intake of vitamin B6, vitamin C, vitamin E, and folates was associated with a higher risk of frailty. Similarly, not meeting the RDAs for

vitamins was independently associated with frailty in the older Spanish population. Data collection was funded by the following grants: FIS PI13/0288 (State Secretary of R+D and FEDER/FSE) Spanish Ministry of Economy and Competitiveness DEP2013-47786-R grant FEDER/FSE, the FRAILOMIC Initiative (EU FP7-HEALTH-2012-Proposal no. 305483-2), the ATHLOS project (EU H2020-Project ID: 635316), and the “Centro de Investigación Biomedica en Red” (CIBER). Instituto de Salud Carlos III. Madrid, Spain.

P143- PHYSICAL FUNCTIONING CORRELATES OF THE FRIED FRAILTY PHENOTYPE COMPONENTS IN WOMEN AGED OVER 65 YEARS. G. Furtado^{1,2}, M. Patrício^{3,4}, M. Loureiro^{3,4}, J.P. Ferreira¹, A. Teixeira¹ (1. Research Unit for Sport and Physical Activity – Faculty of Sport Science and Physical Education, University of Coimbra, Portugal; 2. CAPES/CNPQ – Ministry of Education – Brazil; 3. Laboratory of Biostatistics and Medical Informatics and IBILI, Faculty of Medicine of the University of Coimbra, Portugal; 4. Laboratory of Biostatistics and Medical Informatics, Faculty of Medicine of the University of Coimbra, Portugal)

Background: Frailty syndrome (FS) is conceptualized as a state in which reserve functions across multiple physiologic domains decline, compromising the individuals’ capacity to withstand stress, thereby predisposing them to poor general health and physical functioning (PFU). This study aimed to analyze relationships between Fried FS indicators and PFU components. **Methods:** A prospective study was carried out in the city of Coimbra, Portugal and cross-sectional data were collected. Participants were 119 elderly women (81.96 \pm 7.89 years old) recruited from four social and healthcare centres, who were asked to complete a global health assessment. PFU was assessed through an independent and instrumental activities of daily life, agility-dynamic balance and fear of falling. The following Five Fried of FS indicators were assessed: shrinking, exhaustion, weakness, slowness, and low physical activity level. **Results:** The results in the PFU tests differed between FS subgroups, in specific, the frail subgroup displayed the weakest results for instrumental and independent activities of daily living and agility-dynamic balance and a trend for lower results for fear of falling and Tandem Balance test. Agility-dynamic balance and independent activities of daily life are the physical functioning components more strongly associated with the five Fried of FS indicators. On the other hand, slowness, low levels of PA and poor energy are the Five Fried of FS components more strongly associated with PFU domains. **Conclusions:** Understanding the magnitude of independent association of each PFU components and FS indicators in deferent cohort populations, may help to planned robust actions and policies to prevent frailty syndrome in populations above 65 years old. Key words: Frail Elders, activities of daily living, Physical Activity, walking speed, physical functioning.

P144- EFFECTIVENESS OF TWO EXERCISE PROGRAMS ON PHYSICAL FUNCTIONING AND BIOMARKERS OF AUTONOMIC ACTIVITY IN FRAIL ELDERLY WOMAN. G. Furtado^{1,2}, H. Carvalho³, M. Uba-Chupel^{1,2}, J.P. Ferreira¹, A. Botelho Teixeira¹ (1. Research Unit of Sport and Physical Activity – Faculty of Sport Science and Physical Education, University of Coimbra, Portugal; 2. CAPES/CNPQ – Ministry of Education – Brazil; 3. Faculty of Physical Education, University of Campinas, UNICAMP, Brazil)

Backgrounds: The consequence of the aging is the decline of the physical functioning (PFU). These factors are associated with elderly-frailty syndrome; whose characteristic is psychophysiological decline.

Cortisol (sCOR) is an essential hormone in the regulation of the stress and autonomy activity response but recently, alpha-amylase (sAA) has also emerged as a novel biomarker for evaluating the same settings. The aim of this study was to verify the effectiveness of different types of chair-exercise programs (CE) on PFU and salivary biomarkers of HPA axis and autonomic activity in frail institutionalized elderly woman. **Methods:** The sample consisted of 49 institutionalized elderly women (83.5±4.9 years old) selected by Fried Frailty Phenotype criterion. The participants were divided in elastic-band strength training, (EB; n=18) aerobic exercise (AE; n = 16) and control group (GC, no exercise, n=15). Sessions were done 2-3x per week, 28 weeks, at 60-65% of maximal heart rate. The sCOR and sAA were determined by ELISA and collected at the same time of the day. PFU was assessed through activities of daily life, changes of physical health, fear of falling, static and dynamic balance. **Results:** Lawton's activities of daily life changes across the CE were moderate for AE. Fear of falling presented a substantial decline for the EB. Substantial improvements on static and dynamic balance time was observed for both intervention groups. Considerable improvements on static balance test were observed for EB (effect-size: 0.48 to 0.66). Large between-individual variability was observed for sCOR and suggesting that changes in response to exercise based intervention were likely-trivial. As for sAA levels we observed a small increase for the AE. **Conclusion:** Both CE intervention was efficacy to increase the PFU related to functional fitness and fear of falling, but was not able to improve the perception of perform the activities of daily life and substantial alterations on salivary hormone levels. Key-words: Frail Elders, salivary cortisol, salivary alpha amylase, physical functioning, autonomic nervous system.

P145- TRAJECTORIES OF FUNCTIONAL ABILITY OVER THE LIFE COURSE: A DYNAMIC MODEL OF THE INTERACTION OF STRESSOR-INDUCED FUNCTIONAL LOSS AND RESILIENCE. D.B. Matchar^{1,2}, J.P. Ansah¹, V. Koh¹, H.E. Whitson^{2,3}, A. Chan¹ (1. Health Services and Systems Research, Duke-NUS Graduate Medical School, Singapore; 2. Department of Medicine, Duke University School of Medicine, Durham, NC, USA; 3. Geriatrics Research, Education and Clinical Center, Durham Veterans Affairs Medical Center, Durham, NC, USA)

Background: Successful aging has become an increasingly popular concept in light of population aging worldwide. Understanding resilience, the tendency to recover from life stressors, is integral to identifying factors that facilitate successful aging in individuals. Yet, current literature on resilience, and the related notion of frailty, lacks a common framework and clarity of concepts. We develop and describe a simple dynamic model that produces a wide range of life course trajectories of functional ability in individuals based on a few, explicitly defined factors. **Methods:** The model representing the dynamic relationship of functioning, stressors and resilience over the life course was implemented using the modeling methodology of system dynamics. System dynamics models consist of an interconnecting set of differential and algebraic equations developed from a broad range of relevant empirical data and hypothesis. System dynamics modeling captures complexity by focusing on the causal relationships and dynamic feedback mechanisms between different parts of the system. Key model features of system dynamics models are “stocks” which are quantities that accumulate or diminish over time, and “flows” which are the rates at which quantities flow in or out of stocks. The model was developed as follows: first, a conceptual model of the dynamic interactions of functional ability, stressors, and recovery, supported by evidence from the literature, was developed. Next, the conceptual model was

presented to experts on function over the life course, to verify that the structure and assumptions regarding causal relationships are plausible in the context of existing evidence. The model was refined in an iterative process—supported by expert experience—until the model could satisfy requirements concerning its realism, clarity and its ability to capture important issues relating to the purpose of the model. Following verification, the model was parametrized using synthetic data. Finally, the model was run, and base-case and alternative scenarios were simulated to generate useful insights regarding the trajectory of stress-induced functional recovery at the individual level. **Results:** Key variables in the model were: (1) actual function; (2) expected function (in the absence of stressors); (3) stressor induced functional loss; (4) resilience (specifically defined as rate of increase in recovery of perceived recoverable loss); and (5) expectation of recovery. The model reflected 3 potential feedback loops. In Loop 1 low actual function was associated with more frequent and intense stressors (e.g., people with low balance and strength are more likely to fall). In Loop 2, the greater the perceived recoverable loss (actual vs expected function, adjusted by expectation of recovery (e.g., optimism)), and the more an individual will engage in activities that promote recovery. In Loop 3 resilience can diminish more quickly as actual function declines. In addition to a baseline scenario in which an individual does not experience any stressors, we simulated four scenarios that illustrate the ability of the model to generate a range of realistic trajectories by modifying two inputs: (1) resilience and (2) expectation of recovery. These experiments were implemented under two different contexts: (1) short duration—where the individual experiences only one stressor and the dynamics of functional loss recovery is assessed over 30 months; and (2) life course—where the individual experiences both an initial stressor as well as subsequent stressors at a frequency determined by the level of actual function. Scenario 1 assumes high resilience and high expectation of recovery as well as resource accessibility; scenario 2 assumes high resilience and a significantly high expectation of recovery, while resource accessibility is assumed to be high; scenario 3 hypothesized high initial resilience and relatively low expectation of recovery and resource accessibility; and scenario 4 postulates low initial resilience and significantly low expectation of recovery and resource accessibility. For both the short-duration and the life course simulations, variations in the few parameters in the scenarios led to a realistic range of trajectories of function over time. An accelerating functional decline was produced without assuming an accelerating decline in underlying organ function due to negative reinforcement via Loops 1 and 3. **Conclusions:** We propose a model of the trajectory of function ability over the life course consisting of a series of coherent, precise hypotheses with testable elements and which can be improved based on empirical findings. One benefit of such a model is to clarify the notion of frailty. Frailty may not be merely the opposite of resilience (though the two are most certainly correlated). If we agree that fundamentally frailty is a state of particularly high susceptibility to stressors, then the exercise points to the value of disaggregating the notion of functional ability and responses to stressors based on the factors that drive the underlying dynamic of loss and recovery (functional ability, exposure to stressors, expectation for recovery, and resilience.) Another benefit of the model is that it suggests specific interventions and the mechanisms by which those interventions might improve patterns of decline.

P146- AN INVESTIGATION OF THE MID-THIGH CT CROSS SECTIONAL AREA AND ATTENUATION VALUES OF QUADRICEPS FEMORIS MUSCLE IN ELDERLY PEOPLE.

Y. Suzuki^{1,2}, Y. Matsui², H. Iida², M. Yamamura³, A. Harada⁴
(1. Department of Human Care Engineering, Nihon Fukushi University, Japan; 2. Department of Advanced Medicine (Orthopedic Surgery), National Center for Geriatrics and Gerontology, Japan; 3. Department of Radiology, National Center for Geriatrics and Gerontology, Japan; 4. Director of Hospital, National Center for Geriatrics and Gerontology, Japan)

Background: Although the decline of muscle strength in the elderly (sarcopenia) has been evaluated mainly based on decreased muscle mass by using dual-energy X-ray absorptiometry (DXA) etc., the qualitative alteration of the muscle is rarely examined. Thus, an evaluation procedure for such an alteration should be established. In this study, to examine the qualitative alteration of muscles in elderly people, we focusing on the cross-sectional computed tomography (CT) attenuation values. The CT attenuation values were associated with muscular fat level (Goodpaster et al. J Appl Physiol 2000), which indicated that as the muscle fat content increases, muscle CT attenuation values decrease. We selected the quadriceps femoris as target muscle, which play an important role in a daily life. The aim of this study is to investigate the changes of CT attenuation values in the elderly people by aging and we compared the aging changes of CT attenuation values among each quadriceps muscle and examined the correlations between CT attenuation values and muscle cross sectional areas. **Methods:** The study subjects consisted of 33 elderly (14 males and 19 females, mean age 75.2 years) and 6 young people (6 males, mean age 28.0 years). Cross sectional CT images of the mid-thigh (intermediate position of superior pole of the patella and inguinal crease) were acquired in the supine position. The analyses of CT images were performed using the image processing software, sliceOmatic version 5.0 (TomoVision, Inc., Magog, QC, Canada). The circumferences of the rectus femoris, vastus medialis, vastus lateralis, and vastus intermedius of the quadriceps femoris muscle were extracted by using the software. Then, the CT attenuation value and cross-sectional area of each muscle were measured by the software and compared between the elderly and young subjects. Additionally, the correlations of CT attenuation values and cross-sectional area were calculated and the CT attenuation values were compared among each muscle of the quadriceps femoris in elderly people. **Results:** As compared with the young male people, the elderly male people showed the ratio of the cross-sectional area of the quadriceps femoris as 54%, and the ratios of each muscle were as follows: rectus femoris, 60%; vastus medialis, 65%; vastus lateralis, 62%; and vastus intermedius, 74%, respectively. As compared with the young male people, the elderly female people showed the ratio of the cross-sectional area of the quadriceps femoris as 46%, and the ratios of each muscle were 47%, 43%, 44%, and 49%, respectively. As compared with the young male people, the elderly male people showed the ratio of CT attenuation value of the quadriceps femoris as 85%, and the ratios of each muscle were 87%, 90%, 84%, and 84%, respectively. As compared with the young male people, the elderly female showed the ratio of CT attenuation value of the quadriceps femoris as 84%, and the ratios of each muscle were 85%, 88%, 81%, and 84%, respectively. In the elderly male, with comparing among muscle of the quadriceps femoris, the CT attenuation value of the vastus lateralis was significantly lower than that of the rectus femoris ($p<0.01$), vastus medialis ($p<0.01$) and vastus intermedius ($p<0.01$). Vastus intermedius was significantly lower than that of the vastus medialis ($p<0.05$). In the elderly female, with comparing among muscle of the quadriceps femoris, the CT attenuation value of the vastus lateralis

was significantly lower than that of the rectus femoris ($p<0.01$), vastus medialis ($p<0.01$) and vastus intermedius ($p<0.001$). In the elderly people, cross-sectional area and CT attenuation value significantly correlated in all the muscles ($r=0.61$). The CT attenuation values of all muscles decreased as their cross-sectional areas decreased (correlation coefficients: rectus femoris, $r=0.52$; vastus medialis, $r=0.53$; vastus lateralis, $r=0.64$ and vastus intermedius, $r=0.43$, respectively). **Conclusion:** The elderly people showed decreased cross-sectional area and CT attenuation value in the quadriceps femoris. Although the decrease ratios of CT attenuation value were smaller than those of cross-sectional area, attenuation was seen in each muscle commonly. It was suggested that the decrease of cross-sectional area (muscle mass) in ageing was correlated with that of CT attenuation values (muscular fat).

P147- RESULTS OF THE SARCOPHAGE STUDY AFTER 2 YEARS OF FOLLOW-UP.

C. Beaudart¹, M. Locquet¹, J.Y. Reginster¹, J. Petermans², O. Bruyère¹
(1. Research Unit in Public Health, Epidemiology and Health Economics (URSAPES), University of Liège, Liège, Belgium; 2. Geriatrics Departments, CHU of Liège, Liège, Belgium)

Background: The SarcoPhAge study (for Sarcopenia and Physical impairments with advancing Age) has been designed to measure, among other things, the relationship between sarcopenia and the incidence of falls, hospitalisations, fractures, mobility decline and mortality after two-years of follow-up. **Methods:** This SarcoPhAge study is an ongoing longitudinal study which enrolled 534 subjects aged 65 years or older. A complete diagnosis of sarcopenia has been performed for all subjects according to the algorithm developed by the European Working Group on Sarcopenia in Older People (EWGSOP) at inclusion and once a year every following year. Muscle mass was measured by Dual Energy x-ray absorptiometry, muscle strength was measured by grip strength and physical performance was measured with the Short Physical Performance Battery (SPPB). A research assistant was in charge of meeting the participants once a year during a 1-hour clinical visit during which a large number of sociodemographic, anamnestic and clinic data were collected. **Results:** Among the 534 subjects (60.5% of women, mean age of 73.5 ± 6.16 years) enrolled in the study, 73 have been diagnosed sarcopenic, which represented a prevalence of 13.7%. After two years, only 336 subjects came for the follow-up evaluation (T2 evaluation), which represents 62.9% of the total sample. Reasons for the 198 subjects for not coming back are as follow: 20 died (3.74% of the total sample) 59 presented a physical incapacity (e.g. hospitalisation, institutionalisation, mobility impairment, serious comorbidities, etc. - 11.0% of the total sample.), 12 were lost to follow-up (2.24% of the total sample), and unfortunately, 107 refused to pursue the study (20.0% of the total sample). Only 33 of the 73 sarcopenic subjects diagnosed at baseline were seen at T2 evaluation. This is partly due to a significantly higher incidence of deaths among the sarcopenic (9.59%) subjects compared to non-sarcopenic (2.82%) with a crude OR of 3.65 (IC 95% 1.41 – 9.49) and an adjusted OR (on age, number of comorbidities and number of drugs) of 4.00 (IC 95% 1.51 – 10.6). Moreover, 9 sarcopenic subjects (12.3%) announced, during the two years of follow up, being physically unable to pursue the study. Between inclusion and T2, a significantly higher incidence of hospitalisation has also been observed for sarcopenic subjects (52.9%) compared with non-sarcopenic ones (29.0%) ($p=0.004$) with a crude OR of 2.75 (IC 95% 1.34 – 5.63) and an adjusted OR (same adjustments than those used for the analysis of deaths) of 2.61 (IC 95% 1.18 – 5.76). No differences between groups regarding the incidence of falls ($p=0.63$), fractures ($p=0.34$), physical decline

(reported as decline of gait speed ($p=0.34$), of the SPPB test ($p=0.63$) and of the chair rising test ($p=0.63$)) have been reported. Among the 336 subjects analysed at T2, 54 subjects have been diagnosed sarcopenic (16.0%); 24 subjects were already sarcopenic at baseline and 30 subjects became sarcopenic during the follow-up period. Surprisingly, we also noted 9 subjects who reversed from sarcopenic status to non-sarcopenic status between inclusion and T2. **Conclusion:** The results of the SarcoPhAge study at T2 indicate a higher incidence of death and hospitalisation among sarcopenic subjects compared to non-sarcopenic ones after two-years of follow-up, which highlights the public health burden of sarcopenia. An early diagnosis and an individual and adapted care seem essential to reduce the incidence of the outcomes of sarcopenia.

P148- FACET PROJECT: INTEGRATED SUPPORTIVE SERVICES/PRODUCTS TO PROMOTE FRAILTY CARE AND WELL FUNCTION. R. Rueda¹, D. Davies², F. del Pozo¹, J. Draper⁴, B. Jordán⁵, A. Moreno-Villena⁶, R. Navajo⁷, L. Rodríguez-Mañas⁸, B. Vellas⁹ (1. Abbott Laboratories, Granada, Spain; 2. BIC Innovation, Wales, UK; 3. Universidad Politécnica de Madrid, Spain; 4. Aberystwyth University, Wales, UK; 5. ATOS, Spain; 6. PREMAP Seguridad y Salud, Spain; 7. GMV Innovating Solutions, Spain; 8. Servicio Madrileño de Salud (SERMAS), Spain; 9. Institut National de la Santé et de la Recherche Médicale (INSERM), France)

Background: The world population is getting older, which constitutes a challenge, and imposes a heavy burden to Health Care systems. Initiatives such as EIT Health aim to give response to this global societal challenge in order to increase the quality of life of the ageing population. Within this initiative, the project FACET aims to develop tools (such as the FACET Service Platform presented below) to prevent, early diagnose and/or delay the onset of frailty. The project could impact on the quality of life of 13.05 million people with a potential of prevention in near half a million citizens annually. The FACET consortium is composed of public bodies, universities, small and large enterprises. The project merges biomedical and technological sides, to produce relevant long term outcomes. At the same time, the FACET project integrates the three pillars of EIT-Health: Innovation, Education and Business. **Methods:** FACET will gather data containing information about behavior, nutrition, functioning, cognitions and biometrics from 3 environments: work, community and hospital (and 3 scenarios: robust, frail and disabled). This data will be analysed, managed and integrated through algorithms in a Platform to support individual's care. The Platform will adapt the information according to the user, and will enable integrated, coordinated and continued care involving formal and informal caregivers, and individuals themselves. The Platform generates recommendations for health care practitioners, caregivers and individuals. **Results:** Our Innovation activities comprise the following aspects: -Data from community has been gathered and analysed, and used to feed the Platform, which takes advantage of an existing platform adapted for frailty use cases. The FACET Platform is conceived as a tool to assess frailty status of individuals, providing support to health care practitioners to decide on specific treatments, and for primary prevention and health promotion. The Platform will also have the ability to generate nutritional and physical recommendations and prescribe interventions. In addition, the user will have access to information about their progress, and will be given recommendations and alerts. The Platform will thus empower the citizen to manage their own health. -Given that frailty encompasses a large spectrum of phenotypes, the identification and validation of molecular biomarkers specifically linked to frailty remains challenging. FACET has so far validated a dietary protein exposure

urine biomarker panel and aims to identify potential biomarkers with a link to frailty status. Biomarkers may be associated with changes in overall nutritional status, perturbed energy metabolism and/or altered muscle physiology. -FACET is developing a 15 and 30 minute tool for accurate frailty screening in the community. Such tool will be easy to use, low cost, with limited training required for professionals, and provide simple and easy to record and process data. -Another important aspect to consider in the project are the dissemination and education activities, in this context, FACET had developed a MOOC entitled "Recognizing and Preventing Frailty", hosted in the European Multiple MOOC aggregator (EMMA) platform. It aimed to raise awareness and showcase that frailty can be preventable and reversible. The course, with 115 participants registered, ran for 5 weeks, providing an overview of frailty, its assessment and possible interventions such as diet and physical activities. -The international workshop: "FrAilty, a societal Challenge in nEed of inTegrated solutions" took place in October 2016 in Madrid. It aimed to raise awareness of the importance of frailty for the society. Key opinion leaders in the field presented their views, together with WHO and EIT-Health Management Board members, health and political authorities. It had a high impact and raised interesting questions for future consideration. -The Business side of FACET is developing, with the definition of the products that could arise from the project. Such products may include a biomarker panel/diagnostic kit, commercial products and services around education, the FACET Platform, nutrition services and products and prevention services. **Conclusions:** FACET is conceived as a three-year project. During the first year, we have implemented and produced the knowledge that will act as the basis for the services offered. The FACET project will provide a useful Platform for the prevention, early detection and treatment of frailty, contributing to face the current societal challenge of the aging population and helping to improve the quality of life of the elderly.

P149- RISK FACTORS FOR FRAILTY. A TWO-YEARS FOLLOW-UP COHORT STUDY IN COMMUNITY DWELLING ELDERLY POPULATION. M. Serra-Prat¹, M. Papiol², J. Vico¹, J. López², X. Alpiste², M. Campos², N. Jerez², N. Salvador², M. Garcia², M. Bartolomé², G. Hinojosa², E. Burdoy² (1. Research Unit. Consorci Sanitari del Maresme, Catalonia, Spain; 2. Primary Care Department. Consorci Sanitari del Maresme, Catalonia, Spain)

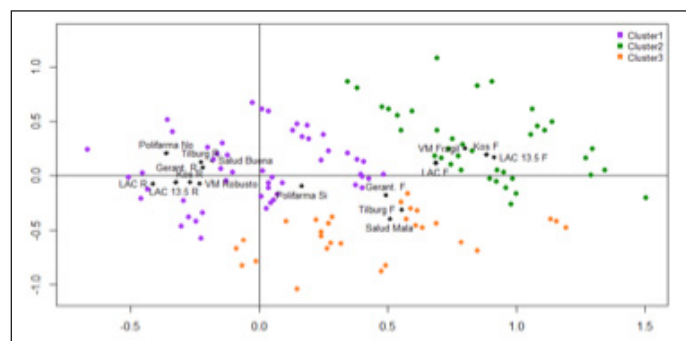
Background: Frailty is a high prevalent geriatric syndrome in elderly population with several clinical and economical consequences. Co-morbidities, physical exercise, metabolic, hormonal, inflammatory or nutritional factors have been shown to be related with the frailty process. However, the mechanisms involved in the frailty process are not well known and understood, which limits the design and implementation of effective preventive measures. The aim of the present study was to identify risk factors for frailty in non-frail independently living community dwelling elderly population. **Methods:** A cohort study among community-dwelling non-frail subjects 75 years old or over was performed. Subjects were recruited and assessed in 3 primary care centres in the city of Mataró and the nearby village of Argentona (Barcelona, Spain) and followed during two years with annual controls. Frailty was established according to the L Fried criteria. Muscle mass was assessed by bioimpedance analysis. Muscle strength was assessed by hand grip measurements using a hand held dynamometer (Jama Model). Sociodemographic characteristics, co-morbidities, nutritional status (by MNA-sf, weight, weight loss, BMI), functional capacity (by Barthel score, Up and go test and unipodal stand test), physical activity (by IPAQ), and analytical biomarkers (including metabolic, hormonal, inflammatory

and vitamins or micronutrients) were also measured and registered at baseline. Logistic regression analysis was used to assess the relationship between study factors and frailty. Analyses were stratified by gender. **Results:** Overall, 225 subjects were recruited (129 men and 96 women) with a mean age of 80.0 (SD 3.4) years. The bivariate analysis showed that female gender, arthrosis, depression, dyspepsia, number of medications prescribed, unable to stand on one foot for 5 seconds, the up and go test, a Barthel score <90, a BMI >28, a high waist-hip ratio (indicating central obesity), and high cholesterol, creatinine and interleukine-6 (IL-6) levels were risk factors for frailty. On the other hand, physical exercise was a protective factor for frailty. Stratified analysis showed an effect of the number of co-morbidities, tricipital skinfold and previous handgrip only in men and an effect of insulin resistance and cortisol levels only in women. The multivariate analysis showed an independent effect of arthrosis, dyspepsia, number of medications, previous balance impairment, central obesity, and high cholesterol, creatinine and IL-6 levels on the risk of fragilization. **Conclusion:** Some modifiable risk factors for frailty have been identified, suggesting that a better control of some underlying diseases (such as arthrosis, depression or dyspepsia) and inflammatory processes, a revision of the number of prescribed medications, physical exercise and correction of obesity and hypercholesterolemia could be potential effective interventions to reduce the incidence of frailty in community-dwelling elderly subjects. However, the effectiveness of such interventions in the prevention of frailty needs to be proved by well designed clinical trials.

P150- FRAILITY IN CLINICAL PRACTICE AND PUBLIC HEALTH. I. Vergara^{1,2,3}, M. Mateo-Abad^{1,9}, F. Rivas-Ruiz^{2,7}, M. Machón^{1,2,3}, A. Díez^{3,4}, M. Antonia Nava Del Val⁸, K. Vrotsou^{1,2,3}, M. Padilla-Ruiz^{2,7}, A. Bueno^{1,4}, J. Nuñez^{1,4}, A. Montiel-Luque⁸, M. del Carmen Saucedo Figueredo⁸, E. Carrasco-García³, B. Aguirre¹, Y. de Mesa Berenguer⁸, G. Abellan van Kan⁶ (1. Primary Care Research Unit Gipuzkoa, Osakidetza, San Sebastian-Donostia, Spain; 2. Health Services Research on Chronic Patients Network (REDISSEC); 3. Biodonostia Health Research Institute, San Sebastian-Donostia, Spain; 4. Beraun Health Center, Comarca Gipuzkoa, Osakidetza, Renteria, Spain; 5. San Ignacio Health Center, OSi Bilbao, Bilbao, Spain; 6. Gerontopole de Toulouse, INSERM 1027, France; 7. Research Unit, Hospital Costa del Sol, Marbella, Spain; 8. Distrito Atención Primaria Costa del Sol, Málaga, Spain; 9. Kronikune)

Background: Numerous tools have been proposed and validated for identifying frail individuals. Nonetheless, advanced research is still needed to assess their predictive ability in primary care settings. A question that arises when tools to identify frail patients are assessed is: Do different tools identify the same patients as frail? Or does each tool explore different aspects of the wide spectrum of frailty? This work is based on data pertaining to a study which protocol and baseline analysis have been presented in previous editions of this conference. **Method:** This is a multicentric (two regions of Spain: Basque Country (north) and Andalusia (south)) prospective two-year follow up cohort study community dwelling autonomous individuals (Barthel test >90). Participants were ≥70 years old at the time of recruitment. At baseline, several variables were collected, via face to face interviews: sociodemographic characteristics, frailty (as measured by the Tilburg Frailty indicator (TFI), the Gerontopole Frailty Scale (GFS) and two performance tests, GS and TUG), physical activity, polipharmacy, comorbidities and self-perceived health status, among others. Considering these variables a multiple correspondence analysis was performed to explore the underlying dimensions and, consequently to identify possible existing clusters of

patients. Afterwards, a comparative analysis of subjects grouped by clusters was performed to assess the existence of clinically meaningful differences. **Results:** A total of 867 subjects were included in the study. They had a mean age of 78.2 (4.17), being women slightly more frequent (52.7%). The level of education was low with more than 80% of the sample having only primary education or less. Comorbidity was frequent but with a well perceived health status (73.2%). Polipharmacy was a frequent condition (68.9%) and the mean number of chronic prescribed drugs was 5 (3,7). The prevalence of frailty varies between 23 to 38% considering the selected tools and a clear north-south gradient was present, being frailty much more prevalent in the Andalusian population (38 vs 19%). According to the correspondence analysis, two dimensions emerged, explaining the 75% and the 10% of the variance respectively: the first distinguished between frail and robust patients and the other signalized two types of frailty, one based in physical performance and the other based on the load of comorbidity and self-perceived health. When these two dimensions were considered, patients were allocated into three clusters. Cluster 1: robust patients; cluster 2: frail patients with a low level of physical performance; and finally cluster 3: frail patients with a high degree of comorbidity and a bad self-perceived health status. Cluster 2 patients were identified as frail by the physical performance tests and the GFS. While cluster 3 subjects were identified as frail mainly by the TFI. This distribution is shown in Figure 1. When patients were compared considering their cluster, significant differences were found in relevant aspects: frail patients at cluster 3 were the youngest (mean age C1 77.5; C2 80.48; C3 77.28, p<0.001), had the highest level of polipharmacy (C1 58%; C2 85%; C3 93%; p<0.001), the worst TFI score, and the highest risk of malnutrition (C1 0 %; C2 4%; C3 6%; p<0.001), among others. **Conclusion:** Frailty is a wide and complex concept that applies to individuals with a high degree of variability when their symptoms, characteristics and needs are considered. The wideness of the concept has determined the development of a high number of tools that try to capture the complexity of frailty itself. This study shows how the above mentioned complexity can be found in a sample of community dwelling elder people in which under the concept of frail, a wide range of subjects is included and can be sub grouped. Given the observed differences, this variation should be taken in consideration when designing protocols to identify and tackle frailty in primary care settings.



P151- ASSOCIATIONS BETWEEN NUTRITION STATUS AND THE DEGREE OF INDEPENDENCE IN DEMENTIA ELDERLY'S ACTIVITY OF DAILY LIVING IN THE ELDERLY IN NURSING CARE FACILITIES IN JAPAN. Y. Oe^{1,2}, T. Goda¹ (1. School of Food and Nutritional Sciences, University of Shizuoka, Japan; 2. Institute of Health Longevity Science and Nutrition, Watami Corporation, Ltd, Japan)

Background: Most of elderly who requires nursing care has chronic disease, and due to a diminished food intake and physical

activity, they tend to show decreased skeletal muscle mass. As a result, there is a great increase in the risk of fall and malnutrition in the elderly. Malnutrition is known to worsen the prognosis after infection and delay healing of disease in the elderly due to decreased immune function. **Method:** We have examined the associations between nutrition status and blood biochemical parameters, the degree of independence in dementia elderly's activity of daily living, the nursing care levels, and the form of food in 1,823 elderly persons aged 61-106 y (average 86.7 y) who lives in nursing care facilities were analyzed using Spearman's rank correlation coefficient analysis and steel-dwass test. Results: The percentages of the elderly at risk of malnutrition according to GNRI (Geriatric Nutritional Risk Index) were 67.0% for men and 66.2% for women. The GNRI scores tended to be lower according to an increase in the nursing care level. In elderly men, the GNRI scores were remarkably lower in the groups categorized as nursing care levels 4 and higher than those in nursing care level 3 or lower. In elderly women, the GNRI scores were greatly decreased in the groups categorized as nursing care levels 2 and higher. The lower the degree of independence in dementia elderly's activity of daily living was, the lower the GNRI, and the GNRI scores of the groups categorized IIIa and over were significantly lower than those categorized as of IIb or under. The GNRI scores were associated with the provided form of food, according to the transition from regular to liquid form. **Conclusion:** The results of this study suggest that the nutrition status of elderly who requires nursing care in nursing homes was associated with the degree of independence in dementia elderly's activity of daily living, the nursing care level, and the form of food, and it may be attributable to a decrease in physical function required for activity of daily living.

P152- SOCIAL, HEALTH-RELATED AND PSYCHOGERIATRIC DETERMINANTS ASSOCIATED WITH PHYSICAL FRAILTY IN COMMUNITY-DWELLING ELDERLY PEOPLE IN PERU. T. Tello^{1,2}, G. Cipriano², D. Burga², P. Casas¹, E. Aliaga¹, L. Varela^{1,2} (1. Instituto de Gerontología, Universidad Peruana Cayetano Heredia, Lima, Peru; 2. Facultad de Medicina, Universidad Peruana Cayetano Heredia, Lima, Peru)

Background:Prevalence and determinants of frailty differs among scenarios including Latin-American countries. Peru has an increasing aging index so, practical tools to detect elderly people at risk are needed to initiate early interventions and further improve quality of life. Some characteristics of frail elderly people could help to identify this special population. We made this study to identify the associated factors of frailty in elderly people who lived in an urban community from Peru. **Methods:** We examined data from our study "Clinical, functional and sociofamilial profiles of the elderly from a community in a district of Lima, Peru" conducted in 2013. Participants were people ≥60 years old living in the urban district of San Martin de Porres, the second most populous of Lima, the capital of Peru. Face to face interview using validated questionnaires were made. Frailty was determined with a gait speed less than 0.7 m/s in a distance of 8 meters. Determinants of frailty were divided in three groups: social, health related and psychogeriatric factors. A logistic regression multivariate analysis was made to find independent associated factors for frailty syndrome. **Results:** A total of 446 participants more than 60 years were included with a mean age of 71,5 (SD: 8,9). Female gender was the most frequent with 62,5% (313), elderly living with a couple were 62,3% (312) and 6,4% (32) were illiterate. Mean gait speed was 1 m/s (SD: 0,29) and the frailty prevalence was 16,1% (72). Table 1 shows the frequency and crude OR of the evaluated factors for frailty syndrome. In the adjusted model of the multivariate analysis the determinants independently associated with frailty were: age more

tan 70 years (OR: 5,6 IC95% 2,3-13,2), depression (OR: 4,1 IC95%: 1,3-13,2), social problem (OR: 3,1 IC95%: 1,2-7,8) and functional impairment (OR: 2,9 IC95%: 1,3-6,5). **Conclusion:** In elderly people from the community, being older than 70 years, have depression, social problems and functional impairment are associated with the frailty syndrome.

Table 1
Associated factors for frailty syndrome

	Frail n (%)	Non frail n (%)	OR (IC95%)	p
Social				
Age more than 70y	61 (84,7)	156 (41,7)	7,8 (3,9-15,2)	<0,001
Female	52 (72,2)	229 (61,2)	N/A	0,05
Illiteracy	60 (83,3)	205 (54,8)	4,1 (2,1-7,9)	<0,001
Social problem	59 (81,9)	202 (54)	3,8 (2,1-7,3)	<0,001
Dysfunctional family	14 (19,7)	71 (19,1)	N/A	0,507
Bad economy during childhood	26 (68,4)	106 (61,6)	N/A	0,277
Bad health during childhood	5 (22,7)	32 (31,1)	N/A	0,308
Head of the family	22 (30,6)	197 (52,7)	0,4 (0,2-0,7)	<0,001
Insurance	52 (72,2)	241 (64,4)	N/A	0,127
Remunerate activities	8 (15,4)	117 (33,1)	0,4 (0,2-0,8)	0,006
Health related				
Malnutrition	30 (41,7)	89 (23,8)	2,3 (1,3-3,9)	0,002
Functional impairment	35 (48,6)	65 (17,4)	4,5 (2,6-7,6)	<0,001
Falls	35 (48,6)	116 (31)	2,1 (1,3-3,5)	0,003
Hearing problems	42 (58,3)	147 (39,3)	2,1 (1,2-3,6)	0,002
Insomnia	43 (59,7)	282 (75,4)	0,5 (0,3-0,8)	0,006
Polypharmacy	21 (35,6)	66 (29,9)	N/A	0,24
Comorbidity	22 (36,1)	46 (16,9)	2,7 (1,5-5,1)	0,001
Hypertension	42 (58,3)	136 (36,4)	2,5 (1,5-4,1)	<0,001
Diabetes	10 (13,9)	55 (14,7)	N/A	0,5
Dyslipidemia	19 (26,4)	89 (23,8)	N/A	0,369
Rheumatologic disease	32 (44,4)	124 (33,2)	N/A	0,05
Chronic pulmonary disease	8 (11,1)	20 (5,3)	N/A	0,064
Psychogeriatric				
Cognitive impairment	28 (38,9)	32 (8,6)	6,8 (3,7-12,3)	<0,001
Depression	11 (15,3)	21 (5,6)	3 (1,4-6,6)	0,007

P153- POLYPHENOL-RICH DIET IS INVERSELY ASSOCIATED WITH PHYSICAL PERFORMANCE DECLINE IN OLDER ADULTS. P. Casas-Agustench¹, M. Rabassa¹, R. Zamora-Ros², M. Urpi-Sarda¹, S. Bandinelli³, L. Ferrucci⁴, A. Cherubini⁵, C. Andres-Lacueva¹ (1. Biomarkers and Nutrimetabolomic Laboratory, Department of Nutrition, Food Sciences and Gastronomy, Food Technology Reference Net (XaRTA), Nutrition and Food Safety Research Institute (INSA), Campus Torribera, Faculty of Pharmacy and Food Sciences, University of Barcelona, Barcelona, Spain; 2. Unit of Nutrition and Cancer, Cancer Epidemiology Research Programme, Catalan Institute of Oncology, Bellvitge Biomedical Research Institute (IDIBELL), Barcelona, Spain; 3. Geriatric Unit, Azienda Sanitaria Firenze, Florence, Italy; 4. Clinical Research Branch, National Institute on Aging, NIH, Baltimore, Maryland, United States; 5. Geriatrics and Emergency Care, Italian National Research Centre on Aging (INRCA), Ancona, Italy)

Background: Physical performance declines with age and in older adults this deterioration has big consequences such as lost of independence, falls, hospitalization, institutionalization and death. Dietary polyphenols are bioactive compounds present in foods such as fruits, vegetables, cereals, tea, coffee and wine. The effect of dietary polyphenols on the prevention against physical performance decline may be due to their antioxidant and anti-inflammatory properties. **Objective:** The purpose of this study is to investigate the association between total dietary polyphenols (TDP) intake and its biomarker, total urinary polyphenols (TUP) and substantial physical performance decline over a 9-year period among community-dwelling older adults. **METHODS:** We conducted a longitudinal study including 368 participants aged 65 years or older from a population-based cohort study (InCHIANTI Study) in Tuscany, Italy. TUP concentrations and TDP intake were assessed at baseline using the Folin-Ciocalteu (F-C) assay and a validated food frequency questionnaire, respectively. Physical performance was objectively measured at baseline and

at 9-year follow-up using the Short Physical Performance Battery (SPPB), which is a group of measures that combines the results of the gait speed, chair stand and balance tests. A decrease of three or more points in the SPPB score was defined as a substantial decline in physical performance. **Results:** At the 9-year of follow-up assessment, 71 participants had suffered a substantial decline in physical performance. In the fully adjusted logistic regression model, participants in the highest TUP tertile had a lower risk of substantial decline in physical performance than those in the lowest tertile (OR, 0.40; 95% CI, 0.17-0.93; P trend=0.033). However, no significant association between TDP intake and physical performance decline was observed. **Conclusion:** Higher concentrations of TUP, a dietary biomarker of polyphenol-rich diet, were associated with lower risk of physical performance decline in community-dwelling older subjects over a 9-year period. A polyphenol-rich diet seems to play an important preventive role against physical performance decline in older adults.

P154- POLYPHENOL-RICH DIET INTAKE AND FRAILTY SYNDROME. RELEVANCE TO POLYPHENOL RECOMMENDATIONS AND AGING-HEALTH PROMOTING.

C. Andres-Lacueva¹, M. Rabassa¹, P. Casas-Agustench¹, R. Zamora-Ros², M. Urpi-Sarda¹, S. Bandinelli³, L. Ferrucci⁴, A. Cherubini⁵ (1. Biomarkers and Nutrimetabolomic Laboratory, Department of Nutrition, Food Sciences and Gastronomy, Food Technology Reference Net (XaRTA), Nutrition and Food Safety Research Institute (INSA), Campus Torribera, Faculty of Pharmacy and Food Sciences, University of Barcelona, Barcelona, Spain; 2. Unit of Nutrition and Cancer, Cancer Epidemiology Research Programme, Catalan Institute of Oncology, Bellvitge Biomedical Research Institute (IDIBELL), Barcelona, Spain; 3. Geriatric Unit, Azienda Sanitaria Firenze, Florence, Italy; 4. Clinical Research Branch, National Institute on Aging, NIH, Baltimore, Maryland, United States; 5. Geriatrics and Emergency Care, Italian National Research Centre on Aging (INRCA), Ancona, Italy)

Background: There is growing evidence of the health-protective role of dietary polyphenols intake on aging. However, assessing dietary polyphenol intake from self-reported questionnaires tends to be inaccurate and not very reliable. Metabolomic fingerprinting is revolutionizing the field of dietary exposure assessment. Thus, a promising alternative is to use urinary biomarker concentrations (i.e. urinary polyphenol concentrations) as a more accurate measure of intake. **Objective:** We investigated whether the intake of rich-polyphenol dietary exposure has a protective effect in the prevention of physical and cognitive decline, frailty and total mortality in older adults aged ≥ 65 y or more within the InCHIANTI study, an Italian cohort study with 12 years of follow-up. **Method:** The dietary intake of total polyphenols and resveratrol was estimated using a validated food frequency questionnaire and an ad hoc database of food composition on polyphenols. The presence of these bioactive compounds in urine was also studied as a reflection of their bioavailability in humans. The urinary concentration of total polyphenols and resveratrol was determined by Folin-Ciocalteu colorimetric and mass spectrometry methods, as biomarkers of the dietary of total polyphenols and resveratrol, respectively. **Results:** The intake of total polyphenols and resveratrol was 555.2 mg/d and 0.5 mg/d, respectively. The most important food sources of total polyphenols were coffee, apples, red wine and oranges. In addition, red wine was the main dietary source of resveratrol. Results showed that total urinary polyphenols expressed by 24-h volume is a better biomarker of total dietary polyphenol than by urinary creatinine normalization. The highest tertile of total urinary polyphenols was

inversely associated with the risk of cognitive and physical decline, frailty and total mortality, in comparison with the lowest tertile. However, no association with total dietary polyphenols was observed. Additionally, habitual dietary exposure of resveratrol was associated with a lower risk of developing frailty over a 3-year follow-up using both approaches combined (diet and biomarker), as well as, individually. **Conclusion:** Our results suggest a protective effect of polyphenol-rich diet, using a biomarker of total dietary polyphenols (the total urinary polyphenols expressed by 24-h urine), against cognitive and physical decline, frailty and all-cause mortality in older persons. In addition, it demonstrates the importance of assessing dietary polyphenol exposure, when

P155- ADEQUACY AND FEASIBILITY OF FRAILTY ASSESSMENT SCALES FOR THE ELDERLY IN DIFFERENT CLINICAL AND SOCIAL SETTINGS: PRELIMINARY RESULTS FROM THE FRAILTOOLS PROJECT. A. Pardo¹, T. Guevara¹, J. Gonzales¹, M. Checa¹, S. Álamo¹, S. Walter¹, L. Rodríguez-Mañas^{1,2} (1. Fundación para la Investigación Biomédica of Getafe University Hospital, Madrid, Spain; 2. Geriatric Department, Getafe University Hospital, Madrid, Spain)

Background: It is well known that frailty is a major issue to be addressed during both the medical and social care of older people. Frailty is recognised as the main risk factor for the incidence of disability and it is the best identifiable target to stop the progression of the disablement process. In the spirit of detecting frailty in every setting as the key to prevent disability, we designed a study to define which of the assessment tools commonly used for the detection of frailty is more useful in each setting, in terms of adequacy for identifying frailty and feasibility to implement in routine care and daily practice. The Frailtools Project is a multicentre observational, prospective study in Europe. Results presented here correspond to a preliminary cut off of data from patients recruited in Spain. **Methods:** People of 75 years and older from geriatric inpatient wards (GW), geriatric outpatient consultations (OC), Primary Care centres (GP) and nursing homes (NH) were asked to participate in the study. Participants with an impaired functional status defined as a Barthel index < 40 in NH and < 90 in all other settings or with and impaired cognitive status, defined as a score of < 20 in the Mini Mental State Examination (MMSE) were excluded. Demographic data was collected. Clinical information, functional and cognitive status was assessed (Charlson, Barthel and Lawton indexes; Short Physical Performance Battery; MMSE). Frailty detection scales included in this study were: Frailty phenotype (Fried); FRAIL scale; 35-item Rockwood frailty index (Rockwood-35); Clinical Frailty Scale (CFS); the Survey of Health, Ageing and Retirement in Europe Frailty Instrument (SHARE-FI); Gérontopôle Frailty Screening Tool (GFST) and the Short Form Frailty Trait Scale. Data is shown for these instruments but the last one. Time expended while implementing every scale was measured. The ability of completing each scale and causes of the inability when it wasn't completed were registered. **Results:** Thus far, 219 patients have been included (GW 47, OC 55, GP 90 and NH 27), 9 have been lost and data for 210 was analysed. Mean age was 82.4 (± 4.8) years; 56% were women; when stratifying by setting, we obtained the following results: Fried's scale was completed in 44.7% (GW), 96.4% (OC), 95.6% (GP) and 77.8% (NH) of patients respectively. Rockwood-35 was fully completed (all 35 items) in 8.5% (GW), 7.3% (OC), 1.1% and 3.7% (NH) of patients; it was completed in 100% in all settings when considering at least the completion of 30 items. SHARE-FI was completed in 95.7% (GW), 96.4% (OC), 98.9% (GP) and 77.8% (NH). FRAIL scale, CFS and GFST were completed in 100% in all four settings. The most common reason for

not completing Fried's scale in GW was medical grounds (monitored patients, on IV fluids, with indwelling catheters, etc). The most common reason for not completing the Rockwood-35 scale was the inability to implement it due to environmental limitations, including not having enough information required by the scale, with SPPB and Vitamin-D levels being the most frequent missing items; if we omit these two items, it can be implemented in almost all cases. Time spent while implementing each scale is shown on Table 1. **Conclusions:** The Frailty Phenotype is a feasible and adequate frailty assessment tool that is well implemented in OC and GP but not as well in NH and GW. FRAIL scale was implemented in all four settings with a short execution time. CFS and GFST are very short time consuming and universally applicable. SHARE-FI is adequate and feasible in GW, OC and GP but not so much in NH. Some items of Rockwood-35 require information to achieve completion of the scale that most of the time is not available for physicians at the moment of assessment. Study funded by DG SANCO. Protocol ID number: 662887

Table 1

Rate of fulfilment and time spent on administration of six different frailty assessment tools in four clinical and social settings

SCALES	SETTINGS							
	GW		OC		GP		NH	
	Completion (%)	Time (sec) Mean (SD)	Completion (%)	Time (sec) Mean (SD)	Completion (%)	Time (sec) Mean (SD)	Completion (%)	Time (sec) Mean (SD)
Fried	44.7	185.5 (90.5)	96.4	186.5 (94.8)	95.6	227 (93.4)	77.8	164.6 (56.4)
FRAIL	100	61.8 (50)	100	114.9 (405.6)	100	70.5 (32.1)	100	41.2 (17.7)
Rockwood-35	8.5	211 (85.5)	7.3	152.4 (89.7)	1.1	332.1 (103.7)	3.7	156.9 (61.3)
CFS	100	7.9 (4.3)	100	9.4 (11.9)	100	4.1 (3.6)	100	9.4 (14)
SHARE-FI	95.7	66.5 (46.4)	96.4	78.3 (41.1)	98.9	90.9 (35.5)	77.8	67.1 (51.2)
GFST	100	34.3 (23.4)	100	40.1 (85.7)	100	19.7 (12.2)	100	30.4 (12.4)

GW: Geriatric Ward. OC: Outpatient Consultations. GP: Primary Care Centres. NH: Nursing Homes. CFS: Clinical Frailty Scale.

P156- DEGREE OF AGREEMENT AMONG FOUR FRAILTY SCALES - FRAILTOOLS STUDY: PRELIMINARY RESULTS.

J. Gonzales^{1,2}, T. Guevara¹, M.D. Checa^{1,2}, A. Pardo¹, S. Walter¹, S. Artola³, M. Rodilla³, L. Rodríguez Mañas^{1,2} (1. *Fundación para la Investigación Biomédica del Hospital Universitario de Getafe. Madrid, Spain;* 2. *Geriatric Department. Hospital Universitario de Getafe. Madrid, Spain;* 3. *General Physician. Centro de Salud José Marvá, Madrid-Spain*)

Background: Frailty is a condition associated to ageing that increases risk for falls, disability, hospitalization and mortality. Identifying frail patients is the main objective of the modern geriatric medicine because it will allow us to recognise them and initiate some interventions to prevent disability. To do so, there is an urgent need to find the most appropriate diagnostic tools especially in the clinical scenario. Many studies have demonstrated the utility of certain assessment tools to evaluate frailty in general population, however the individual risk for disability has not been properly assessed, which is the main interest in daily practice. To evaluate the usefulness of frailty scales as frailty detection instruments in clinical and social settings is the main objective of the FRAILTOOLS project. **Method:** Frailtools is an European observational, prospective study developed in five countries (Spain, United Kingdom, Poland, Italy and France). Results shown here are from participants from Getafe University Hospital (Madrid, Spain). It was developed in different clinical and social settings (geriatric ward and outpatient consultation: Getafe University Hospital, Primary Care Centres: C.S. Sanchez Morate (Getafe), C.S. José Marvá (Madrid), nursing homes: Residencia Sol y Vida (Parla), Residencia Orpea I (Pinto)). Eligibility criteria: People 75 years and

older. Exclusion criteria: MMSE score < 20 points, diagnosis of terminal illness (life expectancy < 6 months), Barthel Index score < 40 in nursing homes and < 90 in all other settings. Frailty was defined as 3 or more criteria for the FRAIL and the Fried's scale, a categorisation of 4 or more in the CFS and a cutoff point of 9.5 in the Rockwood 35 index (Cut-off obtained by finding the point where the sum of sensitivity and specificity are maximum when doing a ROC analysis with the areas under the curve of the Rockwood 35 scale and the Fried's scale). **Results:** 219 subjects have been recruited up to now, 56% were female. Mean age was 82 ± 4.8 years. Mean values for all settings were: Barthel Index 95.8 ± 6.3 points, MMSE 26 ± 3 points, SPPB 8.7 ± 2.9 points. Frailty prevalence varied depending on the scale that was used: Fried: 29%, FRAIL: 15%, CFS: 19%, Rockwood: 28%. Prevalence of frailty (%), when stratified by setting, is shown in Table 1. We analysed the agreement among FRAIL, Rockwood 35 and CFS Scales and compared them with the Fried's Scale, using Cohen's Kappa coefficient. Results are shown in Table 2. **Conclusion:** • The prevalence of frailty was different depending on the tool that was used to assess it. • Frailty is present in one third of the participants, even though they are subjects with a good functional and cognitive status. • We found that agreement among frailty assessment tools varies depending on the setting they are applied in, with a moderate agreement among FRAIL and Fried in Primary Care and Geriatric Ward; a moderate agreement among Rockwood and Fried in Primary Care and a moderate agreement among Clinical Frailty Scale and Fried in Nursing Home, Outpatient Consultation, Geriatric Ward. Study funded by DG SANCO. Protocol ID number: 662887

Table 1

Prevalence of Frailty in four different settings using four different frailty scales

FRAILTY SCALES	SETTINGS			
	PRIMARY CARE	GERIATRIC WARD	GERIATRIC OUTPATIENT CONSULTATION	NURSING HOME
FRIED	15,6	38,3	27,3	48,1
FRAIL	8,9	23,4	7,3	29,6
CFS	3,3	12,8	20	55,6
ROCKWOOD 35	14,4	38,3	16,4	70,4

Table 2

Level of agreement among three different frailty assessment scales and Fried's scale in four different settings.

FRAILTY SCALES	SETTINGS			
	PRIMARY CARE	GERIATRIC WARD	GERIATRIC OUTPATIENT CONSULTATION	NURSING HOME
FRAIL	0.49	0.47	0.22	0.37
ROCKWOOD 35	0.43	0.22	0.15	0.29
CFS	0.18	0.46	0.42	0.58

* Kappa Agreement: < 0: Less than chance agreement; 0.01-0.20: Slight agreement; 0.21- 0.40: Fair agreement; 0.41-0.60: Moderate agreement; 0.61-0.80: Substantial agreement; 0.81-0.99: Almost perfect agreement

P157- FRAILTY SCREENING TOOLS: WHICH TOOL PREDICTS BETTER DISABILITY AND MORTALITY AFTER ONE YEAR OF FOLLOW-UP? RESULTS FROM THE FRAILCLINIC PROJECT.

M. Checa¹, T. Guevara¹, A. Pardo¹, J. Gonzales¹, J. Carnicero¹, L. Rodríguez-Mañas^{1,2}, on behalf of the Frailclinic Team (1. *Fundación para la Investigación Biomédica of Getafe University Hospital, Madrid, Spain*; 2. *Geriatric Department, Getafe University Hospital, Madrid, Spain*)

Background: It is known that frailty syndrome is the main factor risk for disability and one of the main causes of adverse events in elderly (falls, hospitalization, functional decline and institutionalization). For this reason, it is really important to find a useful, adequate and precise tool for the diagnosis of this syndrome. Although there are many tools for its detection nowadays, all of them have been assessed and validated by epidemiological studies in cohorts, in different population, with different characteristics and assessing different domains. However, these studies have traditionally focused on the general population instead of assessing the individual risk in those settings where the risk of disability and the chance of intervention are higher like admitted hospital patients. Furthermore, at this moment it is unknown the ability of some of the most used scales to predict disability and death in different clinical settings. The purpose of the study is to analyze the ability of some of the most common frailty assessment tools to predict mortality and disability after one year of follow-up in elderly subjects admitted to several clinical settings. **Methods:** FRAILCLINIC study is an observational, prospective and multicenter study, carried out in three countries and five hospitals; Spain (HUGetafe; Madrid and Hospital MonteNaranco; Asturias), Italy (SacroCuore Hospital and San Raffaele) and United Kingdom (Luton Hospital) although in this abstract we assessed results from Spain and Italy. Two visits were done; one basal assessment with the evaluation of several frailty tools and a second follow-up visit assessing disability and mortality. Eligibility criteria: Inclusion criteria were patients older than 75 years old with less than 48 hours of hospital admission in different clinical settings of care (Emergency Room, Cardiology, General Surgery and Oncology). Exclusion criteria were patients with moderate-severe cognitive impairment (GDS>6), those with physical disability according to Barthel Index lower to 40, participants with critical acute disease who might need admission in an Intensive Care Unit (ICU), life expectancy lower than six month and institutionalization subjects. The tools assessed were Fried criteria, FRAIL Scale, Groningen Frailty Indicator, Tilburg Frailty Indicator and Clinical Frailty Scale. We analysed death and incident disability (defined as Barthel Index lower than 40 points after one year of follow-up). **Results:** A total of 717 patients were recruited in the basal assessment and 362 patients completed the one-year follow up to now. Of the total; 41 were subjects from Emergency Room, 115 were subjects from Cardiology, 111 from Elective Surgery, 57 patients from Urgent Surgery and 48 from Oncology. The results obtained are presented in Table 1. **Conclusions:** - All frailty tools assessed predicted disability after one year. - Only Fried criteria, FRAIL scale, and Tilburg Frailty Indicator predicted mortality after one year of follow up. - These results suggest that both Fried and FRAIL scale are probably measuring the same construct and the same entity. Study supported by Grant, 20131208 DG-SANTE, EU (2nd Health Programme of EU).

Table 1

Risk of disability and mortality after one year of follow-up.

FRAILTY TOOL	DISABILITY		MORTALITY	
	p	OR	p	OR
Fried criteria	<0.001	3.3(2.0-5.7)	<0.001	3.1(1.8-5.4)
FRAIL scale	<0.001	4 (2.3- 6.7)	<0.001	2.6(1.5-4.7)
Groningen	0.01	1.9(1.1-3.1)	0.071	1.6(0.9-2.8)
Tilburg	<0.001	2.7(1.6-4.6)	0.007	2.1(1.2-3.7)
Clinical Frailty Scale	0.001	2.5 (1.4-4.4)	0.279	1.4(0.7-2.7)

P158- DIFFERENCES BETWEEN FRAIL AND PREFRIL OLDER NURSING HOME RESIDENTS.

R. López-López, L. Lorenzo-López, A. Maseda, C.M. García-Martínez, A. Buján, J.C. Millán-Calenti (*Universidade da Coruña, Gerontology Research Group, Instituto de Investigación Biomédica de A Coruña (INIBIC), Complexo Hospitalario Universitario de A Coruña (CHUAC), SERGAS, A Coruña, Spain*)

Background: Frailty syndrome is a dynamic process that can be described along a continuum of severity: robustness, prefrailty, and frailty. Further exploring prefrailty status is critical because prefrail older adults show an increased risk of progressing to frailty in the next years. Research on how best to manage and assess frailty in residential aged care is limited. The aim of this study was to assess levels of frailty in three Galician residential aged care facilities using the Fried Frailty Index. Further exploring frailty natural progression (robustness/frailty continuum) is critical for identifying specific risk factors and new areas for frailty treatment at preclinical stages, when preventive interventions and a potential reversal from states of greater frailty to states of less frailty could be most possible. **Method:** A cross-sectional study of residents of three nursing homes in Galicia (Spain) was undertaken in 2014. Frailty was assessed using the Fried Frailty Index. Differences between prefrail and frail patients in different health measures were examined. Comparisons between groups were performed by Student's t test or Chi square test when appropriate. **Results:** 126 participants aged 65 years and older (mean 84.4±8.8 years, 69.8% females) were recruited. Based on the Fried Frailty Index, 72.6% of participants were categorized as frail, and 27.4% were categorized as prefrail. Frail and prefrail groups were homogeneous in age, years of education and number of months institutionalized. Walking speed (measured by the Timed Up and Go test; TUG), score of Mini-Nutritional Assessment (MNA), Mini-Mental State Examination (MMSE and severe MMSE), Geriatric Depression Scale Short Form (GDS-SF) and Cornell test, and Barthel score were significantly different between groups (p all <0.05). Prevalence of dependence in mobility skills (≥30 seconds in the TUG test) was higher in the frail group compared with the prefrail group (67.2% vs. 25.0%, p<0.0001). Prevalences of undernutrition risk (66.3% vs. 38.2%) and undernutrition (16.3% vs. 2.9%) were also higher in the frail group (p<0.0001). Prevalence of cognitive impairment (85.2% vs. 57.6%, p=0.001) and depressive symptoms (52.2% vs. 25.0%, p=0.010) were higher in frail patients. Finally, prevalence of Barthel total dependence (13.5% vs. 0.0%) and severe dependence (22.5% vs. 6.1%) were higher in frail patients (p<0.0001). **Conclusion:** Poorer physical function, poorer cognitive function, poorer nutritional status, and more depressive symptoms, were all independent associative factors for frailty. Further knowledge of specific risk factors for prefrailty patients is critical for identifying new areas for treatment for institutionalized patients at preclinical frailty stages in nursing homes. This work was supported by the Xunta de Galicia, FrailNet network IN607C 2016/08.

P159- CHANGES IN DIETARY HABITS BY ICT-BASED MONITORING AND COACHING APPROACH: THE DOREMI PROJECT IN AN UK AND ITALIAN POPULATION.

O. Parodi¹, F. Vozzi¹, S. Bernardi², F. Giugni¹, G. Mellone², D. Musian³, S. Hall⁴, M. Parolini¹, P. Riso² (1. *Institute of Clinical Physiology, CNR, Pisa, Italy*; 2. *Department of Food, Environmental and Nutritional Sciences (DEFENS), University of Milan, Italy*; 3. *SI4Life Regional Hub for Research and Innovation - Life Science, Genoa, Italy*; 4. *The EXTRACARE Charitable Trust, Coventry, UK*)

Background: Malnutrition (excess or defect) associated to inadequate intake of macro- and micronutrients acts as accelerator in the process of frailty in the elderly. Behavioural and cognitive factors often affect eating habits of older people and their ability to choose a healthy diet. In the EU-funded DOREMI project - targeted to Malnutrition, Sedentariness and Mild Cognitive Decline - a systemic solution has been developed to collect older people habits and engage them by serious games. The nutrition task was to collect food intake data engaging older adults to register a photo diary developed as application in tablet, and to correct dietary habits through a remote nutritional coaching approach. Aim of the study was to test whether different compliance among trial's participants on the use of diet application could influence variables related to unhealthy dietary habits. **Methods:** During the 3-month duration of the DOREMI trial, 34 older people (aging 65-80 years) living alone in UK (15 subjects living in retirement communities) or in Italy (19 subjects living in private houses) were enrolled. At baseline, subjects were characterized in terms of nutritional status and other characteristics, through administration of MNA (Mini Nutritional Assessment) test, somatometric, hemodynamic and biochemical measurements (BMI, arterial blood pressure, heart rate, lipid profile, Hb glycate, glycaemia), and body composition by bio-impedentiometric vector analysis (BIVA). Participants were stimulated to adopt the Mediterranean dietary pattern as also reported in dietary guidelines for +65 developed by EU NU-AGE project. Moreover, subjects were trained on diet-app utilization (METADIETA® app, ME.TE.DA srl) to provide awareness on quantity and quality of daily meals. During DOREMI training phase, users were instructed by a well-being advisor to fill the diet e-diary. During the intervention phase, participants were invited to transmit by the app their food diaries at least 3-days/week, receiving by the same application personalised nutritional advices by a remote expert. At the end of trial, users underwent the same test battery of baseline. **Results:** In the whole overweight population (BMI >25) a significant decrease of BMI ($p=0.043$) was observed after DOREMI dietary intervention. METADIETA app usability and acceptance were good; nevertheless, the frequency of compilation of food diary was higher in the UK with respect to the Italian group (80% vs. 60%; $p>0.05$). Energy intake, as assessed by food composition database analysis of the photo diary was significantly higher ($p<0.005$) in the UK group with respect to the Italian one at baseline; however energy intake significantly decreased ($p<0.001$) after DOREMI intervention only in the UK users. MNA score showed a significant increase (from 25 to 27, $p=0.003$) after intervention in the UK population, while did not change (from 27 to 27, $p=NS$) in the Italian participants. Waist and hip circumference significantly decreased ($p=0.001$) only in the UK group. Among blood biomarkers, glycated haemoglobin significantly decreased ($p=0.018$) in the UK population. **Conclusions:** The ICT approach to diet monitoring and improvement significantly decreased BMI in the overweight population during a short time dietary intervention. However, the best improvement of nutrition-related parameters was observed in the population with higher adherence to dietary suggestions given through the smart application. Improvement of dietary habits by technological tools, which provide a continuous

feedback between user and remote coach and increase user's motivation to dietary changes appears effective. This ICT approach to diet, supported by DOREMI platform, offers an innovative solution to stimulate healthy eating and may represent the best practice in long-term interventions to prevent malnutrition in ageing population.

P160- CURRENT RESEARCH TRENDS ON PREVALENCE, CORRELATES WITH COGNITIVE FUNCTION, AND INTERVENTIONS ON SARCOPENIA IN COMMUNITY-DWELLING OLDER ADULTS. S. Ahn, S.H. Chu, H. Jung (*Yonsei University College of Nursing, Seoul, South Korea*)

Background: Sarcopenia, a gradual loss of muscle mass and function, has been associated with poor health outcomes including physical dysfunction, low quality of life, and increased mortality in older adults. However, its correlation with cognitive dysfunction is unclear. This systematic review was performed to investigate relationship between sarcopenia and cognitive function among community-dwelling older adults. **Methods:** A systematic literature search was conducted using the CINAHL, Cochrane Library, EMBASE, Medline, and Korean databases. Studies which reported prevalence rates of sarcopenia in community-dwelling older adults, relationships between sarcopenia and cognitive dysfunction, or effective interventions to alleviate symptoms of sarcopenia in English or Korean up to 2016 were selected. A standard data collection form was used to extract data from the published reports. The risk of bias in each study was assessed in six domains defined in the Cochrane Collaboration's tool for assessing risk of bias. The process was performed by two reviewers independently. **Results:** Of 43 studies reviewed, prevalence rate of sarcopenia ranged from 2.5-42.4% in 25 studies, and 4 studies revealed a significantly positive correlation between sarcopenia and cognitive dysfunction. Among 12 randomized-control trials (RCTs), exercise intervention was used in 2 studies; nutrition intervention in 6; and 4 studies included both the exercise and nutrition interventions. All interventional studies reported positive effects on muscle mass, muscle strength, or physical function. However, only 6 studies met the high quality criteria of Risk of Bias, and there was no study which evaluated cognitive function as an outcome measure. Therefore, this study draws attention to the lack of high-quality RCTs and exclusion of cognitive function as an outcome measure in the research of sarcopenia. **Conclusion:** A comprehensive and sustained system including standardized sarcopenia screening, assessments of cognitive functioning, and evidence-based intervention programs are needed to prevent and manage sarcopenia in community dwelling older adults. This study was supported by a grant from the National Research Foundation of Korea (NRF-2011-330-B00137). Key words: community-dwelling older adults, sarcopenia, cognitive function, exercise, nutrition

P161- FRAILTY INDEX- SPANISH VERSION OF THE KIHON CHECKLIST. R. López-López, A. Maseda, L. Lorenzo-López, C.M. García-Martínez, J.C. Millán-Calenti (*Universidade da Coruña, Gerontology Research Group, Instituto de Investigación Biomédica de A Coruña (INIBIC), Complejo Hospitalario Universitario de A Coruña (CHUAC), SERGAS, A Coruña, Spain*)

Background: Frailty syndrome is one of the main predictors of adverse outcomes such as morbidity and premature mortality in older adults. Its prevalence varies from 4.9% to 27.3% in the community-dwelling older population. Last year, the Spanish-speaking population reached 6.7% of the worldwide population, increasing to 7.5% by 2030. 37% of Spanish population will be older than 65 in 2050. New frailty indexes are needed for frailty categorization in

clinical assessment. Kihon Checklist is widely used to assess frailty in the Japanese population, with a high sensitivity and specificity for predicting the use of long-term care. The objective of this research was to provide an official translation into Spanish of the Kihon Checklist to identify frailty in Spanish older adults. **Method:** English translation of the Kihon Checklist was translated into Spanish through a forward-backward method. Twelve health professional divided into two groups, were involved in the translation process. A focus group was developed to ensure accuracy and comprehensibility of the translated version among older adults. A machine translation interface was used to compare the translated content with the original Japanese version of the test, ensuring the adequacy of the terms included in the Spanish version. **Results:** This frailty index includes 25 yes/no questions assessing the instrumental activities of daily living, physical strength, nutritional status, oral function, isolation, memory, and mood. This tool also identifies lower physical strength, lower nutritional/oral status, lower cognitive function, houseboundness, and depression risk. A score of 0 reflects no frailty and 25 reveals high frailty. A score higher than 9 in the lifestyle domain identifies a frail person. **Conclusion:** Spanish Kihon Checklist represents a screening validated tool for future research to identify frailty in Spanish older speakers. This tool is also able to classify frailty as “experience of falling”, “pre-frailty”, “oral frailty”, “housebound”, and “severe frailty” with its utility to design effective prevention programs for frailty. This work was supported by the Xunta de Galicia, FrailNet network IN607C 2016/08.

P162- RETROSPECTIVE OBSERVATIONAL STUDY TO DEFINE THE PREVALENCE OF SARCOPENIA IN HIV-INFECTED PATIENTS. P. Echeverría¹, A. Bonjoch¹, J. Puig¹, A. Ornella^{1,3}, B. Clotet^{1,2,4}, E. Negrodo^{1,4} (1. *Lluita contra la Sida Foundation, Hospital Universitari Germans Trias i Pujol, Badalona, Spain; Universitat Autònoma de Barcelona, Catalonia, Spain; 2. AIDS Research Institute-IRSICAIXA, Institut Germans Trias i Pujol (IGTP), Hospital Universitari Germans Trias i Pujol, Badalona, Spain; 3. Statistics and Operations Research, Technical University of Catalunya, Barcelona, Spain; 4. Universitat de Vic - Universidad Central de Catalunya UVIC-UCC, Vic, Spain*)

Background: Several typical characteristic of HIV-infected patients (aging process, chronic inflammation, long exposition to antiretroviral drugs, comorbid disease, etc) represent potential risk factors for the development of sarcopenia. At the same time, detrimental effects of sarcopenia could increase the risk of some negative outcomes as fractures, falls, hospitalizations and mortality in this population. The aim of the present study is to assess the prevalence of sarcopenia (low muscle mass, LMM) and the progression in HIV- infected patients. **Methods:** We conducted a retrospective, observational study including all treated HIV-infected patients attended in the HIV Unit who have at least two dual energy X-ray absorptometry (DXA) over the last 15 years. The subjects were considered sarcopenic according to the appendicular skeletal muscle mass index (SMI), calculated as the ratio of appendicular skeletal lean mass (ASM) by DXA/height² (kg/m²). Sarcopenia was defined as moderate: SMI between 5,76 - 6,75 Kg/m² and severe: SMI <5.75 Kg/m². We compared percentage of sarcopenia and its progression among subjects whose interval between DXAs was ≤3 years, 3-7 years, 7-10 years and >10 years, stratified by age (<30; 31-50 and >50 years old). Sociodemographic, HIV-related and clinical data was obtained of the medical record. The statistical analysis was performed using SPSS statistical software version 19 (SPSS Inc, Chicago, Illinois, USA). **Results:** A total of 860 HIV-infected subjects were included and 1,720 DXA scans were evaluated. Mean (SD) age of population was 52 (9,5)

years, 76 % were male and 24,1 % female; the median (IQR) time with HIV-infection was 8,4 (3; 14,5) years and the accumulative exposition to antiretroviral treatment was 7.6 (2.8; 14) years. Lipodystrophy data were available from 154 patients, 137 (89%) of which reported lipodystrophy. The prevalence of sarcopenia in the overall population was 25.7% (CI 95%: 22.8-28.7); 17.1% of moderate sarcopenia and 8.6% severe sarcopenia, being more prevalent in older than 50 years 27.8% (CI 95%: 23.9-31.9). The percentage of sarcopenia increased from 37.6% to 49.4% in these patients with an interval of 7-10 years between DXAs (n=109 patients) and from 22% to 25.4% in these with an interval of more than 10 years (n=209). When sarcopenia was determinate according age/gender categories, 43% of women older than 50 years showed moderate sarcopenia and 8,8% of men. Severe sarcopenia was present in 46.9% of women and only in 0.5% of men older than 50 years. **Conclusion:** The prevalence of sarcopenia in HIV-infected subjects was high, being more prevalent in women with age older than 50 years and in patients with a long interval of time between DXAs. Future research needs to determinate the impact of sarcopenia on morbidity, physical function, and quality of life in individuals with HIV.

P163- SENSIBILITY AND SENSITIVITY OF THE SARC-F QUESTIONNAIRE ACCORDING TO DIFFERENT DEFINITIONS OF SARCOPENIA: RESULTS FROM THE SARCOPHAGE STUDY. M. Locquet, C. Beaudart, L. Delandsheere, J.-Y. Reginster, O. Bruyère (Department of Public Health, Epidemiology and Health Economics, University of Liège, Belgium)

Background: The diagnosis of sarcopenia may require specific devices, sometimes expensive and/or not always available. With this in mind as a starting point, the SARC-F, a short symptom-based questionnaire, was developed in order to rapidly screen for sarcopenia. Our aim was to assess the performance of the SARC-F questionnaire in a cohort of Belgian elderly subjects, according to the various existing definitions of sarcopenia. **Methods:** We analyzed cross-sectional data available from the SarcoPhAge (for Sarcopenia and Physical Impairment with Advancing Age) cohort, a research project seeking to gather scientific data characterizing sarcopenia in a population of subjects over 65 years old. We carried out 3 main assessments: the skeletal muscle mass index using Dual-Energy X-Ray Absorptiometry (DXA) (Hologic Discovery A, USA), the muscle strength with a hand-dynamometer (Saehan Corporation, MSD Europe Bvba, Belgium) and the physical performance with the Short Physical Performance Battery test (including data regarding gait speed). Moreover, for this specific investigation, we used a French translated version of the SARC-F questionnaire, composed of 5 questions and reflecting 5 components: strength, assistance in walking, rise from a chair, climb stairs and falls. A maximum of 2 points are assigned to each question and subjects with a score greater than or equal to 4 are considered sarcopenic. We proceeded to a one-to-one comparison analysis regarding the tool performance (i.e., calculation of sensitivity and sensibility), following 7 different definitions of sarcopenia. Two are based on the concept of a low muscle mass: Baumgartner et al. (1998); Delmonico et al. (2007). The 5 others use the concept of low muscle mass plus a weakness in the muscle function: Cruz-Jentoft et al. (2010); Fielding et al. (2011); Morley et al. (2011); Chen et al. (2014); Studenski et al. (2014). **Results:** The 306 subjects enrolled in this analysis were 74.9±5.93 years old and included 182 women (59.5%). Depending on the definition employed, the prevalence of sarcopenia varied from 5.88% (Morley et al.) to 33.99% (Delmonico et al.). The sensitivity of the SARC-F questionnaire ranged from 22.12% (Delmonico et al.) to 75.00% (Chen et al.) and the sensitivity from 84.86% (Studenski et al.) to 87.06% (Cruz-Jentoft et al.). We

noted that a lower sensitivity was found for the 2 definitions of sarcopenia involving only the notion of muscle mass (Baumgartner et al.; Delmonico et al.). Moreover, all positive predictive values were always less than 50%, with a minimum of 17.31% (Chen et al.) and a maximum of 44.23% (Delmonico et al.). The lowest predictive negative value was 68.11% (Delmonico et al.) and the best one reached around 99% (Chen et al.). **Conclusion:** Globally, for most of the definitions considered in our analysis, our results are in line with the performance established in the initial validation of the SARC-F tool (i.e. a poor sensibility and an excellent specificity). This screening tool seems thus to detect with precision the absence of sarcopenia but seems less precise in affirming the presence of this geriatric syndrome.

P164- RELATIONSHIP BETWEEN SARCOPENIA AND FRAILITY IN THE TOLEDO STUDY OF HEALTHY AGING: A POPULATION BASED LONGITUDINAL COHORT. B. Davies¹, L. Rodriguez-Mañas^{1,2}, F. García³, I. Ara Royo⁴, S. Walter¹ (1. *Fundación para la Investigación Biomédica Getafe University Hospital, Madrid, Spain*; 2. *Geriatrics Department, Getafe University Hospital, Madrid, Spain*; 3. *Geriatrics Department, Virgen del Valle Hospital, Toledo, Spain*; 4. *Faculty of sport sciences, University of Castilla La Mancha, Spain*)

Introduction: Sarcopenia is defined as a gradual and generalized loss of muscle mass and low muscle function than increases the risk of physical disability, poor quality of life and mortality. Frailty is defined as a clinically recognizable state of increased vulnerability resulting from aging-associated decline in reserve and function across multiple physiologic systems, leaving the individual in a special risk category when faced with minor stressors and associated with poor outcomes. Some authors have pointed out that sarcopenia could be the biological substrate for the development of frailty. Nonetheless, it has not been conclusive evaluated whether or not sarcopenia is a precursor to frailty or an added risk factor influencing the progression of frailty. The objective of this study is 1) to describe the distribution of sarcopenia in a cohort of older community-dwelling people with and without frailty 2) to assess the performance of the international criteria of sarcopenia in our population. **Methods:** The study population consists of participants from the Toledo Study of Healthy Aging (TSHA), in Spain. Frailty is diagnosed using the presence of at least three of five of the following phenotypic criteria proposed by Fried: low grip strength, low energy, slowed waking speed, low physical activity, and/or unintentional weight loss. A pre-frail stage, in which one or two criteria are present has been included in for sensitivity analyses. Sarcopenia is diagnosed following the European Working Group on Sarcopenia in Older People (EWGSOP) as the presence of BOTH low muscle mass and evidence of low muscle function (low strength or low performance). Muscle mass was measured using Dual energy X-ray absorptiometry (DXA) and low muscle mass was deemed present when appendicular muscle mass divided by body mass index was below 0.789 in men and below 0.512 in women. Muscle function was measured using grip strength and gait speed. Hand grip strength was measured with a JAMAR dynamometer taking the best of three trials and using less than 26 kg for men and less than 16 kg for women as indicator of low muscle strength following the Foundation of the National Institute of Health (FNIH) criteria. Gait speed as indicator of physical performance was measured on a 3m track and considered reduced when it was less than 0.8m/s. Because EWGSOP recommends as cut-off points the use of normative populations (healthy young adults) instead of other predictive reference populations, with cut-off points at two standard deviations below the mean reference value, we additionally categorized our participants as sarcopenic when they were in the lowest quintile of muscle mass and muscle strength or physical

performance. We calculated cross-tables between sarcopenia status and frailty following the international criteria and the quintile based approach. In addition, we evaluated the predictive capacity of frailty status on the presence of sarcopenia using logistic regression adjusted for age, sex (model 1), and additionally for educational status, literacy, marital status, smoking status, alcohol consumption, prevalence of hypertension, myocardial infarction, and type 2 diabetes. **Results:** In total 1596 participants of the TSHA had frailty assessed and DXA measured. The mean age of the population was 78.8 years (Standard Deviation (SD): 4.5) and 889 (56%) were females. Of these 70 (4.4%) were considered as frail following Fried's criteria. 479 participants (30.0%) were "pre-frail" meaning that they evaluated positively to 1 or 2 of Fried's criteria. The remaining 1047 participants can be considered as robust. Following the EWGSOP criteria 792 (54.9%) participants can be considered sarcopenic. Using the quintile based approach 124 (8.7%) of the participants are sarcopenic. Combining both criteria, Fried frailty and sarcopenia, 86.4% of the frail participants can be considered sarcopenic and 7.2% of the sarcopenic participants can be considered frail using the international criteria. Using the quintile based approach, 34.4% of the frail participants were sarcopenic, and 16.9% of the sarcopenic participants were frail. Using logistic regression, we assessed whether frailty status was a significant predictor of sarcopenia. In the baseline models adjusted for age and sex only, the prevalence of frailty was associated with sarcopenia following EWGSOP with OR=10.68, p=0.023 and with sarcopenia following the quintile based approach with OR=8.17, p < 0.001. In multivariate adjusted models, the prevalence of frailty was marginally associated with sarcopenia following EWGSOP with OR=7.57, p=0.054, but this association was clear when the quintile based approach for sarcopenia was used with OR=6.43, p = 0.005. **Conclusion / discussion:** Identifying and assessing sarcopenia and frailty could be the cornerstone for preventing disability and other adverse effects. Both pathologies represent a state of physiological vulnerability with important consequences such as mortality. Sarcopenia may represent a risk to suffer from negative health outcomes in addition to frailty, but standardized criteria for defining sarcopenia according to the characteristics of the population seem to be necessary. Differentiating frail people with and without sarcopenia could have clinical relevance if these 2 subtypes of frailty (sarcopenic and non-sarcopenic) show separate profiles.

P165- FRAILITY AND FUNCTIONAL MOBILITY OF ELDERLY RESIDENTS IN AN AREA OF HIGH SOCIAL VULNERABILITY. F. de Souza Orlandi¹, A.L. Costa Menezes¹, A.C. Martins Gratão¹, F.A. Vasilceac¹, G.A. de Oliveira Gomes¹, K. Gramani Say¹, M.R. Cominetti¹, P. Costa Castro¹, R. Pontin de Mattos Fortes², M.A. Ponti², S.C. Iost Pavarini¹, W.J. Alves Pedro¹, M.S. Zazzetta¹. (1. *Gerontology Department, Federal University of São Carlos, Brazil*; 2. *Computer Science Department, University of São Paulo, Brazil*)

Background: The frail elderly present a high number of associated factors, which have been studied with the objective of identifying them to assist in the creation of preventive actions and in previous interventions. Deficit in functional mobility is considered one of these factors associated with a frailty condition. Considering that mobility includes mobility, frail elderly individuals with mobility deficits may also present low functional capacity and unsatisfactory performance in daily life activities. Therefore, the present study aimed to verify the association between frailty and functional mobility of elderly residents in an area of high social vulnerability. **Method:** This is a cross-sectional study with a quantitative approach, carried out in family health units located in an area classified according to the Paulista Social

Vulnerability Index (2010)¹, with high social vulnerability, of a municipality in the interior of the state of São Paulo, Brazil. The data collection was done through individual interviews in the elderly's home. In order to evaluate the functional mobility, the Timed Up and Go - TUG test was used, which measures the functional mobility in seconds by means of the time that the individual performs the task of lifting a chair (height of approximately 46 cm), walking a distance of 3 meters, turn, walk back towards the chair and sit again. The completion of the test in up to 10 seconds is the time considered normal for healthy, independent adults without risk of falls, 11 to 20 seconds is the expected time for disabled or fragile elders, with partial independence and low risk of falls. More than 20 seconds spent on the test suggests that the participant presents a significant deficit in physical mobility and risk of falls. For community elders, up to 12 seconds spent on the test is considered the normal time². For frailty screening, an objective evaluation of the frailty associated to the classification of the Fried frailty Phenotype was carried out, which defines five criteria for frailty classification. They are: Unintentional weight loss; Muscle weakness; Decreased walking speed; Fatigue and low level of Physical Activity. Scoring on 3, 4 or 5 criteria classifies the individual as fragile, scores on 1 or 2 criteria rank as pre-fragile and those individuals who have not scored any criteria, are classified as non-fragile. To analyze the data, descriptive analysis and binary logistic regression analysis were performed using the Stepwise Forward selection method. **Results:** Of the total sample composed of 304 elderly individuals aged ≥ 60 years, 12.2% were classified as non-fragile ($n = 37$), 60.5% as pre-fragile ($n = 184$) and 27.3% were classified as fragile ($n = 83$). There was a predominance of females ($n = 173$), age between 60 and 69 years ($n = 162$) and schooling between one and four years ($n = 157$). Regarding the evaluation of functional mobility, of the 304 elderly participants, 122 presented a change in the TUG test. Among the fragile elderly group, the prevalence of elderly people with mobility deficits (43.4%) was higher compared to the fragile elderly who did not present mobility deficits (16.3%). The mean time of the total TUG sample, in seconds, was 17.0 (± 5.7), the non-fragile elderly had a mean score of 10.2 (± 7.0) seconds, the pre-frail elderly scored 17.7 (± 7.4) and the frail elderly scored 18.6 (± 5.3) seconds. Considering the cut-off score of the instrument, which is 12 seconds for community-dwelling elders, the mean score of the total sample indicates a greater impairment in mobility assessment. There was statistical significance between the level of frailty with the longest time spent in the TUG (p -value = 0.001). In the binary logistic regression analysis, functional mobility was associated with the frailty condition of the elderly (OR: 3.0; 95% CI: 1.5 - 5.8). **Conclusion:** The present study identified functional mobility as a factor associated with the frailty condition of elderly residents in an area of high social vulnerability, indicating that there is a greater deficit of mobility with increasing level of frailty. Bibliography references: 1. Fundação Sistema Estadual de Análise de Dados – SEADE. Índice Paulista de Vulnerabilidade Social - IPVS. Espaços e dimensões da pobreza nos municípios do Estado de São Paulo. 2010. 2. Bischoff HA, et al. Identifying a cut-off point for normal mobility: a comparison of the timed 'up and go' test in community-dwelling and institutionalized elderly women. *Age Ageing*. 2003;32(3):315-20.

P166- RELATIONSHIP BETWEEN FRAILTY AND SELF-PERCEPTION OF THE HEALTH STATUS OF ELDERLY RESIDENTS IN NA ÁREA OF HIGH SOCIAL VULNERABILITY. F. de Souza Orlandi¹, A.L. Costa Menezes¹, A.C. Martins Gratão¹, F.A. Vasilceac¹, G.A. de Oliveira Gomes¹, K. Gramani Say¹, M.R. Cominetti¹, P. Costa Castro¹, R. Pontin de Mattos Fortes², M.A. Ponti², S.C. IostPavarini¹, W.J. Alves Pedro¹, M.S. Zazzetta¹ (1. Gerontology Department, Federal University of São Carlos, Brazil; 2. Computer Science Department, University of São Paulo, Brazil)

Background: Frailty can be defined as a multifactor syndrome that occurs due to a decrease in metabolic activities and reserves, difficulty in maintaining homeostasis, and a decrease in the body's capacity to support factors stressors, which can lead to functional disability and increased risk of comorbidities¹. The elderly population in a context of social vulnerability may present a greater health problem, since vulnerability is understood as a process in which economic and social resources interact with physical, psychological and collective aspects, which may cause greater risk to illness². Recent research with the elderly reveals that there is an association between negative self-perception of health and frailty. This fact can occur due to the influence of the trajectory and life experiences experienced by the elderly and the way they deal with adverse situations^{3, 4}. Given this assumption, the present study aimed to verify the relationship between fragility and self-perception of the health status of elderly residents in an area of high social vulnerability. **Method:** This is a cross-sectional study with a quantitative approach, carried out in family health units located in an area classified according to the Paulista Social- Vulnerability Index (2010)⁵, with high social vulnerability, of a municipality in the interior of the state of São Paulo, Brazil. Data collection was done through individual interviews in the elderly's home, with the questionnaire of socio-demographic characterization and health conditions, which includes the question to assess the self-perception of health status, and to screen the fragility was performed the objective evaluation of the frailty associated with the classification of the Fried Frailty Phenotype, which defines five criteria for fragility classification. They are: Unintentional weight loss; Muscle weakness; Decreased walking speed; Fatigue and low level of Physical Activity. Scoring on 3, 4 or 5 criteria classifies the individual as fragile, scores on 1 or 2 criteria rank as pre-fragile and those individuals who have not scored any criteria, are classified as non-fragile. To analyze the data, descriptive analysis and binary logistic regression analysis were performed using the Stepwise Forward selection method. **Results:** The study sample consisted of 304 elderly individuals aged ≥ 60 years old, predominantly female (57%), with a mean age of 69.88 years (± 7.36), average schooling of 2.59 years (± 2.64) and average per capita income of 647.16 reais (± 485.7). In relation to the prevalence of frailty, 12.2% of the sample were classified as non-fragile ($n = 37$), 60.5% were classified as pre-fragile ($n = 184$) and 27.3% were classified as fragile ($n = 83$). Self-perception of health was classified as good / very good / excellent ($n = 87$) and reasonable / poor ($n = 215$). The non-fragile elderly group presented the lowest percentage of self-perception of reasonable/poor health (8.8%). Already, the fragile and pre fragile groups presented the highest percentage of elderly with a reasonable/poor self-perception (61.4% and 29.8%). There was statistical significance between the level of fragility with the negative self-perception of health (p -value = 0.020). **Conclusion:** Evidence presented showed that there is a relationship between the self - perception of reasonable / poor health and the fragility of elderly residents in an area of high social vulnerability, suggesting that the higher the level of fragility, the greater the self-perception negative of the state of health. Bibliography references: 1. Fried

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P167- ELDERLY PEOPLE IN A LONG STAY INSTITUTION: RELATIONSHIP BETWEEN QUALITY OF LIFE AND FRAGILITY. F. de Souza Orlandi¹, L. de Andrade¹, L. Alves Melo¹, H.R. de Oliveira Silva², M.S. Zazzetta¹ (1. Department of Gerontology, Federal University of São Carlos, Brazil; 2. Department of Nursing, Federal University of São Carlos, Brazil)

Background: The condition of physical frailty of the elderly does not mean an outcome for a worse quality of life, nor is aging and frailty synonymous. It is understood that physical fragility is a manageable condition, and can be targeted through gerontological nursing interventions¹. The presence of the physical fragility syndrome coupled with the low score in the domains of quality of life may generate a high number of medical appointments and hospitalizations². It is evident that there is an increase in the number of Brazilian elderly people in ILPIs, and this population tends to grow even more due to several factors, such as longevity, fragility, chronic degenerative diseases, autonomy impairment and fragile family structure. QV3. In this sense, the objective of this study was to verify the relationship between the level of fragility and the perception of the quality of life of institutionalized elderly. **Method:** This was a cross-sectional, correlational study with a quantitative approach, carried out in a long-term institution for the elderly in the entire state of São Paulo, Brazil. All ethical precepts for human research were respected. A single interview was conducted with 34 people aged 60 years or older and the following data collection instruments were used: a socio-demographic characterization tool, Quality of Life Instrument Quality of Life Scale for Nursing Home Residents QoL-NHR and the Frailty Phenotype Fried. **Results:** Of the 34 elderly participants in the study, 58.8% were females, mean age was 78.97 (\pm 9.10) years and mean schooling was 5.85 (\pm 4.71) years. Regarding the QoL of the elderly interviewed, the highest mean score was obtained in the «Individuality» domain (20.85 \pm 3.98) and the lowest average score in the «Food assessment» domain (9.09 \pm 2.30). As to fragility, 5.9% of the elderly were classified as non-fragile, 26.5% pre-fragile and 67.3% fragile. (R = -0.467, p = 0.005), «dignity» (r = -0.498, p = 0.003), «security» (r = -0.538, p = 0.001) and «individuality» (r = -0.470, p = 0.005). **Conclusion:** The prevalence of fragility was high and there was a negative relationship between the level of fragility and the perception of quality of life of the institutionalized elderly, specifically in the areas of comfort, dignity, safety and individuality. References: 1. Lenardt MH, Carneiro NHK, Binotto MA, Willig MH, Lourenço TM, Albino J. Frailty and quality of life in elderly primary health care users. *Rev Bras Enferm* [Internet]. 2016;69(3):448-5. 2. Masel MC, Graham JE, Reistetter TA, Markides KS, Ottenbacher KJ. Frailty and health related quality of life in older Mexican Americans. *Health Qual Life Outcomes* [Internet]. 2009;23(7):70. 3. Magalhães VL, Girardi

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P168- FRAILTY-RELATED PREDICTORS OF FUNCTIONAL IMPROVEMENT DURING GERIATRIC REHABILITATION. THE SARCOPENIA AND FUNCTION IN AGING REHABILITATION (SAFARI) MULTI-CENTER STUDY. A. Calle¹, A. Morandi³, G. Onder², E. Ortolani², G. Bellelli³, L.M. Pérez¹, A. Sanniti³, M. Inzitari¹ (1. Parc Sanitari Pere Virgili, Universitat Autònoma de Barcelona, Barcelona, Spain; 2. Centro Medicina dell’Invecchiamento, Università Cattolica Sacro Cuore, Rome, Italy; 3. Department of Rehabilitation and Aged Care of the Fondazione Camplani, Ancelle Hospital, Cremona, Italy, School of Medicine and Surgery, University Milano-Bicocca, Milan, Italy)

Background: Different factors related with frailty, such as sarcopenia, malnutrition and cognitive impairment, might have an impact on functional outcomes during the recovery process of older adults after an acute event, such as hip fracture or stroke. However, these are rarely considered during geriatric rehabilitation, where other factors, such as main condition, comorbidity, global function or motor status are. Moreover, to define sarcopenia at admission in a geriatric rehabilitation unit is an added challenge, because standard definitions might be altered by inability to walk. We aimed at evaluating if sarcopenia, muscle mass and function, malnutrition and cognitive impairment are related with functional improvement in patients admitted to geriatrics rehabilitation units. **Method:** Multi-centric cohort study, including patients \geq 65 years with orthopedics conditions or stroke from three geriatric rehabilitation units (Barcelona, Spain, and Cremona and Rome, Italy) (December 2014-April 2016). Assessment at admission included: demographics, main diagnosis, comorbidity (Charlson Index (CI)), number of drugs, functional status (Barthel Index (BI), gait speed). As independent variables of interest at admission (“exposure”), we included malnutrition (MNA-SF), cognitive status (MMSE), presence of delirium (confusion assessment method (CAM)), handgrip strength, and skeletal muscle mass through bio impedance. We defined sarcopenia as the combination of altered handgrip strength + muscle mass according to EWGSOP cut-offs (excluding gait speed, because more than 60% of participants were unable to walk at the baseline assessment). We selected Functional Improvement (FI) (Barthel discharge - Barthel admission) as an outcome. We performed bivariate analyses using Spearman correlation coefficient or and ANOVA (continuous or dichotomous variables), and a logistic regression model introducing those baseline admission variables significantly associated with FI in bivariate models, or clinically relevant. **Results:** We enrolled 461 patients (mean age \pm SD=80.6 \pm 8.7 years), 66% women, 69.5% with orthopedic conditions (fractures or prosthesis). Comorbidity (CI=3.8 \pm 2.6) and disability (BI=43.2 \pm 22.0) were moderate. Mean cognitive function (MMSE=22.9 \pm 5.6) tended to potential cognitive impairment, and nutritional status revealed possible risks of malnutrition (MNA=11.2 \pm 3.01). Sarcopenia was highly prevalent (74.3%). In the multivariate model, grip strength (Beta=0.129, p=0.031) and MMSE score (Beta=0.125, p=0.015) were independently and positively associated with functional improvement. Among other baseline characteristics, orthopedic conditions (Beta=- 0.218, p=0.000), a baseline BI (Beta=- 0.361, p=0.000), and number of drugs at admission (Beta=-0.112, p=0.015) were inversely associated with functional improvement. Sarcopenia as combined low handgrip and altered muscle mass was not associated with improved function (Beta= 0.057, p= 0.374); **Conclusions:** In our sample of patients with orthopedic conditions or stroke undergoing geriatric rehabilitation,

better grip strength and cognitive status at admission, among factors related with frailty, are associated with functional improvement. Better baseline function (possible ceiling effect) and more drugs (polypharmacy or proxy of comorbidity) are inversely associated with this improvement. Sarcopenia did not show any statistically significant positive or negative association with functional improvement. If confirmed, these data suggest that taking into account frailty-related variables for geriatric rehabilitation might be important. Further studies should also propose an alternative definition of sarcopenia for this setting.

P169- ASSOCIATION BETWEEN QUALITY OF LIFE AND FRAGILITY IN INSTITUTIONALIZED ELDERLY.

F. de Souza Orlandi¹, L. de Andrade¹, L. Alves Melo¹, H.R. de Oliveira Silva², M. Silvana Zazzetta¹ (1. Department of Gerontology, Federal University of São Carlos, Brazil; 2. Department of Nursing, Federal University of São Carlos, Brazil)

Background: The number of Brazilian elderly people in the ILPIs is increasing and this population tends to grow even more due to several factors, among them, longevity, fragility, development of chronic degenerative diseases, impairment of autonomy and fragile family structure, which can compromise QV. QoL is directly associated with the care and the singular and collective care that the institutionalized elderly are receiving. However, it is perceived that this construct has limited scientific production and its lack of exploitation with respect to people in ILPII. The aim of this study is to verify the relationship between the level of frailty assessed by the Tilburg Frailty Indicator and the perception of the quality of life of institutionalized elderly people. **Method:** This was a cross-sectional, correlational study with a quantitative approach, carried out in a long-stay institution for the elderly in the interior of the State of São Paulo, Brazil. All ethical precepts for human research were respected. A separate interview was conducted with 34 participants aged 60 and over, and the following data collection instruments were used: a socio-demographic characterization tool, QoL-NHR Quality of Life Instrument for Nursing Home Residents and the Tilburg Frailty Indicator. **Results:** Of the 34 elderly, 20 were women, ranging in age from 61 - 96 years. In Tilburg, 50% were classified as non-fragile (NF) and 50% as fragile (F). Regarding the perception of the QOL of the elderly interviewed, according to the levels of fragility assessed by the TFI, it was observed that the non-fragile elderly presented better QoL in all domains of the QoL-NHR, with statistical significance ($p \leq 0.05$) in the domains Comfort (average score of 19.25 for NF and 14.53 for F), Functional competence (average score of 18.56 for NF and 14.47 for F), Privacy (average score of 17.75 for NF and 14.35 for F), Dignity (mean score of 19.44 for NF and 17.18 for F), Relationships (mean score of 17.44 for NF and 14.65 for F), Autonomy (average score of 14.88 for NF and 11.06 for F), Safety (mean score of 16.75 for NF and 13.82 for F) and Individuality (mean score of 22.63 for NF and 19.00 for F). **Conclusion:** The prevalence of frailty was high and there was an association between the level of fragility and the perception of the QOL domains of the institutionalized elderly, specifically in the areas of comfort, functional competence, privacy, dignity, relationships, autonomy, safety and individuality. Reference: 1. Magalhães VL, Girardi PLM, Carneiro VLA. Qualidade de vida de idosos em instituição de longa permanência. Rev. Latino-Am. Enfermagem [Internet]. 2012 ; 20(6) : 1186-1195.

P170- ASSOCIATIONS BETWEEN PHYSICAL ACTIVITY LEVELS, SEDENTARY BEHAVIOR AND SARCOPENIA DETERMINANTS AND PREVALENCE IN TOLEDO STUDY USING POPULATION ADAPTED CUT-POINTS.

J.L. Sanchez¹, S. Walter¹, I. Ara², F.J. García-García³, L. Rodríguez Mañas^{1,4} (1. Biomedical Research Foundation of Getafe University Hospital, Getafe, Spain; 2. GENUD Toledo Research Group. University of Castilla-La Mancha, Toledo, Spain; 3. Geriatric Department, Complejo Hospitalario de Toledo, Toledo, Spain; 4. Geriatric Department, Hospital Universitario de Getafe, Madrid, Spain)

Background: Sarcopenia, defined as the age-associated loss of muscle mass and function (strength and power development), is a core contributor to physical limitations and disability at advanced ages. Although sarcopenia seems to be an inevitable part of aging, the rate of muscle mass and function loss is modifiable. The role of exercise for sarcopenia prevention and reversion is clear. However, evidence of the effects of general physical activity (PA) on sarcopenia development and progression is scarce and inconsistent. This is attributable to use of subjective PA measurement tools such as questionnaires. Lack of sarcopenia definition and diagnostic criteria hampers positive case detection. To overcome this problem, European Working Group on Sarcopenia in Older People (EWGSOP) proposed an algorithm based on handgrip strength (HS), physical performance (gait speed, GS) and muscle mass (MM) measurement. The aim of this cross-sectional analysis is to describe the association between objectively-measured PAL and different components of sarcopenia criteria and its prevalence according to FNIH (a) and population adapted cut-off points (b). Our hypothesis is that time spent in different PA intensities is associated with different sarcopenia-measures (MM, GS, HS), as well as with sarcopenia prevalence. **Methods:** Cross-sectional analysis of data from subjects in the second wave of Healthy Ageing Toledo Study was performed. Included subjects were older than 65 years with available PAL, MM, GS and HS. PAL was estimated from Actigraph wGT3X-BT worn for 7 days. Non-PA related data or not-wearing periods were eliminated. Data was included if the accelerometer was worn for 5 valid days (≥ 10 hours/day). Absolute time spent in sedentary (<1.5 METs), light (1.5-2.9 METs), moderate (3-5.9 METs) and vigorous (>6 METs) intensity activity was calculated. Sarcopenia will be identified by the presence of low MM and low GS and/or low HG both in FNIH criteria-based and quintile-based algorithms. MM was measured using Dual X-ray Absorptiometry (DXA); low Appendicular Lean Mass adjusted to Body Mass Index (ALM/BMI) will be used as marker. FNIH cut-off points for low MM are an ALM/BMI below 0,789 in men and 0,512 in women. HG will be measured using a JAMAR dynamometer. Values lower than 26 kg for men and lower than 16 kg for women were considered as low values. GS was computed by measuring the seconds needed to cover a 3-meters path. Gait speed under 0,8 m/s was considered slow gait speed. All analyses were adjusted for age residuals obtained from the linear regression of chronological age on the four levels of PA. For the analysis of the association between PAL and sarcopenia we used logistic regression. For the analysis of the association between PAL and MM, HG, GS, we used linear regression. All models adjusted for age residuals and sex (Model 1) and a set of prevalent disease conditions as type 2 diabetes mellitus (T2DM), hypertension, myocardial infarction and heart failure. **Results:** 559 subjects had valid-accelerometry and sarcopenia-related measures data available. Mean age was 78,79 \pm 4,52 years and 54,7% of subjects were women. Median MM was 0,57 \pm 0,13. Mean gait speed is 0,73 \pm 0,26. Mean grip strength 22,12 \pm 8,12. Time spent in sedentary behavior, light moderate and vigorous intensity was 2701 \pm 9447, 2003 \pm 819,6,

143±17,16, and 0±0,2minutes per week (m/wk), respectively. Using FNIH sarcopenia, 315 subjects (58,6%) were classified as sarcopenic, 9,5% using lower quintiles for different sarcopenia domains. In Model 1, time spent in moderate physical activity was associated with MM ($\beta=0.007$;95%CI=0.0003–0.0014, $p=0.000185$), GS ($\beta=0.004$; 95%CI=0.003–5.63e-03, $p=0.000000000231$) and HS ($\beta=0.039$; 95%CI=6.48e-03–0.071, $P=0.0186$). Each 10 minutes of moderate PA reduced the risk of being sarcopenic according to FNIH criteria by 0,5% (OR= 0.995; 95% CI=0,993–0,997, $p=0.000391$), but not according to the quintile criteria (OR= 0,994; 95% CI=0,997–1,0009, $p=0.000391$). Association between moderate PA and sarcopenia-related measures remained when applying Model 2. No associations between time spent in different PA levels and sarcopenia prevalence using quintile-based criteria were found in Model 2. **Discussion:** This analysis demonstrated that levels of moderate PA are positively associated with sarcopenia-related measures (MM, GS and HS), independently of age, sex, T2DM, heart failure, hypertension and myocardial infarction. In the same way, being engaged in moderate PA reduced the risk of suffering sarcopenia. These results support the association between general PA and MM and functioning preservation, as demonstrated by Ryu et al. (2013) and Foong et al. (2016). In contrast, Volpato et al. (2014) and Raguso et al. (2016) showed no association between PA and sarcopenia and MM loss, respectively. This controversy might be caused by heterogeneity in PA measures (objective/subjective) and sarcopenia definitions. The cross-sectional design hampers causal inference. Our strengths are the use of the last version of Actigraph accelerometer, with information derived from three movement axis and a broad population with different characteristics. Longitudinal studies are needed to demonstrate preventive effect of general PA on MM, HS and GS loss and sarcopenia incidence in specific population in older adults.

P171- PREVALENCE OF THE FRAILTY PHENOTYPE IN A YOUNG AND MIDDLE AGED AMBULATORY CARE POPULATION. M. Zylbergait Lisigurski^{1,2}, S. Shaharyar¹, C.C. Lee¹, S. Ravindranathan¹, D. Mandale¹, O. Jamal¹, J.G. Ruiz² (1. Internal Medicine Residency Program at Aventura Hospital and Medical Center; 2. Geriatric Research, Education and Clinical Center Bruce W. Carter Miami VAMC)

Introduction: The frailty syndrome is described as a condition of physiological vulnerability and multisystem dysfunction associated with an increased risk of functional decline, disability, morbidity, and mortality in older population. There is some data to suggest that the frailty phenotype, or its precursor, the prefrail phenotype is present in a significant proportion of middle-aged patients as well, and it is thought that these individuals are more likely to present long term functional limitations and disability. Currently, there is none published literature describing the prevalence of the frail or prefrail phenotype in ambulatory, populations under 65. The aim of the present study is to evaluate the prevalence of the prefrail and frail phenotypes in an ambulatory care setting among individuals younger than 65 years of age. **Methods:** Prospective, descriptive study that evaluated a convenience sample of patients between 20 and 65 years old presenting to an academic ambulatory clinic center during the period of August 31, 2016 to November 15, 2016. Frailty status was evaluated using the FRAIL scale, a simple and quick self-administered tool that consists of five questions evaluating Fatigue, Resistance, Ambulation, Illnesses, and Lost of weight. Based on the Frail questionnaire patients were deemed robust if they scored 0 points, prefrail if they scored 1 or 2 points on the questionnaire, and frail if they scored 3 points on the scale. Demographic information as well as past medical history and laboratory data was obtained

from the medical records. We measured body mass index (BMI), waist circumference, and body fat percentage in each patient using a OMRON Fat loss monitor. Elevated waist circumference was described as > 35 inches in females and > 40 inches in males. The 10-year cardiovascular risk was calculated, any value above 7.5% was considered as elevated risk. All variables were assessed for normality. Chi-square tests were performed for categorical variables and t-tests (for parametric variables) or Kruskal Wallis tests (for non-parametric variables) were performed for assessment of continuous variables. **Results:** A total of 70 individuals were included in the study. Mean age of patients was 45 ± 12 years, and 49 (70%) of these were female. Thirty-two (48%) were African American, 29(43%) were white, 5(7%) were Asian, 1(1%) were native Hawaiian and three participants did not report ethnicity. Based on the FRAIL questionnaire 28(40%) were prefrail and 5 (7%) were frail. Patients were divided in two groups based on the FRAIL scale (robust and prefrail/frail). There were no significant differences in age, gender, and race between the two groups. There was no difference in mean values of BMI, and body fat percentage in robust patients versus those prefrail or frail. We also found the same frequency of overweight/obesity (BMI above 25), and 10-year cardiovascular risk above 7.5%. Although we found that prefrail and frail patients had significantly higher mean values of waist circumference (40 ±8 vs 36 ±7, $p=0.02$), they did not differ significantly in the prevalence of elevated waist circumference (47% vs 43%, $p=0.050$). Regarding comorbidities, we found no differences on the prevalence of prediabetes, hypertension, dyslipidemia, coronary artery disease, and smoking history. Likewise, we did not find significant differences on mean levels of LDL. However, prefrail and frail individuals had slightly higher hemoglobin A1c values (5.8 vs 6.0, $p=0.07$) and a higher prevalence of diabetes (30% vs 14%, $p=0.08$). **Conclusion:** This study reveals an unexpectedly high prevalence of the frailty phenotype in a young and middle aged ambulatory population. This suggests that frailty, or its precursors, may be under-recognized and under-reported in this group. The present study identifies a possible gap in the provision of care, as identification of these characteristics represent a potential opportunity for early intervention to prevent frailty or ameliorate the consequences of this syndrome. Frail or prefrail patients showed a non-significant trend for an increased prevalence of diabetes, and A1c. This data suggest that metabolic syndrome, prediabetes and diabetes may contribute to the development of the frailty phenotype in younger individuals. Future studies should include larger sample sizes to increase the power of the analysis. Additionally, further study is needed to determine if the presence of prefrail and frail characteristics in young and middle age individuals confers additional risk for disability, morbidity mortality and health care utilization in the long term, and to identify appropriate strategies for managing these patients in order to reduce risk of adverse outcomes.

P172- FRAILTY AND RE-HOSPITALIZATION IN ELDERLY DUE TO SECONDARY INFECTION IN CHRONIC CO-MORBIDITY. C.-P. Hsu¹, H.-K. Tseng² (1. MacKay Memorial Hospital, Department of Family Medicine; 2. Department of Internal Medicine, Taipei, Taiwan)

Introduction: Frailty can be considered a pre-disability state. Re-hospitalization within 14 days is a critical index for quality of medical care. **Methods:** Frailty is a condition in which there is decreased physiological reserve and resilience. When frail persons are exposed to a stressor such as acute infection, they are at increased risk for developing disability or dying which cause them re-hospitalization easily. We collected the aging people older than 65 years in one of the medical center in northern Taiwan between January 2016

and October 2016 for analysis. The reasons for re-admission were calculated. Activities of daily living (ADL) score were retrospectively collected. Four risk groups were stratified into severe (ADL<30), moderate (ADL 30-60), mild (ADL 60-80) disability and pre-disability state (ADL>80). Clinical outcome analyses included expire, referral, returned to clinics, and still in hospitalization. **Results:** The total numbers with available ADL records were 96 elder persons for re-hospitalization due to secondary infection in chronic co-morbidity. The number of people with severe ADL disability was 50, moderate ADL disability 16, mild ADL disability 11 and pre-disability 19. Among the pre-disability state group, two were die, two were still in hospitalization and 15 were return to clinics. **Conclusions:** The clinical outcome of returned to clinics in these 15 pre-disability elderly with ADL >80 could continuously contribute to re-hospitalization. Further intervention (such as physical activity training and nutritional replacement) to this group for improving medical care quality is critical.

P173- APPROACHING PHYSICAL AND MULTIDOMAIN FRAILTY IN THE COMMUNITY: THE 9 ITEM QUESTIONNAIRE OF EUROPEAN PROJECT SUNFRAIL.

M. Maggio^{1,2}, M. Barbolini², E. Palummeri³, S. Poli⁴, I. Cacciapuoti², G. Moda⁵, V. Romano⁵, M. Illario⁶, G.P. Ceda¹, A. Balestrino⁷, M. Fabi⁷, M. Moro², M. Cesari⁸ (1. U.O.C. Geriatric Clinic, University-Hospital of Parma, Department of Clinical Experimental Medicine, University of Parma; 2. Emilia-Romagna Region; 3. Liguria Region; 4. Dipartimento di Scienze della Formazione Università di Genova; 5. Piemonte Region; 6. Dipartimento di Scienze mediche traslazionali Università Federico Secondo, Napoli; 7. University-Hospital of Parma; 8. Centre Hospitalier Universitaire de Toulouse)

Background and Aim of the Study: Frailty is described as a condition characterized by increased vulnerability and sensitivity to physical, psychological and social stressors. The current operationalized definitions, mostly based on physical and clinical phenotypes, are generally not translated into public health interventions supporting the design of proactive and preventive care pathways. Among the initiatives taken within the Sunfrail European Project, an easy to use questionnaire addressing the bio- (physical), psycho (cognitive and psychological), social aspects of frailty was developed with the aim of feeding a standardized model of adapted care. **Methods and Results:** The European Sunfrail project, a Reference Sites Network for Prevention and Care of Frailty and Chronic Conditions in community dwelling persons of EU Countries, was promoted by an Italian Reference Sites Network (Piemonte, Liguria, and Campania Regions, Azienda Ospedaliera Universitaria Federico II), of the European Partnership for Innovation in Active Healthy Aging (EIP-AHA). The project, funded through the third Programme of Health European Union (2014), is coordinated by Emilia-Romagna - Health and Social Regional Agency and involves Centre Hospitalier Universitaire de Toulouse and Montpellier (France), Uniwersytet Medyczny W Lodzi (Poland), Universidad De La Iglesia De Deusto (Spain), Regional Health & Social Care Board Of Northern Ireland (United Kingdom). Strategic Objectives of the Experimental Project are to improve the identification, prevention and management of Frailty and care of multimorbidity. To address this purpose, a multidisciplinary group of experts composed by geriatricians, sociologists and public health professionals was organized. This group activated a sequence of procedures aimed at a) building and validating a 9 item questionnaire, b) testing the acceptance of the questionnaire by professionals and other carers supposed to administer it, and c) listing potential care pathways activated as part of the questionnaire administration. After the analysis

of the literature conducted in the years ranging from 2000 to 2015 and the good clinical practices identified in European Reference Sites, 20 potential items available from existing questionnaires and frailty screening tools were identified. From the original number of 20, 9 items (5 in the physical domain, 1 in the Psychological/cognitive, 3 in the social and economic domain) were subsequently selected and retained selected for the final version of the questionnaire. The choice of the items was based on the potential ability of each one to activate (after confirmation of the generated alerts) specific care pathways by different professionals. The process of validation of the questionnaire, included the translation and back translation in 5 different languages, the testing of the acceptance by professionals and citizens, including the capacity to activate specific pathways, and the dissemination of this tool along with other deliverables of the Project are in progress and will be completed as part of the experimental phase in the first half of 2017. **Conclusions:** The European Project Sunfrail coordinated by Emilia Romagna Region is focusing on a multidomain approach on the early identification and management of frailty and care of multimorbidity. For this purpose, a 9 item questionnaire was developed and the experimental phase of its validation and dissemination across different European Countries will be completed in the next 6 months.

P174- THE ASSOCIATION BETWEEN DIETARY PROTEIN INTAKE, DIETARY QUALITY AND PHYSICAL FRAILTY - THE ROTTERDAM STUDY.

J. Schoufour¹, T. Voortman¹, J. Kieffe-de Jong^{1,2}, B. Stricker¹, G. Brusselle^{1,3,4}, F. Rivadeneira^{1,5}, L. Lahousse^{1,3}, O.H. Franco¹ (1. Department of Epidemiology, Erasmus MC, Rotterdam, the Netherlands; 2. Leiden University College, The Hague, the Netherlands; 3. Department of Respiratory Medicine, Ghent University Hospital, Ghent, Belgium; 4. Department of Respiratory Medicine, Erasmus MC, Rotterdam, the Netherlands; 5. Department of Internal Medicine, Erasmus MC, CA Rotterdam, the Netherlands)

Background: Physical frailty is a geriatric syndrome characterized by unintended weight loss, low physical activity, weakness, slowness and fatigue. Sufficient protein intake has been suggested to be important for preventing physical frailty, but studies show conflicting results which could be explained by several factors. For example, it has been proposed that not only total protein but also protein source (i.e., plant versus animal-derived) is of importance. Additionally, emerging evidence suggests a non-linear association for protein, as a high protein intake may only be beneficial if levels above the daily recommended allowance (RDA) are consumed. Moreover, an association between higher protein intake and lower frailty could merely be caused by higher overall dietary quality. Therefore, we aim to further understand the association between protein intake and frailty in the context of overall diet and examined the association between protein intake from different food sources (plant and animal-derived) and frailty, using different methods to account for intake of total energy and other macronutrients. We further aimed to examine if the risk of being frail or pre-frail is lower in subjects consuming at least 0.8g/kg/BW or 1.2g/kg/BW of protein daily; and to examine the association between dietary quality and frailty. **Methods:** We studied 2,575 subjects with data on diet and physical frailty who participated in the Rotterdam Study, a population-based prospective cohort among subjects aged 55 years and over. Dietary intake was assessed with a validated food-frequency questionnaire, from which we calculated protein intake from different sources and diet quality. Frailty was defined according to the frailty phenotype as the presence of at least three out of the following five symptoms: weight loss, low physical activity, weakness, slowness and fatigue. Participants with one or two

symptoms were diagnosed as being pre-frail. First, we examined the associations between total protein intake, animal-derived, and plant-derived protein with frailty status using multivariable multinomial logistic regression models, adjusting for several variables (age, gender, socio-economic status, physical activity and energy intake) using both the energy residual method and decomposition models. Second, to test for a threshold effect of protein intake on frailty status, we examined whether meeting the current RDA of 0.8g/kg/BW (yes or no) was associated with frailty status. Additionally, we used 1.2g/kg/BW as a cut off of daily allowance. Third, to examine overall diet quality, we analyzed the association between diet quality and frailty status. **Results:** In the nutrient residual method, total protein, animal-derived and plant-derived protein intakes were not associated with being either pre-frail or frail after adjusting for covariates. Substitution models in which we examined a higher protein intake at the expense of either fat or carbohydrates did not materially change the association for protein intake with frailty. We observed that total energy intake (i.e., from any macronutrient source) was significantly associated with lower prevalence of pre-frailty and frailty (OR to be frail per every increase in 100kcal= 0.95, 95%CI = 0.92-0.99; table 1). Participants who consumed on average at least 1.2 grams of protein per kg BW (n=652/2504) were not more likely to be pre-frail (OR=1.04, 95%CI=0.81-1.32) or frail (OR=1.04, 95%CI=0.55-1.96) than participants who consumed less protein (per 10 grams of protein). Last, diet quality was not associated with frailty status. In the fully adjusted models, ORs were 1.01 (0.96-1.07) and 0.96 (0.90-1.02), for pre-frail and frailty participants, respectively. **Conclusion:** These cross-sectional results suggest that energy intake, but not diet quality or intake of proteins specifically, is associated with frailty. Future longitudinal studies evaluating the association between protein intake and frailty incidence, taking into account diet quality and other macronutrients, are needed to further understand the possible preventive effect of protein intake on frailty.

Table 1

Association between protein intake and pre-frailty and frailty, using the energy partition model, multinomial logistic regression analyses

	Pre-frail OR (95%CI)	Frail OR (95%CI)
Energy for any source (per 100kcal)		
Model 1	0.98 (0.97-0.99)	0.95 (0.92-0.98)
Model 2	0.98 (0.98-0.99)	0.95 (0.93-0.97)
Energy from protein (per 100kcal)		
Model 1	1.04 (0.92-1.18)	1.11 (0.80-1.54)
Model 2	1.02 (0.95-1.09)	1.07 (0.92-1.27)
Energy from vegetable protein (per 100kcal)		
Model 1	1.18 (0.89-1.56)	0.57 (0.26-1.28)
Model 2	1.16 (1.00-1.35)	0.58 (0.38-0.88)
Energy from animal protein (per 100kcal)		
Model 1	1.00 (0.88-1.14)	1.19 (0.87-1.63)
Model 2	0.98 (0.92-1.05)	1.15 (0.98-1.35)
Energy from carbohydrates (per 100kcal)		
Model 1	0.99 (0.96-1.02)	0.93 (0.86-1.01)
Model 2	1.00 (0.97-1.02)	0.93 (0.89-0.97)
Energy from fats (per 100kcal)		
Model 1	0.99 (0.96-1.03)	1.01 (0.94-1.09)
Model 2	1.00 (0.98-1.01)	1.01 (0.94-1.09)

Reference category: Non-frail; Values represent Odds Ratios (OR) and 95% confidence intervals (95%CI) per 100 kcal protein per day; Model 1 adjusted for: age, gender and total energy intake (kcal) from other macronutrient sources. Models with vegetable protein intake are additionally adjusted for animal protein intake and vice versa; Model 2 adjusted for: model 1, smoking status, education and BMI

P175- THE IMPACT OF NUTRITIONAL STATUS ON MORTALITY IN LONG-TERM CARE FACILITIES RESIDENTS. A. Parnicka¹, B. Wizner¹, B. Gryglewska¹, J. Wójkowska-Mach², T. Grodzicki¹ (1. Department of Internal Medicine and Gerontology, Jagiellonian University Medical College, Kraków, Poland; 2. Department of Microbiology, Jagiellonian University Medical College, Kraków, Poland)

Background: Malnutrition is common underlying cause of adverse clinical outcomes. The prevalence of malnutrition is highest among hospitalized patients (especially in geriatric ward-about 40% or in surgical wards-even 60%) and among people living in long-term care facilities (about 30-40%). The aim of our study was to assess whether nutritional screening of residents living in long-term care facilities influence on risk of death. **Methods:** The observational study has been conducted in one nursing and two residential homes in Cracow between December 2009 and November 2010. At baseline demographic characteristics, nutritional and health status were gathered. The nutritional status of participants was assessed based in the screening part of the Mini Nutritional Assessment® (MNA). A total score of 12 or more points was interpreted as normal nutritional status, 8-11 points as at risk of malnutrition and below 7 points as malnourished. BMI was calculated based on patients' weight and height measurements. Using the standardized questionnaire the prevalence of comorbidity, geriatric syndromes (pressure ulcers, falls, incontinence and dementia) were assessed as well as pharmacotherapy. After 12 months of follow-up, the data on general health condition (overall mortality and hospitalisations) were collected. The statistical analysis included descriptive statistics, univariate ANOVA - parametric or nonparametric, the Chi-square or Fischer exact tests and Cochran-Armitage trend test. The multivariable logistic regression analysis was performed to established link between the nutritional status in the screening and overall mortality. **Results:** Of 193 residents attending the study, the 122 have completed data on nutritional status and BMI. Mean age (±standard deviation) of the residents was 78.89±8.6 (range: 60 to 100 years), 67.2% were women. Malnutrition was identified in 19 (15,6 %) of the participants from the long-term care facility, at risk of malnutrition was 36 (29,5%) and normal nutritional status was in 67 (54,9%) of the subjects. Residents at risk of malnutrition and malnourished was older than residents with normal nutritional status, respectively: 79.3±8.6 yrs and 82.0±9.6yrs vs 77.6±8.2 yrs. Table 1 presenting the selected data on the patients' clinical status and pharmacotherapy according to the nutritional status. During the follow-up 16 residents has died, among them 12 (75.0%) were women; 12 (75.0%) were at risk of malnutrition or malnourished and 13 (81.3%) were residents of nursing homes. In univariate analysis as well as age-gender-settings adjusted analyses the nutritional status based on MNA screening part was significantly linked with risk of death. In multivariate logistics models including the comorbidities and the geriatric syndromes, in our study independent impact of the nutritional status on overall mortality has disappeared. **Conclusion:** In our study impairment of the nutritional status was a major in the long-term care facilities and affected almost 50% of the residents. Nutritional status was closely related with residents' clinical status and numbers of death, although in our study its independent influence on the risk of death was not highlighted.

Table 1

	MNA 12-14 points N=67	MNA 8-11points N=36	MNA 0-7 points N=19	P-value
Chronic heart disease	43 (64,158)	25 (69,44)	11(57,89)	0.688
Chronic heart failure	35 (52,24)	11 (30,56)	7 (36,84)	0.087
Dementia	7 (10,54)	23 (63,89)	13 (68,42)	<0.001*
Chronic Obstructive Pulmonary Disease	17 (25,37)	5 (13,89)	2 (10,53)	0.208
Pressure ulcers	0	0	3 (15,79)	<0.001*
Incontinence	7 (10,45)	22 (61,11)	15 (78,95)	<0.001*
Anemia	1 (1,49)	1 (2,78)	2 (10,53)	0.078*
Falls	1 (1,49)	1 (2,78)	0	0.735
ACEIs	43 (64,2)	17 (47,2)	8 (42,1)	0.003 *
β-blockers	24 (25,8)	13 (36,1)	5 (26,3)	0.027
Statines	12 (17,9)	5 (13,9)	2 (10,5)	0.047
Antidepressants	9 (13,4)	3 (8,3)	5 (26,3)	0.014
Number of medications	6 [3 - 8]	7 [4 - 9]	6 [4 - 8]	0.579
Deaths	4 (5,97)	7 (19,44)	5 (26,32)	0.008*

Data are presented as means±standard deviations or median [quartile 1 - quartile 3] and numbers (percentages); * P-value < 0.05 for trend analysis (Cochrane-Armitage trend test)

P176- COMPARISON OF MRI-DERIVED AND DEXA-DERIVED MEASUREMENTS OF QUADRICEPS MUSCLE MASS IN THE HEALTHY ADULTS. T.D. Law^{1,2,3,4}, K. Ampomah^{1,2}, L. Volz^{1,2}, R. Clift², B.C. Clark^{1,4} (1. Ohio Musculoskeletal and Neurological Institute (OMNI), Ohio University, Athens, OH, USA; 2. Clinical and Translational Research Unit (CTRU), Ohio University, Athens, OH, USA; 3. Department of Family Medicine, Ohio University, Athens, OH, USA; 4. Department of Geriatric Medicine, Ohio University, Athens, OH, USA; 5. Department of Biomedical Sciences, Ohio University, Athens, OH, USA)

Background: Developing interventional strategies to prevent or slow muscle wasting diseases and disorders, such as sarcopenia (age-related loss of muscle mass), is well regarded to be of high clinical significance and impact. However, successful investigations of this nature necessitate accurate and reliable measurements of muscle mass. Currently, two of the most common approaches for quantifying muscle mass are magnetic resonance imaging (MRI) and dual-energy X-ray absorptiometry (DEXA). In this study, we sought to examine the relationship between MRI-derived measures of quadriceps muscle volume to DEXA-derived measures of thigh lean mass in a cross-sectional analysis as well as a longitudinal analysis to help guide the design and planning of future studies assessing skeletal muscle volume/mass. **Methods:** Twenty-six adults (mean age: 29.2±9.5 yrs, 21 women and 11 men) underwent a whole body DEXA scan and a mid-thigh MRI (cross-sectional analysis). Following baseline testing, subjects were randomized to one of two resistance exercise interventions groups: a low-load blood flow restricted group and a low-load control group. The exercise training was performed twice per week for 10-weeks. The exercise program consisted of four exercises (leg extension, calf raises, lumbar extensions, and arm bicep curls; 3 sets/exercise to failure with 30-secs recovery). At the completion of the 10-week period the whole body DEXA scan and MRI were repeated, and this data was used for the longitudinal analysis. In both the cross-sectional and longitudinal analyses, thigh lean mass was quantified from the DEXA scans and mid-quadriceps lean muscle volume (fat was subtracted) was quantified from the MRI's for both legs. Cross-sectional and longitudinal analyses were then performed to compare the two imaging techniques using correlational and limits of agreement analyses. **Results:** Cross-Sectional Analysis: The relationship between MRI-derived quadriceps muscle volume and DEXA-derived thigh lean mass was high (r=0.88; p<0.01). Longitudinal Analysis: The associations between MRI- and DEXA-derived measures of change in lean mass were lower in the longitudinal analysis in comparison to the cross-sectional analysis. Here, MRI-derived change in quadriceps muscle volume and the

DEXA-derived change in thigh lean mass were moderately associated (r=0.50; p<0.01), Bland-Altman plots revealed that in the analysis there was a relationship between the error (i.e., the difference between the two techniques) and the change in lean mass (i.e., the data were heteroscedastic). The ratio LOA was 12.26. Examination of individual data points indicated that 46% of scans agreed within 3%. For those differing in their estimate by ≥ 3.0% we noted that in 37% of these cases the MRI resulted in a higher estimate of change whereas in 17% of cases the DEXA resulted in a higher estimate of change.

Conclusions: Correlations between DEXA-derived measures of upper leg mass and MRI-derived measures of quadriceps cross-sectional area are high within the context of a cross-sectional population study of adults. However, within the context of a longitudinal study the association between the two measures is reduced, with the residuals being unequally distributed throughout the range of scores of the dependent variable. This information may be useful in the design and planning of future studies assessing skeletal muscle volume/mass. Acknowledgements: This work was supported in part by a grant from the NIH's National Institute of Arthritis and Musculoskeletal and Skin Diseases (R21AR063909 to BCC).

P177- THE INFLUENCE OF FAT MASS ON THE GLYCEMIC CONTROL OF DIABETIC INDIVIDUALS AND NON-DIABETICS. C. Paiva¹, C. Kovacs¹, F.C. Amparo¹, R. Alves¹, A.S. Monteiro¹, K.G. dos Santos¹, C.D. Magnoni¹, A. Souza², P. Moreira¹ (1. Clinical Nutrition Clinic, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil; 2. Technical Department of Health Department, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil)

Introduction: Obesity is a chronic metabolic disease characterized by excess body fat. Such excess when it occupies the interior of the peritoneal cavity results in several pathophysiological changes, including glucose metabolism that may promote the development of type 2 diabetes mellitus (T2DM) or reflect higher levels of glycated hemoglobin (HbA1c) (1, 2, 3). **Objective:** to identify the relationship between the anthropometric profile of obese individuals with and without T2DM, with HbA1c values. **Methodology:** 63 elderly individuals with a mean age of 66 years, obese, of both genders, were divided into 3 different groups: group 1: individuals without diagnosis of T2DM, but the mean HbA1c values considered as borderline for T2DM (6.6%). Group 2: Individuals with a diagnosis of T2DM with a mean of HbA1c within the normal values (7.1%) and group 3: individuals with a diagnosis of T2DM with a mean HbA1c above normal values (9.7%) (poorly controlled diabetes). Both groups had similar mean body weight and body mass index (BMI), however, they differed in the body fat percentage (% fat) calculated by the Weltman method (4), as shown in the table below, the results were expressed as mean and standard deviation (DP). **Results:** The highest % fat found in the group 3 suggests that this parameter exerts a greater influence on the HbA1c value, which also occurs in the group 1. The group 2 presented lower % fat and also lower HbA1c value, suggesting a greater control of the disease. **Conclusion:** The high % fat was shown to be a parameter which interferes in the control of T2DM and also exposes individuals who non-diabetics to the risk of developing it. The similarities found in the values of weight and BMI suggest a reduction of lean mass with consequent increase of the % fat in poorly controlled diabetics patients. These results confirm the claim that weight reduction, through improved eating habits and physical activity, are fundamental for both improved glycemic control and T2DM prevention. References: 1) Corrêa, FHS; Taboada, GF; Junior, CRMA; et al. Influência da Gordura Corporal no Controle Clínico e Metabólico de Pacientes Com Diabetes

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Table 1

Group 1 Non- diabetics					
	Weight (kg)	BMI (kg/m ²)	AC (cm)	% Fat	HbA1c (%)
Mean	100,5	39,9	121,8	46,2	6,6
SD	16,6	4,6	10,25	5,9	0,7
Group 2 Controlled T2DM (HbA1c = 7,1%)					
	Weight (kg)	BMI (kg/m ²)	AC (cm)	% Fat	HbA1c (%)
Mean	98,9	39,2	122,2	43,3	7,1
SD	12,2	3,5	10,5	7,4	0,7
Group 3 Poorly controlled diabetes (HbA1c =9,7%)					
	Weight (kg)	BMI (kg/m ²)	AC (cm)	% Fat	HbA1c (%)
Mean	101,5	39,4	113,8	49,8	9,7
SD	14,6	4,8	24,8	3,3	0,99

P178- LOSS OF MUSCULAR FUNCTION AS A RESULT OF AGING, OBESITY AND IMMOBILIZATION: A MOUSE MODEL FOR PHARMACOLOGICAL INTERVENTION. A.-S. Foucault¹, P. Dilda¹, S. Veillet¹, W. Dioh¹, A. Ferry², R. Lafont¹ (1. *Biophysitis, Romainville, France*; 2. *Sorbonne Universités, UPMC, Inserm, CNRS, Institut de Myologie, Groupe Hospitalier Pitié-Salpêtrière, Paris, France*)

Background: Sarcopenia, a progressive age-related reduction in skeletal muscle mass and strength which contributes to overall physical frailty, is a worldwide health challenge with limited therapeutic options. Experimental evidences addressing the extent to which a high fat diet and limb immobilization influence aged skeletal muscle are rare. The aim of this study was to characterize in a new experimental model the loss of muscle mass and function using old mice subjected to a high fat diet and hindlimb immobilization. **Method:** Old (22 months) versus adult (12 months) C57BL/6J female mice (n=7-10) were fed ad libitum either with a standard or a high fat diet (HF: 4.62 kcal/g; protein 18.3%, lipid 45.6%, carbohydrate 36.1%) for 14 weeks. Body weight was recorded weekly throughout the experimental period. One week before the completion of the study, body composition was measured (MRI: fat mass and lean mass), the animals were tested for functional activity in toto (maximal running velocity on treadmill) and the right hindlimb of the animals was immobilized. At the end of the experimentation, in situ muscle contractility on tibialis anterior either immobilized or active (maximal force P0, specific maximal force sP0, fatigue resistance, contraction time) was recorded. At euthanasia, plasma and various tissues were collected, weighed then immediately frozen and stored at -80°C until use. **Results:** Regarding weight gain on the experimental period, results showed that age (P<0.01) and diet (P<0.001) had a significant overall effect (two way anova age x diet): (1) old mice showed a weaker ability to gain weight compared to adult mice (-80% in mice fed a standard diet and -55% in those fed HF diet); (2) HF diet increased weight gain by 3-fold in adult mice and by 6-fold in old

mice compared to standard diet. This change in weight gain was correlated with an increase of fat mass (P<0.001; +80% in both age group) and with a decrease of lean mass (P<0.01; -7% in adult mice and -12% in old mice) when compared with standard diet. Interestingly, age had no significant effect on body composition. In terms of muscle mass, age, but not diet, had an effect on active (-17%) and immobilized (-20%) quadriceps mass (P<0.01). An overall significant effect of immobilization (P<0.001) was observed with notably a decrease in soleus muscle mass by 28% in mice under HF diet. In tibialis anterior muscle contractility assay of mice fed a HF diet, maximal force (P0) of the active hindlimb was decreased in old vs adult mice (66.6 ± 3.5 g vs 78.6 ± 3.7 g; P<0.05, uncorrected Fisher's LSD). In old mice, HF diet decreased P0 compared to mice fed a standard diet (66.6 ± 3.5 g vs 80.3 ± 1.6 g; P<0.05, uncorrected Fisher's LSD) and immobilization had an overall deleterious effect on P0 (P<0.05) whatever the diet (-16% and -31% compared to the active limb, respectively). HF diet also showed a significant overall effect on the decrease of P0 (P<0.01). In the immobilized hindlimb, age and diet had a significant effect on contraction time (P<0.001). Notably, in mice under HF diet, age dramatically increased contraction time by 54% (P<0.001, Tukey's multiple comparisons test). Mice in toto performance on treadmill was also measured. In mice fed a HF diet, age tended to decrease Vmax when compared to adult mice (0.44 ± 0.01 vs 0.55 ± 0.02 m/s, Sidak's multiple comparisons test P<0.05, interaction age x diet ns). Eventually, plasma analysis showed that age (P<0.01) and diet (P<0.05) had an overall effect on IGF-1 levels. In animals fed a standard and HF diet, IGF-1 plasma concentrations were 13% and 40% lower in old than in adult mice, respectively. **Conclusion:** In old mice fed a high fat diet for 14 weeks, signs of hindlimb muscle impairment were obvious and were exacerbated by immobilization for one week. These effects were significant on muscle mass and contractility as well as on animal overall physical performance. Taken together, these results shade light on a new animal model of sarcopenic obesity, which is relevant for the characterization of drug candidates on this debilitating pathology.

P179- PATTERNS OF ALCOHOL CONSUMPTION AND RISK OF FALLS IN OLDER ADULTS. R. Ortola¹, E. García-Esquinas^{1,2}, I. Galán^{1,3}, P. Guallar-Castillón^{1,2}, E. López-García^{1,2}, J.R. Banegas^{1,2}, F. Rodríguez-Artalejo^{1,2} (1. *Department of Preventive Medicine and Public Health, Universidad Autónoma de Madrid and Idipaz, Madrid, Spain*; 2. *CIBER of Epidemiology and Public Health (CIBERESP), Madrid, Spain*; 3. *National Center for Epidemiology. Instituto de Salud Carlos III, Madrid, Spain*)

Background: Falls are a major health problem in older adults, but their relationship with alcohol consumption in this population remains unclear. Besides, no previous research has investigated the association between drinking patters and risk of falls. **Method:** A prospective cohort with 1606 community-dwelling individuals aged ≥60 years was recruited in Spain in 2008-2010 and followed-up through 2015. At baseline, participants reported alcohol consumption and, at the end of follow-up, their falls during the previous two years. A Mediterranean drinking pattern (MDP) was defined as moderate alcohol consumption (threshold between moderate and heavy intake was 40 g/day for men and 24 g/day for women) with preference for wine and drinking only with meals. Analyses were conducted with linear or logistic regression, as appropriate, and adjusted for the main confounders. **Results:** Compared to non-drinkers, the number of falls was lower in moderate drinkers (β [95% confidence interval (CI)]: -0.15 [-0.29 to -0.01]) and drinkers with MDP (-0.22[-0.39 to -0.06]). Additionally, moderate drinkers and those with MDP showed a lower risk of ≥2

falls (odds ratio [95% CI]: 0.66 [0.44-0.98] and 0.47 [0.28-0.78] respectively), of falls with severe consequences (0.53 [0.32-0.89] and 0.41 [0.21-0.79], respectively), and of falls with fracture (0.50 [0.28-0.89] and 0.40 [0.19-0.84], respectively). **Conclusion:** Both moderate drinking and the MDP were associated with a lower number of falls and a reduced risk of falls and injurious falls in older adults. This work was mainly supported by grant no. 02/2014 from the Plan Nacional sobre Drogas (Ministry of Health of Spain). Additional funding was obtained from FIS grants no. 12/1166 and 16/609 (Instituto de Salud Carlos III, State Secretary of R+D+I and FEDER/FSE), the FRAILOMIC Initiative (FP7-HEALTH-2012-Proposal no. 305483-2) and the ATHLOS project (EU H2020- Project ID: 635316).

P180- DAILY LIVING AIDS REQUIREMENTS IN ELDERLY ACCORDING TO AREAS OF GREATER FUNCTIONAL IMPAIRMENT IN BASIC DAILY LIVING ACTIVITIES. S. Caroca, M. Vargas Jofre, M. Arias Barredo (*Instituto Nacional de Geriatria, Santiago, Chile*)

Background: Functionality is an indicator of health in elderly. Technical Aids-adaptations are elements required to protect, support or replace functions and activities, thus allowing maintenance of functional Independence. **Objective:** Identify areas of the Basic Daily Living Activities largely altered in the elderly, to objectify the needs of technical aids and / or adaptations. **Method:** Cross-sectional descriptive study, applying Barthel Index and Funcional Independence Measure (FIM) to measure functionality in a sample of 102 patients treated at the Geriatric Day Hospital in National Institute of Geriatrics, during the first quarter of 2015. Data processed with SPSS. **Results:** 68.6% of the sample are women, average age is 80.7 years, with 85.3% of adults over 75 years. 74,5% moderate dependence (Barthel Index). No relation to age ($p=0.579$). Admission diagnoses: Disorder of Gait 25,5%, Painful shoulder syndrome 15,7 %, Osteoarthritis 14,7%, Stroke 6,9 %. Deficit areas according to Barthel Index: stairs (86,3%), ambulation (65,7%), transfers (55,9%), wash up (48%), dressing (27,5%), eating (22,5%), grooming (13,7%), toilet (19,6%). Deficit areas according to FIM: Tub/shower (42,2%), stairs (41,2%), walk/wheelchair (31,4%), dressing lower body (30,4%), transfers (27,5%), eating (22,5%), bathing (24,5%). **Conclusions:** The largest losses functional areas were found in stairs, ambulation, transfers and clothing inferior, with a match between the two applied test and the evidence reviewed, thus the needs of technical aids and / or adaptations for the implementation of activities of daily living are related to this areas, resulting adjustments are necessary in national policies acquisition of technical aids, considering adapted furniture, shoe horns, among others. Key words: technical aids, orthotics, home adaptations, elderly, activities of daily living, functionality of the elderly.

P181- ARE SOME PLASMA CIRCULATING MIRNAS A SIGNATURE FOR THE HAND GRIP STRENGTH OF OLDER ADULTS? – RESULTS FROM THE INCHIANTI COHORT. E. Talluri¹, V. Del Panta¹, J. Grillari², M. Hackl², S. Bandinelli¹ (1. Laboratory of Clinical Epidemiology, InCHIANTI Study Group, LHTC Local Health Tuscany Center, Florence, Italy; 2. TAmiRNA GmbH, Vienna, Austria (MH and JG), Christian Doppler Laboratory for the Biotechnology of Skin Aging, Vienna, Austria (JG))

Background: Here we want to investigate the association between blood circulating miRNAs and hand grip strength which is in turn associated to poor outcomes such as frailty and sarcopenia in older adults (1). Blood circulating miRNAs are an emerging class of potential biomarkers involved in a wide variety of essential biological processes. They are believed to play a key role in regulation of aging

and aging related conditions (2) and their disruption has been linked to a variety of diseases (3). The interest in identifying miRNAs which can be involved in the diagnosis of complex diseases has been increasing. On the other hand, how miRNAs orchestrate biological processes and disease is still unclear, due to the fact that each miRNA is responsible for regulating multiple genes and mRNAs. **Method:** miRNAs determination was assessed in the framework of the Health Project FRAILOMIC Project. Least Absolute Shrinkage and Selection Operator (LASSO) statistical approach was used to explore a panel of circulating miRNA in plasma of older people, implementing the model by using handgrip strength as outcome. A reduced set of explanatory miRNAs variables selected by LASSO model was used to perform a regression multivariate analysis of miRNAs (adjusted for sex and age) versus handgrip strength to investigate the association in elderly people. **Results:** Data on 255 participants (age=75.8, 153F, 102M) enrolled in the InCHIANTI study (4) were analyzed. Among 77 miRNAs explored with LASSO, 6 miRNAs were found significant as predictors. Multivariate regression analysis showed 1 miRNA with $p < 0.01$, 4 miRNAs with $p < 0.05$ and 1 miRNA with $p < 0.1$. **Conclusion:** The study show a selection of miRNAs candidates which should be more deeply investigated in their biological role and potential involvement in sarcopenia and frailty. This work was supported by EU-FP7 Health Project FRAILOMIC 305483. References: 1- Cesari M. et al.(2015). Sarcopenia-related parameters and incident disability in older persons: results from the “invecchiare in Chianti” study. *J Gerontol A Biol Sci Med*;70:457–63. 2- Grillari J. et al (2010). Novel modulators of senescence, aging, and longevity: Small non-coding RNAs enter the stage. *Exp Gerontol*; 45:302-11; 3- Ardekani AM et al. (2010). The role of MicroRNAs in human diseases. *Avicenna J Med Biotechnol*; 2:161–179; 4- Ferrucci L. et al. (2000). Subsystems contributing to the decline in ability to walk: bridging the gap between epidemiology and geriatric practice in the InCHIANTI study. *J Am Geriatr Soc*; 48(12):1618-25.

P182- PHYSICAL ACTIVITY, METABOLIC PARAMETERS, INFLAMMATION AND OBESE SARCOPEMIC ELDERLY. C.M.C. Nascimento, M.S. Zazzetta, G.A.O. Gomes, F.S. Orlandi, K. Gramani-Say, F.A. Vasilceac, A.C.M. Grãto, S.C.I. Pavarini, M.R. Cominetti (*Department of Gerontology, Federal University of São Carlos, São Carlos, SP, Brazil*)

An age-dependent decline in skeletal muscle mass and function of this tissue during the aging process occurs and is exacerbated since the 70 years old. Sarcopenia is a common feature of this process. Concomitantly to the growing of longevity, one of the most concerning of public health is the widespread of obesity in all age group. Obesity appears to be such a promoting factor and has been linked in several studies to sarcopenia. Despite the difficult to understand the causal association between these pathologies, a causal link between both diseases may be linked to the coexistence of a high chronic proinflammatory state. Thus, the main goal of this study was to compare the levels of inflammatory and endocrine levels of specific biological markers, and to discuss the relationship of these levels with sarcopenia. A sample of 363 elderly registered in a primary health care was evaluated. Obesity prevalence was calculated taking into account, adjusted values for each gender for body mass index. In order to evaluate presence of sarcopenia in the participants, it was adopted criteria proposed by European Working Group on Sarcopenia in Older People. Blood samples were analyzed through a customized multiplex panel by luminescence and by immunoenzymatic assay (ELISA). Sarcopenic obese elderly presented significant higher levels of insulin when compared to non-sarcopenic obese ($p < 0.05$). Considering these levels, non-obese participants,

independent of the sarcopenic condition, presented significant lower levels of insulin ($p<0.001$). Regarding to inflammatory markers, both groups of obese elderly, independent of the sarcopenic condition, and non-obese sarcopenic elderly presented higher levels of Interleukin-6 and Tumor Necrosis Factor-alpha (TNF- α) ($p<0.05$). We also found a significant relationship showing that higher levels of proinflammatory cytokine were associated to sarcopenia and hyperinsulinaemia. Our results showed a trend to unbalance of endocrine pathways in the obesity, which may disrupt with immunological pathways linked to the proinflammatory state frequently observed in sarcopenic individuals. Future longitudinal studies will aim to highlight the role of obesity and sarcopenia in the pathological pathway that may underlie frailty in the elderly.

P183- USE OF LOSARTAN AND PREVALENCE OF SARCOPENIA IN OLDER ADULTS IN AN OUTPATIENT CARDIOLOGY CLINIC: THE SARCOS STUDY. P.H.M. Chaves¹, F. Martim¹, S. Ingham², A.C.C. Carvalho², A. Frisoli² (1. Benjamin Leon Center for Geriatrics Research and Education; Department of Humanities, Health and Society; Hebert Wertheim College of Medicine; Florida International University; Miami, FL, USA; 2. Cardiogeriatric Section, Federal University of Sao Paulo, Sao Paulo, SP, Brazil)

Background: Reduced skeletal muscle mass associated with low muscle strength and/or impaired physical performance are the hallmark of sarcopenia, a major geriatric syndrome. Recent basic science evidence has suggested that losartan, an angiotensin II receptor antagonist commonly used to treat hypertension, might be useful as a potential non-hormonal therapy for prevention of sarcopenia in older adults. Building on this line of investigation, we conducted a secondary data analysis study to explore a possible association between losartan use and lower occurrence of sarcopenia in older adults. **Methods:** Cross-sectional analyses of data from SARCOS, an observational study of the epidemiology of sarcopenia and osteoporosis in older outpatients of a cardiology clinic of the Federal University of Sao Paulo, Brazil. Sarcopenia was defined according to the European Working Group on Sarcopenia in Older People (EWGSOP); i.e., low appendicular muscle mass by dual-energy X-ray absorptiometry plus low handgrip strength or walking speed). Use and dose of losartan was abstracted from medical records. Gender-stratified analysis was conducted using logistic regression with adjustment for demographics (age, income, education) and prevalent disease. Informed consent was obtained from all study subjects. **Results:** Analytic sample ($n=279$) had a mean age of 79.1 ± 7.1 ; 55.9% were women. Prevalence of hypertension, diabetes, coronary disease, and congestive heart failure were, respectively, 90.7%, 41.2%, 21.1%, and 29.3%. Losartan was being used by 33.7% of study subjects; among losartan users, 86.7% of subjects used a dose of 50 mg or greater. Prevalence of sarcopenia in analytic sample was 17.7% in women, and 26.0%. In women, but not in men, the odds of sarcopenia was substantially lower among those who were using 50 mg or more of losartan per day, as compared to those who were not (OR: .31; 95%CI: .10, .94; $p=.038$). **Conclusion:** Losartan use was associated with lower likelihood of sarcopenia in older women in this exploratory, cross-sectional study. Results should be interpreted in light of limitations inherent to the study's relative small sample size, and its cross-sectional, observational design (e.g., temporality, selection bias, and lack of intervention). Regarding biological plausibility, the association observed in older adults is in line with recent evidence from mice study supporting a protective effect of losartan on strength decline and muscle healing. Reasons underlying observed gender differences are unclear. Pilot intervention

studies of losartan on muscle mass and function that are currently under development, along with larger prospective epidemiologic studies are warranted to guide next steps regarding the potential use of angiotensin II receptor antagonists as a non-hormonal opportunity for sarcopenia prevention in older adults.

P184- URINE BIOMARKERS OF FRAILTY RISK: MONITORING HABITUAL EXPOSURE TO PROTEIN-RICH FOODS AND HIGH ANTIOXIDANT FRUIT AND VEGETABLES IN COMMUNITY SETTINGS. J. Draper¹, M. Arkesteijn¹, M. Beckmann¹, N. Gregory¹, A. Lloyd¹, J. Mathers², R. Thatcher¹, N. Willis², T. Wilson¹, H. Zubair¹ (1. Aberystwyth University, UK; 2. Newcastle University, UK)

Background: Poor diet resulting in unexpected weight loss in geriatric populations is a key indicator of frailty with malnutrition leading to onset of exhaustion, loss of lean body mass and muscular weakness (sarcopenia) and low levels of physical activity. Elderly people with low protein intake lose significantly more lean body mass than those with an adequate diet. Additionally, the overall quality of diet, particularly vegetable and fruit intake as rich sources of vitamins (particularly vitamin D) and anti-oxidant chemicals, has a significant impact on inflammation status and subsequent frailty risk. Measurement of dietary intake using self-reporting tools such as diet diaries or food frequency questionnaires is both time consuming and inherently inaccurate. This is a particular problem in geriatric populations where mild cognitive impairment can have a detrimental impact on self-reporting. The chemical composition of urine is a rich source of objective information about dietary exposure as many foods contain distinctive metabolites which after absorption and further metabolism are excreted. Metabolomics technology has been used recently to discover potential urine biomarkers of habitual exposure to foods rich in protein or high in natural antioxidants and key vitamins. Malnutrition is found in all care settings and is estimated to affect around 35% of adults on admission, or resident in, either care homes or hospital. Although a major proportion of costs attributed to malnutrition is associated the high turnover of patients in hospital, most malnutrition is harboured in the community and in care homes. Screening and early diagnosis of malnutrition and frailty risk in elderly people living in the community will help to prevent the onset of disability. **Methods:** A small cohort of free-living individuals ($n = 14$) were asked to record their diet for a 6 week period using an electronic diet diary and provide a bed-time and first morning void urine sample each day. Exposure levels to targeted foods rich in protein or high in antioxidants were calculated for each individual using frequency and portion size information. The overall healthiness of an individual's diet was quantified using the Alternative Healthy Eating Index. Non-targeted metabolite profiling using High Resolution Mass Spectrometry was used to determine levels of each metabolite and to validate its performance as a biomarker to accurately report intake of the target food using linear regression and other modelling methods. Multiple Reaction Monitoring approaches using Triple Quadrupole Mass Spectrometry were used to quantify simultaneously a panel of selected biomarkers specifically aimed at assessing malnutrition status with reference to frailty risk. **Results:** Spot urine samples collected as a first morning void were shown to be just as informative as 24h urine samples when estimating dietary exposure using metabolite biomarkers. Standardised methods for the collection of spot urine samples from community settings in order to accurately monitor habitual diet have been validated. Protein intake estimates from diet diaries made on a daily, weekly or monthly basis revealed a wide range of exposure. Dipeptides (anserine and carnosine) and 3-methyl histidine, abundant in striated muscle,

reported accurately exposure to high protein quality meat products, whilst TMAO was strongly associated with the level of exposure to protein-rich seafood. Chemicals representing specific end points of colonic microbial protein fermentation were correlated with overall protein exposure as measured by linear regression models. Hippuric acid derivatives performed well as urine biomarkers for overall fruit and vegetable exposure. Individual high antioxidant food groups (e.g. wholegrains, citrus, crucifers, polyphenol-rich foods) could be monitored efficiently using biomarkers bespoke for each grouping. Two complementary multiple reaction monitoring routines have been developed to quantify concurrently dietary exposure biomarkers of key foods high in either protein or anti-oxidants. We will describe progress in assessing the performance of this standardised biomarker panel in specific cohorts where individuals have been categorised with regard to frailty to explore its utility for the detection of chronically poor diet in individuals potentially at risk of malnutrition leading to onset of frailty. **Conclusions:** Urine biomarkers are fast becoming established as reliable indications of dietary exposure. By focusing on the simultaneous measurement of multiple dietary exposure biomarkers it is possible to assess the risk of malnutrition using a 'one shot' test. It is concluded that urine biomarker technology will provide in the future a useful platform for the prevention, early detection and treatment of frailty.

P185- ALTERATION OF THE BALANCE ASSESSED BY TEST IN THE BALANCE REHABILITATION UNIT IN ELDERLY FROM GERIATRIC DAY HOSPITAL.
M. Arias, M.V. Figueroa, B. Cordier, A. Ibaceta, C. Peña (*Instituto Nacional de Geriatria, Santiago de Chile, Chile*)

Introduction/Background: Changes in balance and frequent falls are an important geriatric syndrome, causing loss of functionality in the elderly. Postural control is altered in the population as it ages due to the various systems involved producing a loss of balance which favors falls in the older adult population. The Balance Rehabilitation Unit (BRU) is a Virtual rehabilitation equipment that's evaluate these altered systems such as pressure center, stability limit and oscillation speed, through somatosensory, visual and vestibular stimuli. Quantitative measurements of balance can be an important tool to reliably identify older people with impaired balance. The BRU equipment has a platform that supports the patient who sends information through a software allowing immediate measurement alterations of the balance in different situations or stimuli, during cephalic movements with eyes open or closed in different surfaces. **Material and Methods:** A cross-sectional non-experimental study was carried out on patients who entered treatment at the Frequent Falls Unit in the Hospital Day Geriatric during the months of October to December 2015. Prior to the initiation of rehabilitation therapy, BRUs were evaluated with different stimuli (visual or vestibular) determining the Stability Limit and Pressure Center oscillation. They were divided into two groups for information processing and crossover of variables: 30 patients with a history of falls and 30 patients without a history of falls. SPSS processed information (significant value $p < 0.05$). **Results:** Average 74.5 years (64-89 years) 48.3% 75-89 years. 73.3% female. Body Mass Index: deficit 10%, overweight 21.7%, obesity 35.0%. Barthel Index: 93.3% moderate dependence in Basic Daily Living Activities. 23.3% Mild cognitive impairment (DCL). Diagnosis of admission: disorder walking 15.0%, frequent falls 23.3%, both 26.7%. Comorbidities: HTA 66.7%, DM 26.7%, hypothyroidism 13.3%. There were no significant differences in both groups between age, male-female ($p 0.991$), patient with or without falls ($p 0.313$), with-without DCL ($p 0.063$). Area of stability: stable surface / closed eyes $p 0.114$, saccadic stimulation $p 0.824$, lateral visuo-vestibular

$p 0.128$, vertical visuo-vestibular $p 0.001$, unstable / closed eyes $p 0.005$. Velocity of oscillation: stable surface / closed eyes $p 0.004$, saccadic stimuli $p 0.019$, lateral visuo-vestibular stimulus $p 0.003$, vertical visuo-vestibular stimuli $p 0.001$, unstable / closed eyes $p 0.004$. **Conclusion:** Patients with a history of falls compared with the patients without falls they had altered the rate of oscillation in different balance assessment tests with decreased stability limit. This difference is greater with closed-eyes, in visuo-vestibular or unstable surfaces.

P186- PATIENT REPORTED OUTCOMES (EPROS) – SARQOL, SF-36 AND TSD-OC - IN AGEING RELATED SARCOPENIA. SARA-OBS, A SIX-MONTH OBSERVATIONAL CLINICAL TRIAL. S. Del Signore^{1,2}, W. Diroh¹, G. Zia², S. Del Signore², S. Veillet¹ (*1. Biophytis, Paris, France; 2. Bluecompanion ltd, London, United Kingdom*)

Background: Sarcopenia is now recognized as an independent condition by the International Classification of Disease, Tenth Revision, Clinical Modification (ICD-10-CM) under the code M62.84. Although no candidate drug has received yet marketing authorization for (ageing related) Sarcopenia, US and EU regulatory experts do strengthen the importance of testing Patient Reported Outcomes aside objective measurements of mobility function and body composition, to demonstrate clinical efficacy in Sarcopenia. Standard designed clinical trials may be inadequate for collecting good quality long-term clinical data in older adults. Rigid visit and investigations scheduling negatively affects compliance and retention rate while increasing the risk of missing data. Moreover, concomitant chronic diseases and poly-therapy related exclusion criteria often prevent enrolling a representative sample of the target population. **Methods:** Administering Patient Reported Outcomes to Older Patients via remotely connected devices as an approach for good quality clinical data is now being tested in SARA-OBS. This EU/US clinical study will assess the 6-month rate of change in physical function and body composition of community dwelling older patients with low SPPB, at risk of mobility disability and physical dependence. In terms of functional evaluation, both the 400-meter walking test and the 6-minute walking distance will be evaluated as putative endpoints for the subsequent interventional clinical trial. SarQoL, SF-36 and TSD-OC are being electronically administered to community dwelling sarcopenic patients. Three-hundred (300) participants are being recruited in Belgium, France, Italy and the United States with the objective of better characterizing the target population of a subsequent interventional clinical trial investigating the safety and efficacy of Sarconeo (BIO101) in preventing further functional decline. ePROs are captured and integrated in the dedicated SARA digital platform. This clinical data platform is based on a semi-permanent clinical trial infrastructure, centered on geographic areas and their clinical investigation centers. It also stores different source data: clinical exams, DXA, physical activity recording, safety laboratory parameters and biomarkers (via a Biobank). At study end, data will remain accessible for secondary research in Sarcopenia, e.g. answering additional, not pre-specified questions from regulators. The clinical trial platform is enabled by novel information and communication technologies (ICT) allowing friendly and secure communication with patients and continuous data collection from home, thus minimizing travels to the investigational site. This approach is expected to empower patient's role in clinical research by providing standardized auto-evaluation tools and a simplified communication with the study staff. A dedicated website, with a general public splash-page, as entry portal and an adaptive data-warehouse will complete the SARA clinical data platform infrastructure. **Conclusions:** SARA-OBS is generating meaningful clinical data in older patients suffering from

age related Sarcopenia; the study protocol includes electronically administered patient reported outcomes (ePROs) that will usefully complement functional evaluation over a 6-month observational duration.

P187- ASSESSMENT OF BODY COMPOSITION, MUSCLE STRENGTH AND FUNCTION IN A DANISH COHORT – A DIAGNOSTIC TOOL FOR SARCOPENIA. C. Suetta¹, B. Haddock¹, L. Rørdam², T. Noerst¹, O. Hansen¹, H. Ludvig¹, E. Prescott³, P. Schnohr³, P. Hovind¹, J. Bulow² (1. Department of Clinical Physiology, Nuclear Medicine & PET, Rigshospitalet, University of Copenhagen, Denmark; 2. Department of Clinical Physiology and Nuclear Medicine, Bispebjerg University Hospital, Denmark; 3. Department of Cardiology, Bispebjerg University Hospital, Denmark)

Background: The prevalence of sarcopenia in the literature varies extensively, depending on the population studied, the reference population and ethnicity, especially when the reference and study populations do not match. Moreover, the introduction of physical performance and muscle strength as part of the sarcopenia definitions creates a need for solid reference materials combining muscle mass characteristics with the assessment of muscle strength and function. **Method:** 1305 participants (732 women and 573 men) aged 20-92 years from the Copenhagen City Heart Study were included in order to establish a Danish reference material (Copenhagen Sarcopenia Study) on muscle mass characteristics (Appendicular Skeletal Muscle (ASM), iDXA, GE Lunar), muscle strength, (hand grip strength, Jamar dynamometer and Leg extension power, Nottingham Power Rig) and physical performance (30 sec Chair Rise Test (CRT) and 10 m maximal walking speed). **Results:** Compared to women, men had larger ASM (26.5 kg vs 18.2 kg; $p < 0.05$), BMI (26.9 kg/m² vs 24.8 kg/m²; $p < 0.05$), ASM/BMI (1.02 vs 0.75; $p < 0.05$), muscle power (3393 w vs 2535 w; $p < 0.05$) and handgrip strength (46.8 kg vs 29.5 kg $p < 0.05$). In contrast there was no gender difference in the chair rise test (21.2 vs 20.4; $p < 0.05$) and 10 m walking speed (4.5 s vs 5.0 s; $p < 0.05$). With increasing age, ASM ($r = -0.306$ and $r = -0.432$; $p < 0.05$), leg extension power ($r = -0.186$ and $r = -0.423$; $p < 0.05$) and chair rise test ($r = -0.405$ and $r = -0.414$; $p < 0.05$) declined in both women and men, respectively. **Conclusion:** With the introduction of physical performance and muscle strength as part of the sarcopenia definitions, adequate reference materials are needed that combine parameters of muscle mass, muscle strength and functional capacity. Effective diagnosis of low muscle mass and parallel impairments in muscle function will enable early targeted treatments to be initiated guided by relevant diagnostic tools.

P188- ASSOCIATION BETWEEN RISK OF MALNUTRITION AND PHYSICAL DISABILITY: EVIDENCE FROM A CASE-CONTROL STUDY IN OLDER MEXICAN ADULTS. M.T. López Teros¹, E. Cruz Arenas², H. Alemán-Mateo³ (1. Medical Doctor and Master of Science. Professor. Departamento de Salud, Universidad Iberoamericana, Ciudad de México. Prolongación Paseo de Reforma 880, Lomas de Santa Fe, Ciudad de México, D.F., México; 2. Medical Doctor and PhD. Professor. Facultad de Medicina, Universidad Nacional Autónoma de México. Ciudad de México, Ciudad Universitaria, Circuito Interior, D.F., México; 3. Professor, and Research Scientist "D". Departamento de Nutrición y Metabolismo. Coordinación de Nutrición. Centro de Investigación en Alimentación y Desarrollo (CIAD), Sonora, México)

Background: At present, few case-control studies on the association between the risk of malnutrition and physical disability

have been conducted. Therefore, this study examines whether the risk of malnutrition is associated with physical disability, while also exploring the components of the multidimensional mini-nutritional assessment-short form (MNA-SF) scale that are most closely associated with physical disability in a Mexican geriatric population. **Methods:** This is a case-control design that analyses a representative national sample. Only, 700 older adults were chosen, and 350 of those were selected at random to form the case group because they had some physical disability. The other subjects were free of physical disability and constituted the control group. Anthropometric data, information from the MNA-SF, basic activities of daily living (BADL) and instrumental activities of daily living (IADL) scales, as well as some health and socioeconomic variables were also considered. Based on the MNA-SF the risk of malnutrition was defined, while the BADL and IADL scales were used to identify physical disabilities. A logistic regression procedure was applied to explore the association. **Results:** The prevalence of the risk of malnutrition differed between groups, as it was higher in cases (44.1%) than controls (31.2%) ($p = 0.0001$). Unadjusted and adjusted models for several covariates showed that older people at risk of malnutrition also had a higher risk of developing some physical disability than subjects with normal nutritional status (OR= 1.4; 95% CI, 1.3-2.4; $p < 0.0001$). Of the MNA-SF items explored, only loss of appetite was associated with physical disability, as subjects with this condition were 1.89 times to develop some disability than the subjects without this component (OR=1.89, 95% CI, 1.38-2.60; $p = 0.0001$). **Conclusion:** Risk of malnutrition was significantly associated with physical disability. Loss of appetite was the only component of the multidimensional MNA-SF scale that was significantly associated with physical disability in the Mexican geriatric population studied. **Keywords:** Risk of malnutrition, MNA-SF, physical disability, BADL and IADL scales, older people

P189- CHANGE IN HEMOGLOBIN STATUS AND IMPACT ON PHYSICAL PERFORMANCE IN BRAZILIAN OLDER ADULTS. L. Pires Corona¹, T. da Silva Alexandre², T. Renata Pereira de Brito³, D. Pires Nunes⁴, Y. Aparecida de Oliveira Duarte⁵, M.L. Lebrao⁶ (1. Faculty of Applied Sciences, University of Campinas, Brazil; 2. Department of Gerontology, Federal University of Sao Carlos, Brazil; 3. Faculty of Nutrition, Federal University of Alfenas, Brazil; 4. Nursing Course, Federal University of Tocantins, Brazil; 5. Department of Medical Surgical Nursing, School of Nursing, University of Sao Paulo, Brazil; 6. Department of Epidemiology, Faculty of Public Health, University of Sao Paulo, Brazil)

Background: Anemia has been identified as a major health problem, because it is the commonest hematological abnormality among older adults, and it has been associated with decreased physical performance, more functional dependence, reduced mobility, decreased cognitive function and increased mortality. Common symptoms of anemia, such as fatigue and dyspnea, are directly related to lower mobility and difficulty in activities of daily living. Thus, this study aimed to assess the impact of changes in hemoglobin status on physical performance in Brazilian older adults in five years of follow-up. **Method:** Older adults ($n = 1,256$) from the third wave of SABE Study (Health, Well-being, and Aging) conducted in 2010, were followed for 5 years, when they were contacted for the fourth wave. We assessed hemoglobin in 2010 and 2015, and the outcome was the total score in 2015 on the Short Physical Performance Battery (SPPB), analyzed according to anemia status in four groups: 1) participants who were not anemic in 2010 and remained so in 2015; 2) those who did not have anemia and developed the condition during the period; 3) those who had anemia in 2010 and no longer presented the condition in 2015; 4) people with anemia in both waves. Differences

between groups were estimated using the Wald test of mean equality, and Poisson regression was used to evaluate the association between anemia and SPPB score (reference group 1), adjusted for sex and age group (60-74 years and 75 years and more). **Results:** The mean SPPB score was 7.7 for those in group 1, 6.2 for those in group 2, 6.8 for older people in group 3, and 5.8 for those in group 4 ($p = 0.01$). In Poisson regression, after adjusting for sex, the incidence-rate ratios (IRR) for group 2 was 1.69 ($p=0.001$) and 1.95 for group 4 ($p=0.002$). When stratified by age group, the association persisted only in the youngest old (up to 74 years-old), with an IRR value of 1.78 for group 2 and 2.70 for group 4 ($p=0.01$). **Conclusion:** Anemia seems to be associated to a lower score in SPPB in a period of 5 years, and the worse performance were observed in groups 2 (those who did not have anemia and developed the condition during the period) and 4 (people with anemia in both waves). When stratified by age group, the association was persistent only in youngest old, raising the hypothesis that in the oldest, anemia can have a lower effect because it is associated also to several chronic diseases. Anemia (new cases and persistent cases) should be a target for intervention in youngest older persons to prevent physical function decline.

P190- VALIDITY OF THE SELF- MINI NUTRITIONAL ASSESSMENT (SELF- MNA) FOR THE EVALUATION OF NUTRITIONAL RISK. A CROSS- SECTIONAL STUDY CONDUCTED IN GENERAL PRACTICE. L.M. Donini^{1*}, W. Marrocco², C. Marocco¹, A. Lenzi¹, and SIMPeSV Research Group^{2*} (1. Department of Experimental Medicine - Medical Pathophysiology, Food Science and Endocrinology Section, Sapienza University of Rome, Rome, Italy; 2. SIMPeSV Italian Society of Preventive Medicine and Lifestyles; * Vito Albano, Lucia Auriemma, Giuseppe Bariletto, Francesco Bellani, Carla Bruscellini, Maria Grazia Rita Cadeddu, Barbara Cogorno, Rosario Salvatore Di Modica, Fernando Gori, Daniela Livadiotti, Giulia Marini, Matteo Marolla, Serafina Mastroianni, Maria Felicia Mocerino, Antonella Monaco, Francesco Filippo Morbiato, Sauro Omenetti, Tiziana Panzera, Elisabetta Pelini, Sara Petruzzi, Maurizio Pirro, Italo Guido Ricagni, Franco Roscilli, Guido Alberto Siviero, Francesco Vaccaro)

Introduction: Malnutrition is a frequent condition in the elderly especially in hospitals and in nursing homes, and even among the free-living elders the prevalence is not negligible (5-10%). Awareness towards malnutrition is still limited. The lack of time for nutritional assessment by the overcommitted healthcare personnel, including the general practitioners (GPs), may represent one possible explanation for limited recognition of malnutrition. Therefore, a self-administered instrument could be useful in raising alert on the GPs and allow early detection of malnutrition and early care provision. The aim of the present study was to analyze the validity of the Self-MNA that takes cue from the Mini Nutritional Assessment- Short Form (MNA-SF) and has been adapted to be self-administered by free-living elderly subjects. **Methods:** Participants were recruited from patients referring to the GP offices in Italy. Nutritional evaluation was performed through the administration of Full-MNA, MNA-SF and Self-MNA. The comorbidity level was assessed through the Cumulative Illness Rating Scale (CIRS). The level of difficulty in filling out the test was reported by the participants, and the time spent to complete the Self-MNA was also registered. **Results:** A total of 226 subjects, 125 women and 101 men (75.1 ± 8 and 75.3 ± 8 years old, respectively; $p=0.89$) were enrolled, and 214 (94.7%) of them completed the Self-MNA. According with the Full-MNA test score, 8.4% of women and 3.5% of men were classified as malnourished, whereas 32.7% of women and 31.4% of men were at risk of malnutrition. Agreement between Self-MNA and Full-MNA, and Self-MNA vs. MNA-SF

was classified as “moderate” ($k = 0.476$ and 0.496 respectively; $p < 0.001$). Self-MNA showed a fair predictive value compared to the Full-MNA and MNA-SF tests (76.6 and 79.9%, respectively) with a barely adequate sensitivity (70.9 and 75.4%, respectively). The analysis of the characteristics of FN (false negative: subjects who were considered at risk of malnutrition or malnourished at Full-MNA but not at Self-MNA) showed that the clinical and functional aspects of these subjects (age, comorbidity and severity, time necessary to complete the Self-MNA, decrease in food intake, severe illness in the past 3 months, dementia and depression, fluid intake, need for feeding assistance, arm and calf circumferences) were very similar to the characteristics of true positive subjects. Patients required 6.7 ± 4.5 minutes to complete the test and 25 subjects (11.7%) needed more than 10 minutes, up to a maximum of 30 minutes. Patients who stated a greater difficulty were older (79.8 ± 7 vs. 73.5 ± 7 years; $p < 0.001$), they were more «malnourished» at Full-MNA (10.7 vs. 1.7%; $p = 0.006$) and clinical status was characterized by a higher severity index (1.72 ± 0.6 vs. 1.41 ± 0.4 ; $p = 0.008$). **Conclusion:** In the present study we investigated the validity of the Self-MNA in a sample of free-living elderly subjects. The results obtained confirm the validity of the test that may represent a useful tool for the GPs, although some important limitations need to be considered, limiting its use in clinical practice. **Keywords:** Nutritional risk, Mini nutritional assessment, Self-MNA, general practitioner. **Conflict of interest:** The authors declare they have no conflict of interest

P191- DISABILITY, PHYSICAL INACTIVITY, AND IMPAIRED HEALTH-RELATED QUALITY OF LIFE ARE NOT DIFFERENT IN METABOLICALLY HEALTHY VS. UNHEALTHY OBESE SUBJECTS. E. Poggiogalle¹, L.M. Donini¹, G. Merola¹, C. Lubrano¹, L. Gnessi¹, S. Mariani¹, S. Migliaccio², A. Lenzi¹ (1. Department Experimental Medicine-Medical Physiopathology, Food Science and Endocrinology Section, Sapienza University of Rome, Rome, Italy; 2. Department of Movement, Human and Health Sciences, Foro Italico University of Rome, Rome 00197, Italy)

Background: Obesity represents a major health hazard, affecting morbidity, psychological status, physical functionality, quality of life, and mortality. The aim of the present study was to explore the differences between metabolically healthy (MHO) and metabolically unhealthy (MUO) obese subjects with regard to physical activity, disability, and health-related quality of life (HR-QoL). **Methods:** All subjects underwent a multidimensional evaluation, encompassing the assessment of body composition, metabolic biomarkers and inflammation, physical activity level (IPAQ questionnaire), disability (TSD-OC test), and HR-QoL (SF-36 questionnaire). MHO and MUO were defined based on the absence or the presence of the metabolic syndrome, respectively. **Results:** 253 subjects were included (54 men and 199 women; age: 51.7 ± 12.8 vs. 50.3 ± 11.7 years, $p = 0.46$; BMI: 38.1 ± 5.7 vs. 38.9 ± 6.7 kg/m², $p = 0.37$). No significant difference was observed in body composition. There was no difference between MHO and MUO considering inflammation (hs-CRP: $6517.1 \pm 11,409.9$ vs. 5294.1 ± 5612.2 g/L; $p = 0.37$), physical inactivity (IPAQ score below 3000 METs-min/week in 77.6% of MHO vs. 80% of MUO subjects; $p = 0.36$), obesity-related disability (TSD-OC score $> 33\%$, indicating a high level of obesity-related disability, in 20.2% of MHO vs. 26.5% of MUO subjects; $p = 0.28$), and the HR-QoL (SF-36 total score: 60 ± 20.8 vs. 62.8 ± 18.2 , $p = 0.27$). **Discussion and Conclusion:** The metabolic comorbidity and the impairment of functional ability and psycho-social functioning may have a different timing in the natural history of obesity. Alterations in the physical activity level and mobility disabilities may precede the onset of

metabolic abnormalities. (Trial registration 2369 prot 166/12—registered 23 February 2012; Amendment 223/14—registered 13 February 2014). Keywords: metabolically healthy obesity; disability; physical activity; quality of life.

P192- SPEED OF MULTIMORBIDITY DEVELOPMENT AND FUNCTIONAL DEPENDENCE: THE ROLE OF SOCIO-DEMOGRAPHIC FACTORS. A. Calderón-Larrañaga¹, G. Santoni¹, H.X. Wang², A.-K. Welmer¹, D. Rizzuto¹, D.L. Vetrano¹, A. Marengoni¹, L. Fratiglioni¹ (1. Aging Research Center, NVS Department, Karolinska Institutet, Sweden; 2. Stress Research Institute, Stockholm University, Sweden)

Background: Although multimorbidity is the main driver for disability, there may be factors related to personal characteristics or environment that buffer such an association. In fact, many older people feel to age healthy even in the face of chronic diseases. We aimed to explore how different socio-demographic factors moderate the association between speed of development of multimorbidity and changes in levels of disability. **Method:** Data from the Swedish National study on Aging and Care in Kungsholmen (SNAC-K) enabled us to follow the 60+ year-olds individually over 6 years. The speed of development of multimorbidity for each individual (i.e. rate of change in the number of chronic diseases) was calculated using linear mixed models. Binomial negative mixed models were used to analyze the association between speed of multimorbidity development and longitudinal decline in functional independence (i.e. rate of change in the number of IADL+ADL limitations). Socio-demographic factors included gender, education, occupation, and social network. **Results:** Compared to the rest of the population, those with rapidly developing multimorbidity were significantly older (81 vs. 70 years), widowed (40% vs. 22%), with elementary school level education (22% vs. 12%), manual occupation (28% vs. 19%), weak social network (38% vs. 22%), a higher baseline number of chronic diseases (6 vs. 3) and drugs (6 vs. 3). Female sex and a weak social network significantly intensified the effect of a rapid accumulation of diseases on functional dependence (incidence rate ratios in Males: 2.1, 95% CI: 1.3-3.3; Females: 4.0, 95% CI: 2.7-6.0; Strong social network: 2.9, 95% CI: 1.8-4.5; Weak social network: 6.2, 95% CI: 4.1-9.4). **Conclusion:** Socio-demographic factors such as gender and social network could be shaping older person's reserves of functional ability, contributing to their levels of resilience and their ability to live independently despite a rapid accumulation of chronic conditions. These findings emphasize the need for person instead of disease-centred care and the importance of improving the function of those who have co-occurring chronic diseases, rather than focusing on individual chronic conditions. Our results also call for an intersectoral approach to improving older people's health.

P193- COULD A MULTICOMPONENT EXERCISE PROGRAMME IMPROVE COGNITIVE FUNCTION AND FUNCTIONAL STATUS IN FRAIL COMMUNITY-DWELLING INDIVIDUALS? I.A. Rodrigo (Matia Fundazioa, San Sebastian, Spain)

Introduction: The purpose of this program is to examine if a supervised multicomponent exercise program (MEP) in frail elderly people can improve functionality and cognitive status, and reduce falls. **Methods:** This is a prospective intervention of 38 frail elderly (September 2014-March 2016). The inclusion criteria were balance problems and/or previous falls. The exclusion criteria were to suffer from moderate and severe dementia. The 38 elderly at risk of falling were trained by a physiotherapist in little groups (6 people per group).

MEP includes proprioception -20 minutes-, balance (balance carpet) -20 minutes / fig 1- and strength exercises (leg press machine) -20 minutes / fig 2-. Total 60 minutes twice a week during 12 weeks (3 months). We have done pre and post assessment of functional and cognitive values and comprehensive geriatric assessment. The functional values were SPPB (short physical performance battery), gait velocity, balance carpet, falls and maximal dynamic strength (RM) measured in kilograms. The cognitive values were MEC (spanish adapted version of MMSE), TMT a, TMT b and two dual cognitive tasks (dual tasking) -walk while name animals and walk while subtracting-. **Results:** Of 38 elderly, mean age 80, females 51%, barthel 94, lawton 5.46, affective disorders 43%, BMI 25.81, drugs number 5.11, no. of falls 3 months previous to the programme 1.24, no. of falls during de programme 0.30, poor sleep quality 43%, mild cognitive impairment 10%, mild dementia 2.7%. Statistical analysis was performed with Wilcoxon signed ranks test. We found statistical significant differences pre/post intervention in SPPB (8.46; 9.35 p=0.002), balance carpet (278/300; 294/300 p<0.001), lower-body RM (34.35; 53.22) with an improvement of 54%, gait velocity 6m (0.81m/s; 0.95m/s p<0.05) and no. of falls (1.24; 0.30 p=0.006). We didn't find statistical significance in MEC, TMTa -attention-, TMTb -executive function-, and dual cognitive tasks (dual tasking) -gait velocity arithmetic task and gait velocity verbal task-. **Conclusions:** MEP shows improvements in functional measurements, reduce falls but not improvements in single and in dual cognitive tasks.

Effect of the multicomponent exercise program: functional and cognitive values			
	Pre-training	post-training	p
Functional values			
SPPB	8,46/12	9,35/12	0,002
Carpet Balance	278,3/300	294,11/300	< 0,001
Leg press (Kg)	34,35kg	53,22kg	54% improvement
Gait velocity 6m (single task)	0,81m/s	0,95m/s	0,041
Falls	1,24 (3m pre)	0,30 (3m during)	0,006
Cognitive values			
MEC	30,19	30,31	0,724
TMTa	96,98	92,25	0,379
Gait velocity 30-3 (dual tasking)	0,51m/s	0,55m/s	0,097
Gait velocity animals (dual tasking)	0,61m/s	0,60m/s	0,606

P194- CORRELATES OF SARCOPENIA IN CHRONIC KIDNEY DISEASE. S. Lai¹, P. Protopapa, A. Molfino², M.I. Amabile², A. Perrotta, L. Piloni (1. Department of Internal Medicine and Medical Specialities, "Sapienza" University of Rome, Rome, Italy; 2. Department of Clinical Medicine, "Sapienza" University of Rome, Rome, Italy)

Introduction: Chronic kidney disease (CKD) is a common condition with a high cardiovascular mortality, associated with emerging risk factors such as sarcopenia. Several conditions can affect the muscle wasting in the CKD, such as Vitamin D deficiency, reduced protein intake, physical inactivity, metabolic acidosis, chronic inflammation, leading to a worsening of cardiovascular outcomes and cognitive function in these patients. The aim of the study was to assess the prevalence of sarcopenia, dinapenia and sarcopenic obesity in patients with CKD in conservative and replacement therapy and their association with markers of atherosclerosis, endothelial dysfunction, and cognitive tests. **Method:** 77 patients (32 ♂, 44 ♀) with a mean age of 69.57 ± 9.84, affected by CKD (stage 3 / 5 KDOQI) in conservative or replacement therapy with hemodialysis (HD), peritoneal dialysis (PD) and renal transplantation (RT), were subjected to an assessment of anthropometric parameters (BIA and HandGrip Strength), inflammatory markers, mineral metabolism, and atherosclerotic markers (IMT, ABI and FMD), as well as an evaluation

of compliance and cognitive status. **Results:** The prevalence of sarcopenia was of 49.4%, with 44.7% in HD, 10.5% in conservative therapy, and 31.6% and 13.2% for DP and RT, while the dinapenia and sarcopenic obesity of 10.4% and 2.6%. The sarcopenic patients had a significant increase in IMT values ($p < 0.032$), a significant reduction in Total Cholesterol ($p < 0.006$), HDL ($p < 0.004$) and FMD ($p < 0.003$). Inside of the groups, sarcopenic patients in conservative therapy showed a significant reduction of values of Total Cholesterol ($p < 0.002$), Vitamin D ($p < 0.046$) and FMD ($p < 0.013$), whereas sarcopenic patients in HD presented an increase of TotalBodyWater ($p = 0.13$) and ExtraCellularWater ($p = 0.28$), which reflects a greater water retention. Sarcopenic Patients in DP had a reduction in the levels of Phosphorus ($p < 0.003$) and HDL ($p < 0.008$), whereas sarcopenic patients with RT had a reduction of FreeFatMass ($p < 0.029$) and basal metabolism ($p < 0.05$). No significant differences were found on cognitive tests and compliance. **Conclusions:** In our study we found a high prevalence of sarcopenia in patients suffering from CKD both in conservative and replacement therapy, with a significant change in IMT and FMD, early systemic markers of atherosclerosis and endothelial dysfunction, in addition to a reduction in the Total cholesterol and HDL, known as a negative prognostic markers. Sarcopenia is a condition underestimated, in CKD patients, therefore, the systematic assessment of the muscular component, through simple, inexpensive and non-invasive methods, it may be useful to define the prognosis and the cardiovascular risk of these patients with a high cardiovascular morbidity and mortality.

P195- MORPHOTYPES IN MEN AND WOMEN PRESENT DIFFERENT ASSOCIATIONS WITH ADVERSE HEALTH EVENTS: RESULTS FROM THE TOLEDO STUDY FOR HEALTHY AGING. C. Castillo-Gallego, J. Carnicero, A. Alfaro-Acha, W. López, F. Solís, J. Losa-Reyna, F.J. García-García (*Hospital Virgen del Valle, Complejo Hospitalario de Toledo, Spain*)

Background: Several studies have shown that the body mass index (BMI) is a limited measurement to establish cardiovascular risk in elderly population. It is due to the body composition changes that take place with age. In fact, in the elderly, the lowest mortality risk is found to be in the range of overweight and mild obesity. In a previous study from the Toledo Study for Healthy Aging (TSHA), we observed that men and women behaved different in terms of isometric strength, according to BMI and waist to hip ratio (WHR), defining morphotypes with higher and lower strength. The aim of this study is to describe the health risks related to these morphotypes. **Methods:** We used the data from the TSHA, which is a population base study. The data was collected from 2006 till 2009. We computed a bivariate variable (BMI-WHR). We estimated two cut-off points that generated 3 groups for each dimension. Men: BMI <25 (category 1, C1), BMI 25-30 (central category, CC) and BMI > 30 (category 3, C3), WHR <0.92 (C1), WHR 0.92-1(CC) and WHR >1 (C3); Women: BMI <26.5 (C1), BMI 26.5-30 (CC) and BMI >30 (C3), WHR <0.89 (C1), WHR 0.89-0.94 (CC) and WHR >0.94 (C3). The resulting nine categories had at least 50 individuals. The association between the death and the BMI-WHR was assessed by Cox proportional hazard models and the associations between prevalent and incident frailty, prevalent and incident disability and worsening were assessed by logistic regression models using the central category as reference. The potential confounders were age, educative level and Charlson index. **Results:** 822 men and 1044 women participated, mean age was 75 (SD 6.2). In men, we found an increased risk of death for the following morphotypes: BMI C1-WHR CC (HR 1.9 $p = 0.0145$, 95% CI 1.5-3.17) and BMI C1-WHR C3 (HR 2.46 $p = 0.012$, 95% CI 1.22-4.95). Furthermore, BMI C1-WHR C1 presented an increased risk of

prevalent disability (OR 2.75 $p = 0.008$, 95% CI 1.3-5.8); and BMI C3-WHR C3 presented an increased risk for prevalent and incident disability (OR 2.1 $p = 0.32$, 95% CI 1.07-4.1 and OR 2.16 $p = 0.04$, 95% CI 1.03-4.5, respectively). In women, we found morphotypes with decreased risk for incident disability, i.e., BMI C1-WHR C1 (OR 0.46 $p = 0.046$, 95% CI 0.22-0.98), BMI C1-WHR CC (OR 0.23 $p = 0.008$, 95% CI 0.08-0.68), and BMI CC-WHR C1); as well as decreased risk for worsening in the disability components, i.e., BMI C1-WHR CC (OR 0.34 $p = 0.02$, 95% CI 0.13-0.86) and BMI CC-WHR C1 (OR 0.44 $p = 0.017$, 95% CI 0.22-0.87). **Conclusions:** BMI alone is not enough to evaluate health status in the elderly. Therefore, measurements of fat distribution such as the WHR should be included. This study shows that certain morphotypes may increase the risk of adverse health events while other may protect against them, with a different behavior between genders. Men and women should be evaluated independently, since the weight and fat distribution shows a different relationship with adverse health events. Android fat increases the risk of death, as well as prevalent and incident disability in normal weight and obese men, respectively, whereas gynoid fat seems to be protective against incident and worsening disability in normal weight and overweight women. Further studies are necessary in order to redefine obesity in the elderly using direct and indirect measurements of body composition, such as DXA scan and BMI jointly with WHR.

P196- RELATIONSHIP BETWEEN POLYPHARMACY AND NUTRITIONAL STATUS IN ELDERLY PATIENTS WITHOUT DISABILITY. B. Gryglewska, A. Kańtoch, J. Wielek, T. Grodzicki (*Department of Internal Medicine and Gerontology, Jagiellonian University, Medical College, Cracow, Poland*)

Background: Multimorbidity and polypharmacy are typical problems in elderly patients. A declined nutritional status is one of markers of weakened health status in older population. A worsening of physical health is frequently measured by validated screening tests developed for elderly persons. Of these MNA (mini nutritional assessment) test is usually used in estimating the risk of malnutrition. Drugs may adversely affect nutrition, but to drug-induced weight gain is also possible. Researches on the relationship between polypharmacy and nutritional determinants are limited. The aim of the study was to evaluate the association between nutritional status, and used treatment among elderly patients without disability. **Method:** The study was performed among patients aged 65 years and over without functional and cognitive impairments. The questionnaire including: socio-demographic and clinical data, questions about drugs used, Charlson Comorbidity Index (CCI) and MNA test were performed among all study participants. Results obtained during the study were compared using Spearman rank correlation and backward regression analysis. **Results:** The study population consisted of 91 older adults, whose average age was 78,14 \pm 6,4 years old, and 35% were men. Mean MNA score was 21,7 \pm 4,79, CCI -3,8 \pm 2,14 and number of regularly used drugs -6,6 \pm 4,1. Polypharmacy (>5 drugs) was observed in majority of cases (70%). Most of the participants were overweight (40%) or obese (23%), but at risk of malnutrition (46%) or malnourished (17%) in the MNA score. Positive correlation was found between MNA score of nutritional status and the amount of used drugs ($r = 0,28$). Regression analysis confirmed that association ($\beta = 0,35$, $p < 0,001$). **Conclusion:** Treatment of chronic diseases in elderly patients without disability may have positive impact on nutritional status estimated by MNA score.

P197- HYPOVITAMINOSIS D, A FRAILTY-RELATED RISK FACTOR FOR MOTOR VEHICLE CRASHES AMONG OLDER ADULTS. P.V. Targonski¹, J. Poplin² (1. *Public Health Sciences, University of Virginia, Charlottesville, VA, United States*; 2. *University of Virginia Center for Applied Biomechanics, Charlottesville, VA, United States*)

Background: Road traffic injuries are a leading global cause of preventable death according to the World Health Organization (WHO), and while a disproportion of fatalities occur in low and middle income countries, collision rates remain high in many high income countries for drivers age 60 and older. For example, motor vehicle crashes (MVCs) are the second leading cause of unintentional injury deaths for adults age 65 years and older in the United States. Over 6800 deaths and 191000 non-fatal injuries were treated in emergency departments due to MVCs in the US among persons age 65 years and older in 2014, an age group that represents 36 million drivers in the US alone. With elders representing an increasing proportion of persons throughout many countries globally, a better understanding of factors unique to elderly drivers that contribute to pre-crash, crash and post-crash outcomes is critical to mitigating preventable morbidity and mortality. Frailty, encompassing osteopenia, visual and cognitive impairment, and other increased susceptibilities for injury and medical complications, is well-known to elevate risk among elders for adverse MVC severity and injury. However, less is known about pre-crash risks for MVCs among elderly. Hypovitaminosis D is associated with frailty, falls, and may be associated with acute cardiovascular events and cognitive decline in older adults. However, literature to date is sparse to absent exploring this biomarker and MVCs among elders. The primary objective of this study was to evaluate if frailty-related risk factors, focusing on vitamin D levels, were associated with MVCs among older adults in a community setting. **Methods:** This was a historical cohort study utilizing the University of Virginia Clinical Data Repository and examining emergency department visits for MVCs from 1999 through 2012 among residents of the Thomas Jefferson Health District (TJHD) age 50 years and older. The University of Virginia Health System is one of two main primary medical care providers for the TJHD, serving over 100,000 persons regionally and with a Level I Trauma Center that serves the City of Charlottesville, Albemarle County, the Thomas Jefferson Health District and the central Virginia region. Cases were identified as persons presenting to the University of Virginia Emergency Department for treatment following a MVC of a car, truck, or motorcycle with another vehicle or object and in which the individual presenting was not identified as an occupant (ICD-9 E81x.x). Rates of hypovitaminosis D, defined as measurement below the assay-specific lower limit of normal, were determined for two periods: within 2 days of case presentation and within 2 years prior to case presentation. Six laboratory codes were identified in the medical record relating to vitamin D assays that were utilized during the period of study. Those not presenting for MVCs were allocated to the comparison group and a subsample were selected based on age, gender, and vitamin D assay/date matched to cases. Basic demographics were summarized and contingency analysis was undertaken with Fisher's exact test where appropriate to assess differences in the rates of hypovitaminosis D between groups. **Results:** Two hundred twelve individuals were involved in 246 MVC incidents presenting for treatment to the University of Virginia emergency department during the period of study. Of those, 23 individuals had vitamin D testing performed within 2 years prior to presentation and 8 had vitamin D testing performed within 2 days before or after presentation. Cases ranged in age from 50 to 83 years of age (mean 61.4 + 8.8 years). Males represented 43.5% of cases and 87% of

cases were white. Among 50+ year old persons living in the TJHD who had not experienced an MVC as a driver during the period of interest, 1176 persons underwent vitamin D testing utilizing the same assays as cases. Among controls, 113 of 1176 persons had low levels of vitamin D (9.6%) while 5 of 16 cases had low vitamin D levels observed within 2 years before their motor vehicle collision (31.2%, Fisher's exact $p=0.016$) and 5 of 8 has low vitamin D levels observed at the time of presentation for their MVC (62.5%, Fisher's exact $p<0.001$). **Conclusions:** We observed a novel association between hypovitaminosis D, a frailty-related risk factor, and risk of MVCs among persons age 50 years and older. The observed prevalence of hypovitaminosis D in this study is consistent with expectation based on US data, and MVC rates in the Virginia study population are midrange relative to other states in the US. Biologic plausibility for this association is reasonable, possibly reflecting increased risk of psychomotor delay concomitant with depression or cognitive decline, or acute cardiac events preceding MVCs. Despite some potential biases in this analysis, further study is warranted. Hypovitaminosis D is associated with increased risk of frailty and may represent a modifiable risk factor for frailty and MVC in elders, presenting a substantial global public health impact.

P198- INSTITUTIONALIZED ELDERLY SOCIAL SUPPORT: IS THERE A RELATIONSHIP WITH FRAGILITY? F. de Souza Orlandi¹, L. de Andrade¹, L. Alves Melo¹, H.R. de Oliveira Silva², M.S. Zazzetta¹ (1. *Department of Gerontology, Federal University of São Carlos, Brazil*; 2. *Department of Nursing, Federal University of São Carlos, Brazil*)

Background: The number of Brazilian elderly people in the ILPIs is increasing and this population tends to grow even more due to several factors, among them, longevity, fragility, development of chronic degenerative diseases, impairment of autonomy and fragile family structure, which can compromise QV. In the institutionalization, the support network is essential, as it helps the elderly to adapt to this situation, improves their subjective well-being and the quality of their life¹. The objective of this study is to verify the relationship between social support and the level of fragility of institutionalized elderly. **Method:** This was a cross-sectional, correlational study with a quantitative approach, carried out in a long-stay institution for the elderly in the interior of the State of São Paulo, Brazil. All ethical precepts for human research were respected. A separate interview was conducted with 34 participants aged 60 and over, using the following data collection instruments: a socio-demographic characterization tool, the Medical Outcome Study (MOS) and the Tilburg Frailty Indicator (TFI). **Results:** Of the 34 elderly people evaluated, the female gender was predominant ($n = 20$), with a mean age of 78.97 (± 9.10) years and an average schooling of 5.85 (± 4.71) years. Regarding the perception of social support, the evaluated elderly had a mean score of 90.59 (± 11.33) for Social Support Material, 79.80 (± 20.19) for Affective Social Support, 70.88 (± 26.12). In Emotional Social Support, 71.62 (± 24.33) in Social Support for Positive Social Interaction and 70.29 (± 26.96) in Social Information Support. When correlating MOS domain scores with total TFI, a negative correlation of strong magnitude was observed, with statistical significance of all MOS domains with the TFI, with $r = -0.559$ ($p = 0.001$) in the Material Social Support, $R = -0.508$ ($p = 0.002$) in Affective Social Support, $r = -0.512$ ($p = 0.002$) in Emotional Social Support, $r = -0.734$ ($p < 0.001$) in Social Support for Social Interaction and $r = 0.597$ ($p < 0.001$) in Social Information Support. **Conclusion:** It is concluded that there is a relationship between the perceived social support and the level of fragility of the institutionalized elderly. It is recommended that longitudinal and

intervention studies be carried out in order to analyze more deeply the cause and effect relationships between Social Support and the Fragility of the elderly living in a long-term institution. New studies need to be done to develop procedures and techniques that can improve the social skills of older people, as well as for institutionalized older people to be able to conquer and maintain a social network with effective exchanges with other people, especially with others Residents of the institution. In addition, one can investigate the impact of improving Social Support on the fragility of the institutionalized elderly. Reference: 1. Rodrigues AG, Silva AA. A rede social e os tipos de apoio recebidos por idosos institucionalizados. Rev. bras. geriatr. gerontol. [Internet]. 2013 2016; 16(1): 159-170.

P199- EFFECTS OF A HOME BASED EXERCISE PROGRAM USING A GERONTECHNOLOGY VERSUS A SUPERVISED EXERCISE PROGRAM ON FUNCTIONAL CAPACITIES IN COMMUNITY-DWELLING OLDER ADULTS AFTER A MINOR INJURY. D. Martel^{1,2,3}, M. Lauzé^{1,2,3}, A. Agnoux^{1,2,3}, M.-J. Sirois^{4,5}, M. Émond^{4,5}, R. Daoust⁶, M. Aubertin-Leheudre^{1,2,3} (1. Département des Sciences de l'activité physique, Université du Québec à Montréal, Montréal (Qc), Canada; 2. Groupe de recherche en activité physique adaptée, Université du Québec à Montréal, Montréal (Qc), Canada; 3. Centre de recherche de l'Institut universitaire de gériatrie de Montréal, Montréal (Qc), Canada; 4. Centre d'Excellence en Vieillesse de Québec (CEVQ), Québec, Canada; 5. Centre de Recherche du Centre hospitalier universitaire de Québec, Hôpital de l'Enfant-Jésus, Québec (Qc), Canada; 6. Hôpital du Sacré-Coeur de Montréal, Montréal (Qc), Canada)

Background: In Canada, 16.1% of the population is 65 years old and older. Among Canadian community-dwelling older adults, 24% are considered frail while 32% are considered pre-frail. More than 20% of visits in Emergency Department (ED) are done by individuals aged 65 years old. From this number, 17% are due to minor injuries. Unfortunately, it has been demonstrated that three months post injury, autonomy in Activity Daily Living (ADL) and instrumental ADL decline (-7% and -22%, respectively) in previously independent older adults. In addition, these minor injuries can also lead to mobility limitations, sedentary lifestyle and eventually to frailty and disability. It also increases furthermore the risks of falls which is a burden on our health system, especially to the ED. Fortunately, it has been demonstrated that physical activity interventions are effective in improving or maintaining functional status in autonomous elderly individuals or to reduce the risks of major disabilities and falls in vulnerable older adults. However, more than 50% of them are inactive in their leisure time. Poor health, fear of falling and getting injured or lack of motivation are the most cited barriers. Supervised exercise programs in community centers could alleviate some of these barriers, but require lots of human resources and transportation. Home Exercise Programs (HEP) may also alleviate these problems, but do not allow for constant monitoring and close supervision. Gerontechnologies, specifically those based on exergames, can potentially overcome these limits. The aim of this study was to compare the effects and the adherence of a HEP intervention using a gerontechnology and a supervised group intervention in a community center on functional capacities in community-dwelling older adults after a minor injury. **Method:** 44 previously independent individuals aged over 65 years old (73.7±6.6 years old) were recruited at the ED in Montréal after suffering of a minor injury. They were randomly assigned to 3 groups [Group 1: HEP using a gerontechnology (JIN; n=20); Group 2: supervised exercise program at a community center (YMCA; n=16) and; Group 3: control group (CONTR; n=8)]. Both interventions had the same form: 12 weeks, 2 sessions/week, 50-55min/session.

The program itself included 8 cardiovascular and 8 resistance/flexibility exercises. No special intervention or follow-up have been done in CONTR group. Anthropometric measurements (BMI; waist circumference), body composition (muscle and fat masses (BIA)), handgrip strength and functional capacities (SPPB, TUG) were evaluated before (week 0) and after intervention (week 13) for all 3 groups. Data distribution was verified using the Kurtosis test. Groups were compared using ANOVA and Post-hoc (Bonferroni) statistical tests. P<0.05 was considered significant (SPSS 22.0). **Results:** First, no adverse events were reported. At baseline, no significant difference was observed between groups except for the JIN group who had a significantly better sit-to-stand score in the SPPB compared to the CONTR group (JIN:2.68±1.20 vs. CONTR:1.50±0.76 nb; p=0.49) and for the YMCA group had a higher fear of falling than the CONTR group (Y:11.00±3.52 vs. CONTR:7.00±0.00 FES-score; p=0.02). The JIN group completed an average of 21 out of 24 sessions planned vs 22/24 for the YMCA group resulting in an adherence rate of 88% and 90%, respectively. After the intervention, the JIN group participants significantly increased their normal walking speed (T0:0.81±0.17 vs. T12:0.93±0.20 m/s; p=0.007), normal TUG (T0:10.71±3.50 vs. T12:8.82±2.12 sec; p=0.007), unipodal balance (T0:10.49±12.92 vs. T12:21.24±20.62 sec; p=0.005) and SPPB total score (T0:9.42±1.77 vs. T12:10.50±1.32 points; p=0.006). Regarding the YMCA group, participants significantly improved their normal TUG (T0:10.41±2.45 vs. T12:8.73±1.76 sec; p=0.010), time to complete the chair test (T0:14.93±5.38 vs. T12:11.32±3.06 sec; p=0.003) and SPPB total score (T0:9.44±1.59 vs. T12:10.44±1.46 points; p=0.011). As expected, three months after their ED visit, all groups significantly increased their SF-36 total score (JIN: T0:64.21±10.75 vs. T12:80.49±12.59, p=0.001; Y:T0:59.18±15.20 vs. T12:79.19±13.43, p=0.002; or CONTR: T0:69.75±13.53 vs. T12:85.16±5.03, p=0.018). No other significant change was found in CONTR group. In addition, YMCA group significantly decreased their time to complete the chair test compared to two other groups (delta changes (ABS): YMCA:-3.61 vs. JIN:-0.71sec (p=0.039); vs. CON: +0.48sec (p=0.020)). JIN group significantly decreased its time to complete the 4m walk test compared to CON group (delta changes (ABS): JIN:-0.71 vs. CONTR: +0.16 sec; p=0.044). JIN group tended to increase its normal walking speed compared to CON group (delta changes (ABS): JIN: +0.12 vs CONTR: -0.02 m/s; p=0.061). **Conclusion:** A HEP using a gerontechnology seems to be as effective as a supervised exercise program to increase functional capacities and more interestingly walking speed in community-dwelling older adults after a minor injury. The adherence rate shows that its feasibility and could be used to prevent functional capacities decline in elderly after a minor injury. Finally, further researches need to be realized in a larger population to validate our conclusions and in post-hospitalisation context or in alzheimer older adults to see its potential.

P200- DIETARY INTAKE IN COMMUNITY-DWELLING PRESARCOPENIC AND NON-PRESARCOPENIC OLDER WOMEN: A CASE-CONTROL STUDY – PRELIMINARY RESULTS. R. Krzyżmińska-Siemaszkó¹, N. Czepulis², M. Lewandowicz¹, K. Wieczorowska-Tobis¹ (1. Laboratory of Geriatric Medicine, Department of Palliative Medicine, Poznan University of Medical Sciences, Poland; 2. Department of Pathophysiology, Poznan University of Medical Sciences, Poland)

Background: Muscle loss is the most constant marker of ageing. The decline of muscle mass reaches about 30% from 30 to 80 y, parallel with the decline of muscle strength. Research has shown that nutrition is an important factor in the complex etiology of age-related decline of muscle mass (presarcopenia). For the maintenance of

muscle mass the amount of food and energy consumed is of primary importance. Generally, food and energy intake decline with age due to many reasons i.e. physiologic changes like reduced appetite, altered taste and smell sensation, or the presence of multiple diseases which may be accompanied by inflammation, pain and multiple medication. Also consuming adequate amounts of dietary protein can minimize the age-related decreases in skeletal muscle. Literature examining the role of non-protein dietary nutrients on muscle mass is less common. In 2010 Scott et al. showed that higher intakes of calcium, magnesium, phosphorus, potassium, zinc and riboflavin and niacin, had positive increasing trends for increased appendicular muscle mass. Relatively little is known about dietary intake of older people with low muscle mass (presarcopenia) with respect to elderly without presarcopenia. Such knowledge can help to identify the potential target of areas for nutritional interventions. The goal of this study was to compare dietary intake between age-matched older women with and without presarcopenia. **Method:** We conducted case-control study. 30 community-dwelling older women were included for this analysis (15 women with presarcopenia and 15 age-matched women without presarcopenia. Inclusion criteria for presarcopenic older women were as follows: (1) age 60 or more; (2) low appendicular lean mass index (ALM ≤ 5.52 kg/m²) measured using bioelectric impedance analysis (BIA), (3) lack of cognitive function disorders, i.e.: result ≥ 8 points evaluated by means of Abbreviated Mental Test Score, (4) expressing an informed consent to take part in the study. Non-presarcopenic older women were recruited to match by age (-1 year, +2 years accepted). Inclusion criteria for non-presarcopenic older women were: (1) age 60 or more; (2) normal appendicular lean mass index (ALM > 5.52 kg/m²) measured using BIA, (3) lack of cognitive function disorders, i.e.: result ≥ 8 points evaluated by means of Abbreviated Mental Test Score, (4) expressing an informed consent to take part in the study. All participants were asked to complete at least 3-day dietary intake records over two weekdays and one weekend day. The size of consumed portions was estimated based on a photographic album. Food diaries were checked and verified by trained dietitians. Dietary intakes were analysed using Dieta 5.0. (National Food and Nutrition Institute, Warsaw, Poland). Declared dietary supplements were not included into the analysis. The dietary intakes of all nutrients were compared with the recommended intake (Recommended Dietary Allowances) for adults above 51 years from Polish Recommendation of National Food and Nutrition Institute in Warsaw. **Results:** An average energy intake with daily food rations amounted to 1486.1 kcal in the presarcopenic women and 1695.8 kcal in the non-presarcopenic group ($p=0.095$). The percentage of energy from protein, fat and carbohydrates in the presarcopenic women diets amounted to: 15.8%, 34.5% and 49.8%, while in non-presarcopenic women: 17.6%, 34.0% and 48.4%, respectively (without statistically significant differences). Protein intake expressed as gram intake/day was significantly lower in the presarcopenic group (58.5 vs 71.2g; $p<0.05$ respectively). There were no significant differences in intake of carbohydrate or fat. In the diets of both groups, a lower than the recommended content of: potassium, calcium, folate and vitamin D was observed. Moreover, the group of women with low muscle mass presented inadequate intake of magnesium, iron, zinc and vitamin B1. The presarcopenic women had statistically significantly lower: potassium (2845.6 vs 3510.9mg; $p<0.05$), calcium (488.7 vs 696.0mg, $p<0.01$), phosphorus (962.4 vs 1268.4mg, $p<0.01$), magnesium (252.8 vs 334.6mg, $p<0.01$), iron (9.6 vs 12.4mg, $p<0.01$) and zinc (7.8 vs 10.2mg; $p<0.01$). Also the intake of vitamin E (8.3 vs 11.1mg; $p<0.05$), vitamin C (81.3 vs 167.4mg; $p<0.01$), vitamin B1 (1.0 vs 1.5mg, $p<0.05$), vitamin B2 (1.3 vs 1.8mg, $p<0.01$), vitamin B6 (1.6 vs 1.9mg, $p<0.05$) and folate (235.8 vs 348.7 μ g; $p<0.01$) was significantly lower in the women with low muscle mass. **Conclusion:**

We observed differences in dietary intakes between community-dwelling presarcopenic and non-presarcopenic older women, which might be related to differences in muscle mass level between the two groups. Presarcopenic women consume less calories, less protein and presented more deficiencies of micro- and macronutrients as well as most of the vitamins. Further studies on larger groups of elderly individuals (especially on men) both with normal and low muscle mass are needed.

P201- FRAILTY OF THE ELDERLY AND SOCIAL SUPPORT IN A CONTEXT OF SOCIAL VULNERABILITY. M.S. Zazzetta, F.S. Orlandi, I.T.J. Machado, R.B. Lanzotti (*Gerontology Department, Federal University of São Carlos, Brazil*)

Background: Frailty can be associated by the absence of social support relationships in the elderly¹. In this sense, it is assumed that maintaining family support relationships and external relations will promote better health conditions in the lives of the elderly². The aim of this study was to compare the level of frailty with the family and social relationships of elderly people living in areas with social vulnerability. **Method:** An exploratory, comparative and cross-sectional study with 217 elderly people living in areas with social vulnerability and enrolled in public health care. The Frailty Scale of Edmonton (FSE) was applied to verify the level of frailty, the Genogram to verify the family relations and the Ecomapa to verify the external relations. All ethical recommendations have been adhered to. The study was approved by the Research Ethics Committee of the Federal University of São Carlos, São Paulo, Brazil, in the opinion No. 1785874/2016. The data analysis was performed in The SAS System for Windows, version 9.2, 2008, in a descriptive and univariate manner. **Results:** Between the 217 elderly interviewed, 176 (81.1%) belonged to the female gender. The predominant age group was between 60 and 69 years, with a total of 140 (64.5%) elderly and mean age was 68.56 (± 7.35) years. Of the respondents, 125 (57.6%) were white, 91 (41.9%) married, 126 (58%) catholic, 112 (51.6%) had 1 to 4 years of study and 120 (55.3%) were retired. Regarding the evaluation of fragility through EFS, 89 (41%) did not present fragility, 46 (21.2%) were vulnerable and 82 (37.8%) were fragile. When comparing the level of fragility with the family relationships evaluated by the Genogram, there was a significant difference ($p = 0.028$) for the elderly with severe frailty with a «close» family relationship (87.50%) and for the elderly with moderate frailty with a «conflictual» family relationship (17.86%), being elderly and family living in the same household. Regarding the external links evaluated by Ecomapa, there was a significant difference ($p = 0.010$) for the elderly who had severe fragility (50%) because they did not show any external link and for the non-fragile elderly (55.06%), delicate (56.52%) and moderate (50%) because they had 1 or 2 links and for those who were apparently vulnerable (47.83%) had 3 or more links. **Conclusion:** Knowing the frailty of the elderly in a context of social vulnerability and verifying support relationships can reverse the frailty. The family as an expressive social support is of great importance to maintain close relations, especially when the elderly are at some level of fragility. Generally, when the elderly do not have family support, the same seeks support in the external network, being it public services of health or care, religious institutions or the community. In this way, researching the fragility in a context of social vulnerability can help in interventions for families, services or institutions, thus materializing a consistent and positive social support network. 1. Vaingankar JA, et al. Prevalence of frailty and its association with sociodemographic and clinical characteristics, and resource utilization in a population of Singaporean older adults. *Geriatrics & Gerontology International*, 2016; 2. Brito TRP, Pavarini SCI. The relationship between social

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P202- FRAILITY IN ELDERLY PEOPLE LIVING IN A REGION WITH SOCIAL VULNERABILITY. M.S. Zazzetta, F.S. Orlandi, I.T.J. Machado, R.B. Lanzotti (*Gerontology Department, Federal University of São Carlos, Brazil*)

Background: Studies indicate that elderly people living in disadvantaged neighborhoods have worse health¹. They include in this context social factors such as educational level, socioeconomic status, marital status, thus contributing to the degree of vulnerability of the place². In this sense, it is assumed that health may cause risk to frailty³. The aim of this study was to compare the level of vulnerability with the degree of vulnerability of elderly residents in regions with social vulnerability. **Method:** An exploratory, comparative and cross-sectional study was conducted with 217 elderly people living in regions with social vulnerability and enrolled in public health care. The Frailty Scale of Edmonton (FSE) was applied to verify the level of frailty and the vulnerability of the neighborhood was verified from the Paulista Index of Social Vulnerability (IPVS) for the Brazilian context classified as low, very low, medium and high vulnerability⁴. All ethical recommendations have been adhered to. The study was approved by the Research Ethics Committee of the Federal University of São Carlos, São Paulo, Brazil, in the opinion No. 1785874/2016. The data analysis was performed in The SAS System for Windows, version 9.2, 2008, in a descriptive and univariate manner. **Results:** Betwixt the 217 elderly people interviewed, 176 (81.1%) were female. The predominant age group was between 60 and 69 years, with a total of 140 (64.5%) elderly and mean age was 68.56 (±7.35) years. Of the 217 participants, 125 (57.6%) were white, 91 (41.9%) were married, 126 (58%) Catholic (58%), 112 (51.6%) had 1 to 4 years And 55 (55.3%) were retired. Regarding the evaluation of frailty through EFS, 89 (41%) did not present frailty, 46 (21.2%) were vulnerable and 82 (37.8%) were fragile. When comparing the level of vulnerability with the degree of vulnerability, 114 (52.53%) lived in a region of high vulnerability and 44 (38.59%) were fragile at some level (mild, moderate or severe). Those living in a medium vulnerability region, 56 (25.8%), 22 (39.28%) were fragile at some level and 47 (21.65%) lived in a region of very low vulnerability 16 (34.04%) also presented frailty at some level. **Conclusion:** It was obtained that the elderly with frailty at some level resided in neighborhoods with a high degree of vulnerability and the less fragile ones in a region of low vulnerability. Belonging to the female gender, having low schooling and residing in regions that need the support of public services are variables that with the fragility should be further developed with other methods of study. In this context, knowing the frailty of the elderly in regions of social vulnerability may help in the management and implementation of actions of the public welfare services for this public. 1. Browne-Yung K, Ziersh A, Baum F. Faking til you make it: Social capital accumulation of individuals on low incomes living in contrasting socio-economic neighbourhoods and its implications for health and wellbeing. *Social Scine & Medicine*, 85, 2013; 2. Andrew MK, Keefe J. Social vulnerability from a social ecology perspective: a cohort study of older adults from the National Population Health Survey of Canada. *BMC Geriatrics*, 2014; 3. Brigola AG, et al. Relationship between cognition and frailty in elderly: A systematic review. *Dementia & Neuropsychologia*, 9 (2), 2015; 4. Seade Foundation. Population distribution according to IPVS groups. São Paulo, 2010.

P203- FRAILITY AND FRAGILITY FRACTURES – A DOUBLE RISK FOR FUNCTIONAL LIMITATIONS? J. Fuchs, C. Scheidt-Nave (*Department of Epidemiology and Health Monitoring, Robert Koch Institute, Berlin, Germany*)

Background: In all industrialized countries life expectancy is rising. It is still not yet clear if living longer means to live longer in good health und with a shorter period with limitations (compression of morbidity) or if a postponent or expansion of morbidity is more likely [1]. Frailty is present in older people and can be considered as a risk factor for limitations. Fragility fractures may as well contribute to functional decline. Both frailty and fragility fractures may reduce the overall period of life spent in good health and could lead to a double risk of being limited. **Method:** The “German Health Interview and Examination Survey for Adults” (DEGS1) 2008-11 comprised interviews, examinations and tests. Data on 1,676 community-dwelling people aged 65 to 79 years participating in DEGS1 with full records on frailty and fragility fractures were analysed. Physical frailty was defined as exhaustion (SF-36 item), low grip strength (men<30kg, women<20kg, or unable to perform), slowness (Timed Up and Go test>20 seconds or unable to perform) and low physical activity (no sports or exertion). Fragility fracture was defined as a fracture experiences after the 50th birthday that results from a low trauma event, such as falling from a standing height or less. [2] Subjective health status was measured using the Minimum European Health Module (MEHM) item. SF-36-Physical Functioning scale (SF-36PF) and as part of the MEHM the ‘Global activity limitation Indicator’ (GALI) based on a single question on long-term activity limitation with answering categories “severely limited / limited but not severely / not limited at all”. **Results:** 26.0% of women (CI 22.1-30.3) and 10.3 % of men (CI 7.5-14.0) aged between 65 and 79 years experienced a fragility fracture after the age of 50. Most frequent localisations are hand, forearm, spine and vertebral fractures. In persons with fragility fractures, women are significantly more often diagnosed as having osteoporosis (37.5%, CI 28.5-47.5) than men (8.2%, CI 3.5-18.4). In men 36,6% (CI 32,2-41,2) were classified as pre-frail, 2,5% (CI 1,4-4,4) as frail; in women 41,8% (CI 37,3-46,5) were classified as pre-frail, and 2,9% (CI 1,9-4,5) as frail. Persons with frailty and fragility fractures did not report more falls but significantly more fear of falling (women 32.8%, CI 20.2-48.5; men 16.8% CI 6.0-38.9) than all other groups. 23.8% of women and 32.5% of men with frailty and fractures report severe limitations (GALI) compared to 19.8% of women and 17.6% of men with frailty without fragility fractures. The respective numbers in non-frail persons are 3.6% in women without and 4.1% with fractures and men 5.5% without and 7.4 % with fractures. Subjective health status differed between prefrail/frail persons and not frail persons without significant impact of fragility fractures. Men with the double risk of frailty and fragility fractures scored lower on the SF-36PF scale: prefrail/frail participants with fragility fractures have a mean score of 50.8, compared to a score of 68.7 for prefrail/frail men without fractures. Not frail men have a mean score of 80.0 with and 84.8 without fractures. The respective numbers in women are 62.1, 62.2, 77.0, and 71.4. **Conclusion:** In DEGS1 community-dwelling people aged 65-79 with frailty and fragility fractures showed more limitations of physical functioning compared to participants with only frailty or fragility fractures. Furthermore, fear of falling is higher and all these components may lead to a reduction of physical activity with higher risk of morbidity and mortality. A special focus should be put on men, who are less frequent diagnosed with osteoporosis than women with consequences on treatment and training. Preventive activities therefore should focus on the maintenance of basic physical activities in order to support an independent life in good health in old age. References: [1] Payne G, Laporte A, Deber R, Coyte

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P204- THE FIVE-TIMES SIT-TO-STAND TEST CAN PREDICT MUSCLE POWER IN HEALTHY ADULTS. C. Burton¹, B. Kumar Shukla², S. Kumar Yadav², V. Vijayvargiya², D. Hewson¹ (1. Institute for Health Research, University of Bedfordshire, UK; 2. Indian Institute of Technology Jodhpur, India)

Background: Sarcopenia is a condition that occurs as people age and gradually lose skeletal muscle mass. The consequence of sarcopenia is a loss of muscle strength and power that in turn leads to an increased risk of falls and death. The European Working Group on Sarcopenia in Older People (EWGSOP) have defined a diagnostic criterion for age-related sarcopenia that consists of three tests of muscle mass, muscle strength, and physical function. Someone who fails to meet age- and gender-based cut-off points for all three tests can be considered to have severe sarcopenia, while someone failing two tests is considered to have sarcopenia. Failure to match the cut-off on a single test means the person tested has pre-sarcopenia. The EWGSOP recommend that muscle mass is best measured using magnetic resonance imaging (MRI) or computer-tomography (CT), grip strength as the preferred method for measuring muscle strength, and the Short Physical Performance Battery (SPPB) or gait velocity be used to test physical function. One of the three components of the SPPB is the five times sit-to-stand (5STS), which requires participants to stand up and sit down from a chair five times, with performance taken as the time to complete the test. The 5STS might be a better alternative to grip strength to measure muscle strength as lower limb muscle strength is more relevant for gait and physical function than upper limb muscle strength. It could also be argued that a test of lower-limb muscle power could be better-suited than a test of muscle strength in sarcopenia as muscle power deteriorates earlier and quicker than muscle strength in older populations. In addition, the 5STS requires only a chair and a stopwatch to perform. The aim of this pilot study was to identify whether the results of the 5STS test could predict lower-limb muscle power in healthy adult subjects. **Method:** Twenty-three adult participants were tested (14 females and 9 males). Participants had a mean age of 41.7 ± 20.2 years, mean height of 1.67 ± 0.09 m, mean weight of 74.0 ± 13.4 kg, and a mean BMI of 26.4 ± 4.4 kg/m². Participants completed a five-min warm-up on a cycle ergometer before the test. Muscle and strength and muscle power were measured for knee flexion and knee extension using an isokinetic dynamometer (Biodex System 3, Suffolk, UK). Participants performed a set of five repetitions of knee flexion and extension at an angular velocity of 60°/s. Peak power were calculated as the sum of torque at knee flexion and knee extension multiplied by the angular velocity. Mean peak power (MPP) was calculated as the mean of the peak power measurements for all five repetitions. Participants performed the 5STS twice, with a one-minute rest between trials. The mean of the 5STS trials was used for all subsequent analyses. Statistical analyses were performed with SPSS (v23, IBM Inc., NY, USA). Data were checked for normality using the Shapiro-Wilk test, with all data being normally distributed. The intraclass correlation coefficient (ICC) was used as a measure of reliability for the 5STS. Stepwise linear regression was performed with muscle power as the dependent variable and subject characteristics (age, height, weight, and BMI) and 5STS as independent variables. Statistical significance was set at $p < 0.05$ for all tests. **Results:** The mean 5STS performance was 9.1 ± 2.1 sec while mean peak power was 199.7 ± 93.7 W. The ICC for the

5STS was 0.93 (95% CI: 0.83-0.97). The stepwise linear regression for muscle power included 5STS and height as independent variables ($r=0.76$). **Conclusion:** This pilot study showed that the 5STS was a highly reliable test, and could predict lower-limb muscle power with similar values to those previously reported for grip strength. A follow-up study is planned in which the performance of the 5STS and grip strength to predict lower-limb strength and power will be compared. This planned study will include older subjects at each of the three stages of sarcopenia, as well as older subjects without sarcopenia.

P205- NUTRITIONAL MANAGEMENT OF PATIENT WITH MEGAESOPHAGUS DUE TO CHAGASIC DILATED CARDIOMYOCARDIOPATHY. R. Alves¹, C. Paiva¹, C. Kovacs¹, F.C. Amparo¹, P. Moreira¹, A.S. Monteiro¹, K.G. dos Santos¹, C.D. Magnoni¹, A. Souza², M. Dinalli³, T.M. Almeida³ (1. Nutrition Clinic, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil; 2. Technical Department of Health Department, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil; 3. Phonoaudiology Clinic, Dante Pazzanese Institute of Cardiology, São Paulo, Brazil)

Background: Chagasic dilated cardiomyopathy (CDM) is a heart muscle disease caused by *Trypanosoma cruzi* infection, progressing to cardiac dysfunction and lower capacity for pumping blood through the body. The pathology also degenerates nerve plexuses, favoring the genesis of megaesophagus. **Method:** Qualitative descriptive case study, with information of attendance and medical records. Female patient, 66 years old, with CDM, megaesophagus and hypothyroidism, postoperative of esophagectomy (2009), accompanied by an outpatient clinic specialized in cardiology hospital. Redirected to the nutrition clinic in 2014, due to malnutrition: weight 44 kg, body mass index (BMI) 18.1 kg/m² and abdominal circumference (AC) 64.5 cm. **Results:** In an initial anamnesis in nutrition, the patient reported adequate food intake for her physical condition, rich in simple carbohydrates, normal intestinal function and without major complaints. It was oriented to fractionate 5 to 6 meals/day, high-calorie foods (such as olive oil, oilseeds, avocado), as well as supplement rich protein powders and micronutrients once a day. The patient was followed up, with a satisfactory evolution for 5 months, when she presented weight loss of 4 kg, inappetence, normal intestinal function and reduction in the volume of food intake, in 4 meals a day. Despite reinforcement for previous guidelines, the patient returned after 3 months with 37 kg, AC 60.0 cm, BMI 15.4 kg/m², lacking appetite, but with normal intestinal function, being oriented to maintain fractionation with low food volume, preference for foods of high energy density and supplementation with zinc, thiamine and B12, aiming to improve digestion and muscle maintenance. Returning after 4 months, the patient gained 0.5 kg of weight, with little appetite, following nutritional conduct. In September 2015, CT scan demonstrated esophageal dilatation with high volume of food residues in the lower third, suggesting Auerbach's myenteric plexus deficiency, without cardiac and pulmonary alterations. At this moment, the patient presented 36.0 kg. In November, the patient was hospitalized in another hospital by a gastroenterologist for nasoenteral feeding for 15 days, without good evolution, being 32 kg on discharge and indication for a new esophagectomy, which was contraindicated by the CDM cardiology team. In nutritional return in January 2016, it presented 34 kg, BMI 14.1 kg/m² and AC 58.0 cm, and additional anthropometric measurements were performed to monitor body composition and malnutrition evolution: brachial circumference (BC) 14, 0 cm, triceps (TF) and bicipital (BF) folds of 5.0 mm and 2.0 mm, respectively. The food was low volume, at 6 meals/day, with liquid-pasty food, low nutritional quality and rich in simple refined carbohydrates, without food of high energy density,

being oriented to use supplements of whey protein, brewer's yeast and liquid amino acid compound, to improve lean mass. She still had little appetite and eagerness. Because of the difficulty in feeding, this nutritional consultation was sent to the evaluation of dysphagia with phonoaudiology and indication of videofluoroscopy of swallowing. In this test, with dry solid, soft solid and liquid, revealed a reduction of oral force, multiple swallows with compensatory movements of the head, no sign suggestive of penetration and/or aspiration, normal transit in the upper third, stopping at the level of cardia (middle third), where were visualized dilation (megaesophagus), tertiary waves, reflux and tapering in the distal third, elevating the transit time for the stomach. The phonoaudiological approach was to avoid dry solids, reinforce the fractionation of the daily intake, humidified, to facilitate the pharyngoesophageal transit. After 1 month, the patient presented weight gain of 1 kg, AC 58.0 cm, BC 14.6 cm, TF 8.0 mm and BF 3.0 mm, reporting appetite, good nutrition in volume, with nutritional quality, fractionation 6-7 meals/day, using prescribed supplements and high energy density foods. To date, the patient continues to follow the CDM outpatient clinics and nutrition, with good weight gain. In the table, the evolution from June 2014 to September 2016. **Conclusions:** The follow-up of the patient with CDM and megaesophagus allowed a better understanding of her conditions and difficulties in relation to food, adjusting it together with supplementation to her immediate needs, aiming to improve acceptance, bioavailability and maintenance / improvement of lean mass. The joint treatment with phonoaudiology was of important help for individualized assistance and faster recovery.

Date	05.06.14	17.11.14	24.02.15	22.07.15	02.06.15	02.10.15	06.01.16	15.01.16	19.02.16	19.05.16	17.06.16	15.06.16
Height (mts)	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
Weight (Kgs)	44.9	40.7	37.0	37.5	37.0	35.9	34.0	34.0	35.2	35.0	36.0	36.6
BMI	18.1	16.9	15.6	15.6	15.6	14.7	14.0	14.0	14.6	14.6	14.7	15.3
Abdominal circumference (cm)	64.5	65.0	60.0	57.5	57.5	59.0	58.0	58.0	58.0	57.0	58.0	58.5
Right arm (cm)	-	-	-	20.5	20.5	21.7	19.5	19.5	20.5	19.5	19.5	21.0
Triceps fold (mm)	-	-	-	7.0	8.0	9.0	5.0	8.0	8.0	7.0	7.0	6.0
Bicep fold (mm)	-	-	-	3.0	3.0	2.0	2.0	3.0	3.0	3.0	2.0	2.0

P206- SOURCES OF INFORMATION FOR PREFRIL AND FRAIL PATIENTS, THEIR CAREGIVERS, HEALTHCARE, AND SOCIAL CARE PROFESSIONALS. D. Kurpas¹, M. Bujnowska-Fedak¹, S. Santana², A. Soll³, B. D'Avanzo⁴, C. Holland⁵ (1. Family Medicine Department, Wrocław Medical University, Poland; 2. University of Aveiro, Portugal; 3. Nursing Faculty, Opole Medical School, Poland; 4. Istituto di Ricerche Farmacologiche "Mario Negri", Milan, Italy; 5. Aston Research Centre for Healthy Ageing (ARCHA), Aston University, UK)

Background: Frailty correlates with many components on the personal, health, and societal levels, thus highlighting the importance of individual and population-level frailty detection and interventions in this population. The phenomenon of an aging population is often considered negatively; however, elderly people in need of care only account for 13% of the total elderly population, and this is not expected to further increase. A focus on 'successful aging' and the increasing number of "healthy elderly individuals with rich experience and knowledge" is proposed, which would not become a negative factor in the future. Modern information and communication technologies have become a basis of functioning in everyday life, a simple example of which is the nearly universal use of mobile phones and the Internet. Using advances in the fields of medicine, information technology, telecommunications, and biomedical engineering, telemedicine and Internet-based eHealth activities enable the diagnostic process, treatment, prevention, and control of health status faster and more efficiently, even over considerable distances. The purpose of this presentation is to underline the most important

domains of information sources for prefrail and frail patients, their caregivers, healthcare, and social care professionals, with special regard to online Internet-based activities. **Method:** Conclusions from the focus groups conducted within the FOCUS project (Frailty Management Optimization through EIPAHA Commitments and Utilization of Stakeholders' Input) will be presented as a SWOT analysis of the most effective online source of information about frailty prevention and management within the eHealth supporting platform. **Results:** Internet-based tools were perceived positively by healthier older adults, and the important role of the website about frailty was underlined. In opinion of focus groups members, self-care should be stimulated, healthcare centers' local team meetings will prove very helpful, and screening must lead to access to services or an intervention. The social and psychological aspects of information are as important as the clinical aspects in encouraging adherence and in promoting older-adult wellbeing. A shift in perception is needed to persuade stakeholders that frailty is dynamic and that, by building resilience, it is possible to recover from a frail state and prevent sudden, fast decline. **Conclusions:** Instead of a direct application of the current model of care developed to suit the chronic disease trajectory, an approach aimed at identifying the needs that frail older people normally experience is necessary to provide patient-centered care with an efficient platform of information on frailty prevention and management. Existing community and social support networks are vital for supporting frail older people in minimize alienation and maintaining self-determination in the face of increasing dependence. The effective informative platform for knowledge exchange (PKE) and the use of innovative Internet-based solutions, complimentary to existing channels, will certainly support efficient elderly care.

P207- COORDINATION OF CARE AS A STAKEHOLDER RESPONSE TO NEEDS IN FRAILTY. D. Kurpas¹, M. Bujnowska-Fedak¹, A. Soll², B. D'Avanzo³, C. Holland⁴ (1. Family Medicine Department, Wrocław Medical University, Poland; 2. Nursing Faculty, Opole Medical School, Poland; 3. Istituto di Ricerche Farmacologiche "Mario Negri", Milan, Italy; 4. Aston Research Centre for Healthy Ageing (ARCHA), Aston University, UK)

Background: Frailty is a dynamic process characterized by frequent transitions between states over time—a third of which are associated with functional improvement. Functional decline is not irreversible, and attention should be draw to frailty as an important target for prevention. Frail older adults with low psychosocial resources often present an elevated risk of mortality, discharge to higher level care, long length of stay, and rehospitalization. The purpose of care is to improve the quality of life for frail older people through a better quality of care (health, social, and community), tailored to the needs and expectations of older people. Care offered to prefrail and frail patients should be provided more flexibly and equitably, responding to the varied concerns and needs of people with different advanced conditions. The purpose of this study was to identify the most important areas of care for frailty patients requiring improvement. **Method:** In-depth interviews and focus groups were conducted for the five target groups in Poland: nonfrail older adults (n = 11); frail older adults (n = 9); social care professionals (n = 9); health professionals (n = 9) and caregivers (n = 6), as a part of the FOCUS project within the 3HP: Frailty Management Optimization through EIPAHA Commitments and Utilization of Stakeholders' Input. All members of focus groups were asked to express their views and experiences with treatments and interventions aimed at improving care for prefrail and frail patients. Data were analyzed with coding and constant comparison techniques. **Results:** The main areas detected for dealing with within a model of care for prefrail and frail patients were limited access to care and continuity of care, insufficient

communication with healthcare and social care professionals, lack of information about frailty (there is a need for information on frailty, correct diagnosis, and referral; information about whom to turn to is essential, and there should be a dedicated phone number for frail people to get help), the need for psychological support for patients and their caregivers, the need for a person to act as a link between patients, their caregivers, healthcare and social care professionals, simultaneous support for prefrail and frail patients and their caregivers, periodical practical training for caregivers with support of written education materials, and the inclusion of volunteers into the model of care for prefrail and frail patients. The need for collaboration between different types of social workers and social care institutions is also underlined. Also detected were a lack of knowledge of the functioning of social care and a lack of resources - e.g., places in public nursing homes, senior homes, social care homes, long waiting times, lack of home-based social care at night, and neighborly help, and the shortage of formal caregivers. Family doctors were considered to best know frail patients, but members of all focus groups underlined the need for accessible and tailor-made care for prefrail/frail patients and their caregivers. Current care (medical and social) was considered reactive, and not the proactive care needed for prefrail and frail patients. **Conclusion:** Lack of care coordination, especially between medical care and social care, turned out to be the main area in need of improvement. The integration of health and social care support has been identified as a pivotal, though challenging, step. Aspects of paramount importance are embedding assessment and intervention initiatives, the multidisciplinary and coordinated care approach, and the experience of health professionals with frail patients. The delivery of efficient care was associated with competent professional behavior, which is inextricably linked with the education of professionals. The consideration of psychosocial factors in comprehensive assessments will assist in prefrail/frail patient care planning. An individual assessment of the caregiving situation may help identify carers at risk of physical and mental ill health and facilitate the provision of information and support that will assist them to continue caring for frail family members. A comprehensive continuum of care intervention comprising tailor-made components, including patient preferences, has a positive effect on frail older persons' satisfaction with their functional capacity, psychological health, and financial situation.

P208- FRAILTY: BELIEFS AND PREVENTION FROM THE PERSPECTIVE OF ELDERLY PEOPLE, THEIR CAREGIVERS, HEALTHCARE, AND SOCIAL CARE PROFESSIONALS. D. Kurpas¹, M. Bujnowska-Fedak¹, A. Soll², B. D'Avanzo³, C. Holland⁴ (1. Family Medicine Department, Wrocław Medical University, Poland; 2. Nursing Faculty, Opole Medical School, Poland; 3. Istituto di Ricerche Farmacologiche "Mario Negri", Milan, Italy; 4. Aston Research Centre for Healthy Ageing (ARCHA), Aston University, UK)

Background: Frailty is a practical unifying concept in the care of older people that directs attention away from organ-specific diagnoses and towards a more holistic viewpoint of the patient and their predicament. Frailty is a state of vulnerability to poor resolution of homeostasis following stress and is strongly associated with adverse outcomes. The social vulnerability of physically frail older adults should be taken into account in care provision for frail older adults. Empowering FRAIL OLDER older frail people in the community setting requires changes throughout the health and social system. A multiprofessional approach, including a broad spectrum of information and knowledge, might be an important factor contributing to the more positive view of frailty prevention and management. The social

components of frailty syndrome adversely affect the ability to self-care in elderly patients with frailty. Frail older adults are increasingly encouraged to be in control of their health care; however, little is known about how they perceive health and frailty. This study aims to investigate beliefs and perception from the viewpoint of prefrail and frail older adults and their caregivers, as well as healthcare and social care professionals. **Method:** In-depth interviews and focus groups were conducted for the five target groups in Poland: nonfrail older adults (n = 11); frail older adults (n = 9); social care professionals (n = 9); health professionals (n = 9), and caregivers (n = 6) as a part of the FOCUS project within the 3HP: Frailty Management Optimization through EIPAHA Commitments and Utilization of Stakeholders' Input. All members of focus groups were asked to express their views, beliefs, and experiences with health care and social care aimed at prefrail and frail patients. Data were analyzed using coding and constant comparison. **Results:** The dimensions recognized as most important were regular screening of biopsychosocial issues, education, physical activity, social interactions with younger people, efficiently dealing with loneliness, effective communication and support with and from health and social care professionals, regular and smooth access to and contact with physicians or nurses, the positive role of a supportive attitude of nurses, and regular medical check-ups of frail persons. Frailty was considered as being possible to detect by people who live in contact with a person in a prefrail or frail condition. The need to be healthy and frailty as subjective term were underlined by healthy, prefrail, and frail patients. Educational meetings, printing materials, contact by phone and Internet, training for patients (and their caregivers, healthcare, and social care professionals) were indicated as the main sources of information about prefrailty and frailty conditions by members of all focus groups. Healthcare professionals underlined the lack of knowledge among healthcare and social care professionals. They also suggested the need for the earliest possible interventions. **Conclusion:** The implementation of a proactive primary care attitude in daily practice, as well as a strong interdisciplinary collaboration, is needed. Such an approach should be adapted to the local context of prefrail and frail patients. Future strategies for intervening should target the older persons' individual barriers and promote the positive coexisting dimension of frailty. A person-centered approach, encompassing knowledge of physical, social, and psychological aspects is recommended in care. The findings from this study reveal frail older adults' resilience to adversity from their own point of view, and further demonstrate an association between their experiences of health and feelings assured in their day-to-day lives with frailty. The importance of supporting frail older adults in stimulating their experience of health and well-being, despite frailty, by focusing on the individual's resources, requirements, and conditions in the life context to which they are accustomed should be underlined. The challenge for health and medical personnel is to focus on the factors that strengthen older adults' health. Creating health, despite frailty, will be possible by enabling older adults to provide opportunities for managing their everyday lives and endure suffering, which requires on-going coping and support.

P209- LOW HANDGRIP STRENGTH IS THE MOST PREVALENT CRITERION IN PRE-FRAIL AND FRAIL PORTUGUESE OLDER ADULTS: RESULTS FROM NUTRITION UP 65. A.R. Sousa-Santos, C. Afonso, P. Moreira, P. Padrão, A. Santos, N. Borges, T.F. Amaral (Faculdade de Ciências da Nutrição e Alimentação, Universidade do Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal)

Background: Background: Frailty is a common clinical syndrome in older adults, with a reported average prevalence of pre-frailty and

frailty in the community of 42% and 11%, respectively. However, the burden of this condition among Portuguese older adults is still unknown. The purpose of this study is to estimate the frequency of frailty in a sample of Portuguese with 65 years or older and to evaluate its associated factors. We also intend to identify which criteria has more impact on the diagnosis of frailty. **Methods:** A nationwide cluster sample of 1453 older adults with 65 years or older from the Nutrition UP 65 study was evaluated on a cross-sectional analysis. Frailty was identified according to Fried et al by the presence of three or more of the following factors: unintentional weight loss, self-reported exhaustion, slow walking speed, weakness (handgrip strength) and low physical activity. Pre frailty was defined as the presence of one or two of these criteria. The association between individuals' characteristics and frailty status was analysed through logistic regression analysis. **Results:** The frequency of pre-frailty is 52.7% and of frailty is 20.9%. For those older adults who presented pre-frailty or frailty, low handgrip strength was present in 76.7% and exhaustion in 48.6%. In multivariate analyses, frailty was associated with age >75, lower education level, poor or very poor self-assessed health status, being single, divorced or widower, being professionally inactive, not drinking alcohol, obesity and being undernourished or at undernutrition risk. **Conclusion:** This condition is very prevalent in Portuguese older adults, one fifth is frail whereas half is pre-frail. Low handgrip strength is the most prevalent criterion in pre-frail and frail Portuguese older adults. **Keywords:** frailty, older adults, weakness, exhaustion, weight loss, physical activity, walking time

P210- ARE SARCOPENIA AND FRAILTY CLOSELY INTERRELATED IN PORTUGUESE OLDER ADULTS? RESULTS FROM THE NUTRITION UP 65 STUDY. A.R. Sousa-Santos, C. Afonso, N. Borges, A. Santos, P. Padrão, P. Moreira, T.F. Amaral (*Faculdade de Ciências da Nutrição e Alimentação, Universidade do Porto, Rua Dr. Roberto Frias, Porto, Portugal*)

Background: In Portugal, the frequency of sarcopenia was estimated in hospitalized older adults, however results regarding the community are still lacking. The aim of this study is to evaluate the frequency of sarcopenia in Portuguese older adults from the Nutrition UP 65 study and its associated factors. We also evaluated the overlap between sarcopenia and frailty status. **Methods:** A nationwide cluster sample of 1493 older adults with 65 years or older from the Nutrition UP 65 study were evaluated on a cross-sectional analysis. Sarcopenia was defined according with the European Working Group on Sarcopenia in Older People (EWGSOP) definition, as the presence of low muscle mass (anthropometry) plus low muscle strength (by HGS) or low physical performance (measured by usual gait speed). Frailty was identified according with the definition proposed by Fried et al. The association between individuals' characteristics and sarcopenia was analysed through logistic regression analysis. **Results:** The frequency of sarcopenia was 11.6%. Moreover, 20.7% of the sarcopenic individuals were also frail. On the other hand, 11.5% of frail individuals were sarcopenic. In multivariate analyses, sarcopenia was positively associated with age >75, being married or in common-law marriage, and inversely associated with being overweight and obese. **Conclusion:** Sarcopenia is present in a tenth of the sample, and only one in five sarcopenic older adults presented frailty. **Keywords:** sarcopenia, frailty, older adults, muscle mass, HGS, gait speed

P211- AN OBSERVATIONAL STUDY ON FRAILTY AND ON NUTRITIONAL STATUS OF PATIENTS WITH IMPAIRED MOBILITY ADMITTED TO THE PADUA GENERAL HOSPITAL. A. Musumeci¹, F. Santi², S. Masiero¹ (*1. Neurorehabilitation Unit, University of Padua, Italy; 2. University of Padua, Italy*)

Background: Frailty is characterized by reduced biological reserves and increases the risk of adverse outcomes in individuals who face even minor stressors; in fact, it determines an augmented risk of falls, disability, hospitalization and death. Frailty can vary in severity and is not a static process; the degree of frailty is more predictive than chronological age for many of these adverse outcomes. Even in hospitals the frailty state is poorly investigated due to a number of factors: the need to cope with the patient's acute disease, underestimation of this problem, the lack of clear hospital guidelines for the diagnosis of frailty in a hospital setting. If frailty is not diagnosed prevention measures are not adopted and, consequently, it may determine a progressive patient's decline. Furthermore, hospitalized frail patients are at greater risk of surgical complications and poor outcomes after admission to an intensive care unit; there is also a higher risk of delirium, length of hospital stay, discharge to a care home, and death in older patients. **Method:** This observational study aims to investigate the prevalence of frailty and the nutritional status of 22 consecutive patients (9 men and 13 women) admitted to the Padua General Hospital in November 2016 and for whom a psychiatric consult was requested for mobility impairment. Inclusion criteria were age >50 years. Exclusion criteria were stupor or coma, critical conditions or admission to ICU units, cognitive impairment or patients without a motor control of dominant upper limb. The following parameters were evaluated: age, sex, BMI, admission unit, recent hospitalization and falls, length of hospital stay, Mini Nutritional Assessment Short-form, Fried Frailty phenotype, albumin serum level. Results are shown in Table 1 and 2. **Results:** Mean age of men was 74,4 +/- 10,3 years and women was 74,6 +/- 12,2 years. 12 patient were admitted to surgical units and 10 to nonsurgical units. 6 females were malnourished (3 from surgical and 3 nonsurgical units respectively), 5 were at risk of malnutrition (2 from surgical and 3 nonsurgical units) and two had normal nutritional status (1 from surgical and 1 nonsurgical unit). 6 females had a frail state (Fried score >= 3), their mean length of stay 15,3 days, 4 of them had fallen at least once and 4 were hospitalized in the last 12 months. 6 women were pre-frail (Fried >= 1 and <3), their mean length of stay 12,5 days, 2 of them had fallen and 3 were hospitalized in the last 12 months, 1 a robust state (Fried score=0). 4 males were malnourished (2 from surgical and 2 nonsurgical units), 3 were at risk of malnutrition (3 from surgical units), 2 had normal nutritional status (1 from surgical and 1 nonsurgical unit). 5 males had a frail state, one of them died after 41 days of hospitalization, the mean length of stay of the other frail patients was 27,7 days, no previous falls and 3 previous hospitalizations. 2 males had a pre-frail state, their mean length of stay was 14,5 days, 1 patient had previous falls and 2 patients had previously admitted to the hospital. 2 patients had a robust state, both of them had had a previous hospitalization. **Conclusion:** This study showed the high prevalence of malnutrition, frail and pre-frail state in hospitalized patients both in medical and in surgical units who were evaluated for mobility impairment. Limitations of this study are the small number of participants. Moreover it was impossible to completely evaluate "walk time criterion" of the Fried Frailty Phenotype due to the fact that patients were unable to deambulate when they were visited and this could underestimate the real prevalence of frailty in patients with difficulties in mobilization. Frailty is not an inevitable part of ageing. Further studies and,

maybe, different clinical scales are needed in order to identify the real prevalence of frail and pre-frail status in hospitalized patients in order to improve patient's health and avoid unnecessary harm and hospitalization.

Table 1
Female parameters

Age	Sex	Length of stay	BMI	Comorbidities n.	Falls*	Hospitalization *	MNA SF	FRIED SCORE	P-albumin g/l
81	F	10	32	11	No	No	8	2	26,99
87	F	20	22	4	No	No	11	0	
57	F	19	41	3	Yes	Yes	5	3	42
49	F	21	19	2	No	Yes	4	1	23
67	F	5	24	9	No	Yes	12	2	43
67	F	6	23	5	Yes	No	9	2	44
85	F	23	32	2	Yes	No	7	3	27,44
71	F	11	20	1	Yes	Yes	3	3	33,11
83	F	11	29	12	No	Yes	12	3	34
76	F	16	23	2	No	Yes	11	1	35,08
75	F	17	27	1	Yes	No	9	2	
92	F	13	25	6	No	No	6	4	21
80	F	15	26	7	Yes	Yes	5	4	22

*= last 12 months

Table 2
Male parameters

Age	Sex	Length of stay	BMI	Comorbidities n.	Falls*	Hospitalization *	MNA SF	FRIED SCORE	P-albumin g/l
65	M	35	25	3	No	No	7	3	26
67	M	41	41	4	No	No	5	4	24
77	M	15	22	3	No	Yes	8	3	26
76	M	15	24	6	No	Yes	11	2	45
69	M	13	28	4	No	Yes	9	3	37
78	M	14	20	1	No	Yes	12	0	45
63	M	48	21	5	No	Yes	5	3	24
94	M	14	18	8	Yes	Yes	6	2	56,82
81	M	21	29	6	No	Yes	12	0	

*= last 12 months

P212- CHANGE OF FRAILITY DURING HOSPITALIZATION AND ITS IMPACT ON ADVERSE OUTCOMES IN OLDER PATIENTS. G. Basile¹, A. Catalano¹, G. Ciancio¹, D. Brischetto¹, N. Morabito¹, A. Lasco¹, M. Cesari^{2,3} (1. Unit and School of Geriatrics, University of Messina, Messina, Italy; 2. Gérontopôle, Centre Hospitalier Universitaire de Toulouse, Toulouse, France; 3. Université de Toulouse III Paul Sabatier, Toulouse, France)

Background: Frailty is a highly prevalent condition at old age, characterized by reduced homeostatic balance and increased susceptibility to stressors. It is a status associated with adverse outcomes in hospitalized patients, such as falls, delirium, disability and mortality. Despite frailty predicts adverse outcomes in elderly subjects, its evaluation in hospitalized elderly patient is not codified; furthermore, there is no agreement on the most appropriate tool to use. The aim of the present study is to 1) measure the frailty status using the frailty index (FI) in older hospitalized patients and its changes during hospitalization, and 2) determine the relationships existing between frailty and length of stay and mortality. **Method:** Between September 2015 and April 2016, data were collected from 156 patients, aged 65 years or older (mean age 81.5±6.2), admitted to Acute Geriatric Medicine Unit at the University Hospital of Messina, Italy. Frailty was evaluated using Frailty Index, according to the model proposed by Rockwood. It is based on arithmetic assumptions, and generated by the ratio between the number of deficits (i.e., signs, symptoms, diseases, disabilities) presented by an individual and the number of considered deficits. Thus, the FI ranges between 0 (no deficit present) and 1 (all the deficits are present), although it is consistently reported an extreme difficulty at obtaining scores higher than 0.7 as per an implicit biological limit between life and deficit accumulation. FI was calculated taking into account 46 potential deficits collected as part of the standard clinical and laboratory evaluations. Patients with an FI >0.25 were classified as frail. For each patient, FI was calculated twice during hospitalization,

within 24 hours of admission (aFI) and at discharge (dFI). Statistical analyses were performed using MedCalc software (version 10.2.0.0; Mariakerke, 173 Belgium). The normal distribution of values was verified with the Kolmogorov-Smirnov test. Comparisons between groups were performed using Student's t-test for unpaired observation or Mann-Whitney test. Student's t-test for paired observations and the Wilcoxon test were applied for within group comparisons. Spearman's coefficient was used to measure the degree of association between two variables, and multiple regression was used to analyze the relationship between a dependent variable and one or more independent variables. Values of P < 0.05 were considered to indicate statistical significance. All reported P values were two-sided. **Results:** Women represent the majority of subjects (59%) and showed a higher median age in comparison with men [83 years (77 to 86.25) vs. 80 years (77 to 84) yr, p=0.02, respectively]. The median FI at admission (aFI) on the overall population was 0.362 (0.306 to 0.404), and no gender differences were detected [0.38 (0.21 to 0.48) vs. 0.36 (0.21 to 0.46), p=0.58, in men and women, respectively]. During the hospitalization, 17 patients died and 139 were discharged; patients who died during hospitalization had higher mean aFI scores than those who were discharged [0.52 (0.45 to 0.57) vs. 0.31 (0.19 to 0.44), p<0.0001, respectively]. The mean length of stay was 9.3±5.8 days. On average, FI changed at discharge, and the difference between aFI and dFI was statistically significant [0.31 (0.19 to 0.44) vs. 0.29 (0.19 to 0.40), p=0.04, respectively]. Mortality, dFI and percent change (Δ) of FI during the hospitalization were not significantly different by gender. A statistically significant correlation was found between aFI and age (r=0.320, p < 0.001), dFI (r=0.897, p<0.001), and nearly significantly with ΔFI (r=-0.166, p=0.051) and length of hospitalization (r=0.164, p=0.054). Moreover a significant correlation was found between ΔFI and length of stay (r=0.220, p=0.009). Overall, aFI was predictive of mortality (β=13.6; SE 3.28; p<0.0001) and duration of hospitalization (β=6.38; SE 3.24; p=0.05), even after age and gender adjustments. **Conclusion:** In the present study about 70% of patients were frail, with a frailty index > 0.25. Patients with greater frailty at admission are more likely to die during hospitalization, and increased length of hospital stay. On average, we observed a reduction of FI at discharge, it is probably due to the improvement of the acute disease(s) which led to hospitalization, and to the mode of management. We believe that frailty index is an useful tool to evaluate frailty status in hospitalized elderly subjects, it predicts hospital length of stay and mortality and may improve the approach to the elderly patients that require, on the basis of their frailty status, a personalization of clinical interventions.

P213- GENERAL, ABDOMINAL ADIPOSITY AND FRAILITY IN PORTUGUESE OLDER ADULTS: RESULTS FROM NUTRITION UP 65. C. Afonso¹, R. Guerra¹, P. Moreira, P. Padrão, A. Santos, N. Borges, T.F. Amaral (Faculdade de Ciências da Nutrição e Alimentação, Universidade do Porto, Rua Dr. Roberto Frias, Porto, Portugal)

Background: The prevalence of overweight and obesity are growing every year simultaneously, with frailty, a multidimensional syndrome which is also common among the older adults. General adiposity can be evaluated using Body Mass Index (BMI), and abdominal adiposity through Waist Circumference (WC), Waist:height ratio (WHtR) and by the new body indices: A Body Shape Index (ABSI) and Body Roundness Index (BRI). The purpose of this study is to evaluate the independent relation between frailty and anthropometric indices, that measure general adiposity and abdominal adiposity, in a sample of Portuguese older adults, as well as to identify the best anthropometric measure associated with this condition. **Methods:** A nationwide cluster sample of 1339 community dwelling

older adults with 65 years or older from the Nutrition UP 65 study was evaluated on a cross-sectional analysis. Frailty was identified according to Fried et al by the presence of three or more of the following factors: unintentional weight loss, self-reported exhaustion, slow walking speed, weakness (handgrip strength) and low physical activity. Pre frailty and intermediate frailty was defined as the presence of one or two of these criteria. General and abdominal measurements included BMI, WC, WHtR, ABSI, BRI. The association between individuals' characteristics and frailty status was analysed through multinomial logistic regression analysis. All models were adjusted for age, education level, marital status and self-perceived health status. **Results:** For women, the mean value of all anthropometric indices increased with aggravation of this condition ($p < 0.05$). For men, the tendency is the opposite ($p < 0.05$), except for BMI. Multinomial analyses allow to identify the anthropometric indices associated with frailty. In women, values in the highest quartile of all anthropometric measures, were associated with the increased the odds of frailty ($p < 0.05$), contrary for the ABSI: second quartile [OR=0.487 (0.245-0.963)]. R2 Nagelkerke is higher for BRI (0.352) and lower (0.306) for ABSI. In men, BMI and WC were not associated with frailty, however being at the highest quartile of WHtR and of BRI increased the odds of frailty. For the ABSI: second quartile [OR=2.986 (1.958-7.069)]. R2 Nagelkerke is higher for BRI (0.3284) and lower for WC (0.258). **Conclusion:** Frailty is mainly associated to abdominal adiposity, since BRI was found to be the best indicator. Keywords: frailty, older adults, weakness, exhaustion, weight loss, physical activity, walking time

P214- IMPACT OF FRAILTY ON HEALTHCARE OUTCOMES AFTER ISCHAEMIC STROKE IN PATIENTS WITH ATRIAL FIBRILLATION. L. Morrison¹, M. Hanley¹, R. O'Caolmh^{1,2} (1. Department of Geriatric Medicine, University Hospital Galway, Newcastle Road, Galway City, Ireland; 2. Health Research Board Clinical Research Facility Galway, National University of Ireland, Galway, Geata an Eolais, University Road, Galway, Ireland)

Background: Frailty has been shown to be a predictor of all-cause mortality,¹ and is also associated with increased risk of death in patients admitted from emergency departments.² Frailty Index scores are associated with increased mortality and institutionalisation among stroke patients. Little is known about the impact of frailty on other important healthcare outcomes for patients with stroke. Stroke due to atrial fibrillation is one of the common stroke mechanism in extreme old age and frailty.³ Given this, the objective of this study was to examine the impact of frailty on hospital length of stay (LOS), 30-day mortality and 90-day readmission rates post stroke with atrial fibrillation. **Method:** Data were collected from a large single centre university hospital. Patients were identified using an existing database of stroke patients presenting consecutively during the month of August 2016. Only those with an ischaemic stroke due to atrial fibrillation were included. A retrospective chart review was performed to assess pre-admission frailty, using the 9-point Clinical Frailty Scale (CFS) taking a cut-off of ≥ 5 for established frailty.⁴ Baseline function was measured with the Modified Rankin Scale (mRS) score. Stroke severity was assessed using the National Institute of Health Stroke Scale (NIHSS) score. LOS including time in rehabilitation units, 90-day re-admission rates and 30-day mortality were calculated from national hospital administrative data (Hospital In-Patient Enquiry Scheme). **Results:** In total, 26 patients were identified as having ischaemic stroke and atrial fibrillation. Their median age was 77 years (interquartile +/-12, range 65-94 years) and 67% were male. Their median preadmission mRS was 2 (+/-3) and their median NIHSS score was 11 (+/-8). The median preadmission CFS score was 3 (+/-3) and 33.3% scored ≥ 5 , indicating they were

mildly to severely frail. At discharge the median mRS increased to 3 (+/-1). In all, 45% were transferred for rehabilitation to an off-site stroke rehab unit of whom 38% were classified as frail at baseline. Frail patients (CFS ≥ 5) had a longer acute hospital LOS compared to those not classified as frail, median 30 days vs. 15 days, respectively, though this was not statistically significant $z = -1.8$, $p = 0.075$. This trend was also seen in total hospital stay including rehabilitation, 52 days vs. 24 days respectively, though again it was not statistically significant, $z = -1.1$ $p = 0.29$. **Conclusion:** Though numbers were small, likely under-powering the study, these initial data suggest a trend towards an association between frailty, as measured by the Rockwood CFS, and increased LOS in patients with a common and often severe stroke presentation among older adults, ischaemic stroke with atrial fibrillation. Further study to achieve an adequately powered sample is on-going. These results suggests that there may be utility in brief frailty assessment instruments as pre-admission measures of frailty in patients presenting with acute stroke. This may improve risk prediction for patients at risk of increased length of hospital stay post stroke. References: 1) Xue Q-L. The Frailty Syndrome: Definition and Natural History. Clinics in geriatric medicine. 2011;27(1):1-15. doi:10.1016/j.cger.2010.08.009. 2) Ravindrarajah R, Lee DM, Pye SR, et al. The ability of three different models of frailty to predict all-cause mortality: results from the European Male Aging Study (EMAS). Archives of Gerontology and Geriatrics. 2013;57:360-8. 3) Lubitz SA, Bauer KA, Benjamin EJ, Besdine RW, Forman DE, Gurol ME, Reddy VY, Singer DE. Stroke prevention in atrial fibrillation in older adults: existing knowledge gaps and areas for innovation: a summary of an American Federation for Aging research seminar. Journal of the American Geriatrics Society. 2013 Oct 1;61(10):1798-803. 4) Hastings SN, Purser JL, Johnson KS, et al. Frailty predicts some but not all adverse outcomes in older adults discharged from the emergency department. Journal American Geriatric Society. 2008;56:1651-7. 5) Rockwood K, Song X, MacKnight C, et al. A global clinical measure of fitness and frailty in elderly people. CMAJ : Canadian Medical Association Journal. 2005;173(5):489-495. doi:10.1503/cmaj.050051.

P215- FRAILTY INDEX IS A STRONG PREDICTOR OF IN-HOSPITAL OUTCOMES AND MORTALITY AFTER DISCHARGE IN CIRRHOTIC PATIENTS. G. Caccamo¹, G. Basile², S. Maimone¹, D. Vadalà¹, T. Crea¹, M.S. Franzè¹, A. Sitibondo¹, R. Filomia¹, C. Saitta¹, I. Cacciola¹, G. Squadrito^{1,3}, G. Raimondo^{1,4} (1. Division of Clinical and Molecular Hepatology, University Hospital of Messina, Messina, Italy; 2. Unit of Geriatrics, Department of Clinical and Experimental Medicine, University Hospital of Messina, Messina, Italy; 3. Department of Human Pathology of the Adult and Evolutive Age, University Hospital of Messina, Messina, Italy; 4. Department of Clinical and Experimental Medicine, University Hospital of Messina, Messina, Italy)

Background: Frailty is a multiply determined vulnerability state causing a higher risk of adverse outcomes including death. Frailty status and its impact on adverse outcome are usually poorly explored in cirrhotic patients. The aim of the present study is to evaluate the impact of frailty, measured by Rockwood frailty index (FI), on in-hospital outcomes and mortality after discharge in a cohort of hospitalized cirrhotic patients. **Methods:** We applied the FI to 101 cirrhotic patients (72% male; 65.6 years \pm 12.2 SD) consecutively hospitalized from January to May 2015. Using medical, nursing and laboratory records we estimated FI taking into account 45 potential combinable deficits. The ratio between the number of deficits presented by each patient and the 45 considered deficits corresponds to FI. A value of FI > 0.25 identifies a frail patient. **Results:** Cirrhosis was cryptogenic in 40% of cases; viral in 39%, alcoholic in 21%.

CPT class distribution was 51A/30B/20C, median MELD score was 11.0(6.0-29.0). Thirty-five/101(34.6%) and 29/101(28.7%) patients were frail at admission (FI-a) and discharge (FI-d), respectively. No difference was found in FIa between CPT-B and C [16/30(53.3%) vs 15/20(75%), p=0.1]. Frail patients had a longer in-hospital stay (17±14.8 vs 10.8±14.3 days; p=0.04); a higher probability of re-hospitalisation within 3 months [23/35(65.7%) vs 40/66(60.6%) p=0.005]; a higher in-hospital mortality [5/35(14.3%) vs 2/66(3%), p=0.03]; a higher mortality either at 3months [14/29 (48.3%) vs 8/72 (11.1%), p<.001], 6months [18/29(62.1%) vs 10/72(13.8%), p<.001], and 12months [18/29(62.1%) vs 16/72(22.2%), p<.001]. Patients with a FI-d>0.25 had a risk of mortality higher than that predicted by CPT and MELD. **Conclusion:** FI strongly predicts in-hospital outcomes and mortality after discharge in hospitalized cirrhotic patients. We believe that clinical assessment of frailty is needed for improving the therapeutic management of cirrhotic patients and promote a better personalisation of interventions, and that frailty index is an useful tool to evaluate frailty status in cirrhotic hospitalized subjects.

	Mortality risk								
	3 months			6 months			12 months		
	HR	95.0% CI	P	HR	95.0% CI	P	HR	95.0% CI	P
FI-d>0.25	30.8	6.1-155.9	<0.0001	39.0	9.9-156.2	<0.0001	27.9	7.3-106.3	<0.0001
CPT	1.6	1.3-1.9	<0.0001	1.5	1.3-1.8	<0.0001	1.4	1.2-1.6	<0.0001
MELD	1.16	1.1-1.2	<0.0001	1.15	1.1-1.2	<0.0001	1.11	1.05-1.17	<0.0001

P216- SGA AND MIS AS DIAGNOSIS OF ENERGY-PROTEIN MALNUTRITION IN AGED PATIENTS WITH CHRONIC RENAL DISEASE ON CONSERVATIVE TREATMENT.

F. Amparo¹, C. Kovacs¹, C. Paiva¹, P. Moreira¹, R. Alves¹, K. Gama¹, A. Monteiro¹, A. Sousa², D. Magnoni³ (1. Ambulatory of Nutrition Clinic, Institute Dante Pazzanese of Cardiology, São Paulo, Brazil; 2. Technical Director of the Health Department, Institute Dante Pazzanese of Cardiology, São Paulo, Brazil; 3. Director of Nutrition, Institute Dante Pazzanese of Cardiology, São Paulo, Brazil)

Introduction: The prevalence of protein-energy malnutrition (PEM) is high and varies from 18 to 65%. The causes of PEM are numerous and include factors related to chronic kidney disease (CKD) and treatment that contribute to reduced food intake and increased protein catabolism. These data confirm the need to control disease and feeding to avoid complications. **Objective:** The objective of this study was to evaluate the prevalence of PEM by Subjective Global Evaluation of 7 scales (SGA-7) and Malnutrition and Inflammation Score (MIS) and to compare it with clinical outcomes. **Discussion:** We included 61 patients (median age 65.6 years [59.8-86.8] years, 64.4% men) with CKD in conservative treatment. 25 (49.3%) patients were diabetic. The presence of PEM was defined by SGA-7 and MIS. The patients were followed up for 18 months with attention to mortality. The presence of PEM was diagnosed in 31% by SGA; 22% by MIS. During follow-up, 9 deaths were recorded and the diagnosis of PEM by the two methods evaluated was associated with the increased risk in the univariate Cox analysis: (HR: 2.52 [1.40-4.54]); (HR: 2.20 [1.20-4.03]); (HR: 2.08 [1.13-3.83]), respectively SGA and MIS. However, after adjusting for gender, age and primary risks of cardiovascular diseases (Infarction, Stroke, diabetes, hypertension, dyslipidemia), only SGA (HR: 2.06 [1.09-3.89]) maintained a significant association. **Conclusion:** The prevalence of PEM in our population was 22 to 31% according to SGA and MIS. The SGA was shown to be superior for the diagnosis of PEM. This shows that nutritional treatment is necessary to reverse the PEM, soon after the diagnosis of CKD.

P217- BIO103, A SECOND-GENERATION COMPOUND FOR THE TREATMENT OF SARCOPENIA. FROM ANABOLIC PROPERTIES TO THE REVERSION OF AGING-RELATED FUNCTIONAL LOSS.

P. Dilda¹, A.-S. Foucault¹, S. Raynal¹, C. Carbonne², J.-D. Durand², S. Veillet¹, W. Dioh¹, R. Lafont³ (1. Biophytis, Paris, France; 2. Metabrain Research, Chilly-Mazarin, France; 3. Sorbonne Universités, Laboratoire BIOSIPE, Paris, France)

Background: Muscular degeneration or sarcopenia is a natural process which accelerates with age. It is characterised by a loss of skeletal muscle mass and function, which is at the origin of a general deterioration in physical condition. Muscle atrophy results from a reduction of fibre number and diameter. Obesity aggravates sarcopenia and impairs functional capacities. The aim of this study was to characterize a new hemisynthetic derivative of 20-hydroxyecdysone (BIO103) in vitro on myocytes and in vivo on various animal models designed to analyze the effects of high fat diet, aging and disuse. **Method:** Murine C2C12 cells were employed to evaluate the effects of BIO103 on protein synthesis (via ELISA measurements of pS6K levels) and on myostatin and atrogenin gene expression (qRT-PCR). The oral bioavailability of BIO103 was determined in rats (n=3) who received a single dose of the compound either orally (50 mg/kg) or intravenously (5 mg/kg). Plasma concentrations were determined by HPLC-MS/MS at various time points and AUC were then calculated for each route of administration. In vivo, two animal models employing C57BL/6J mice under high fat diet (4.62 kcal/g; protein 18.3%, lipid 45.6%, carbohydrate 36.1%) were performed. The first one involved 12 week-old males (n=8) treated orally for 6 weeks with vehicle or BIO103 at 5 or 50 mg/kg/day. At completion of experimentation, the soleus of the animals were weighed and then tested for protein content and myostatin, myogenin and MyoD gene expression (qRT-PCR). The second animal model compared old (22 months) versus adult (12 months) female mice treated orally for 14 weeks with either vehicle or 50 mg/kg/day of BIO103 (n=7-10). One week before the completion of the study, the animals were tested for functional activity in toto (maximal running velocity on treadmill) and their right hind limb was immobilized. At the end of the experimentation, in situ tibialis anterior contractility parameters (maximal force and fatigue resistance) were recorded on both immobilized and active limbs. At euthanasia, plasma was collected and various muscles were weighed. IGF-1 plasma levels were determined by ELISA assay. **Results:** In C2C12 cells, BIO103 used at 1 and 10 µM was responsible for a dose-dependent stimulation of protein synthesis as demonstrated by a 32% and 54% increase in pS6K. This observation was consistent with a significant inhibition by BIO103 (10 µM) of myostatin gene expression by 60% (p<0.001). Interestingly, the gene expression of atrogenin, a muscle-specific ubiquitin-ligase, was also reduced by 24% (p<0.001). In rat, BIO103 showed a good oral bioavailability (38%) which justified further in vivo experiments employing an oral administration of the drug. The in vitro results obtained on C2C12 cells translated perfectly into in vivo data. Indeed, in young mice, BIO103 was shown to increase significantly the protein content of the soleus muscle (+25%; p<0.05). This was accompanied with a subtle increase in soleus mass (+18%, ns) and a significant inhibition of myostatin (-48%; p<0.05) gene expression, along with an increase in myogenin (+372%; p<0.05) and MyoD (+93%; p<0.05) gene expression. In the second animal model involving untreated adults, untreated old and BIO103 treated old mice, we showed that the significant aging-linked atrophy tends to be compensated by BIO103 treatment. In immobilized limbs, the significant atrophy (-17% and -18% for gastrocnemius and plantaris, respectively) observed in old untreated animals in

comparison with adult untreated ones tended towards compensation when the animals received BIO103, for which the residual atrophy was limited to only 4% and 6%, respectively. Similar observations were made in gastrocnemius and quadriceps of the active limb. These results on muscle mass were correlated with IGF-1 plasma levels: the significant decrease in IGF-1 plasma levels in aged animals versus adult ones ($p < 0.01$) was totally compensated by BIO103 treatment ($p < 0.05$). In terms of functionality, the loss of fatigue resistance observed in the tibialis anterior of untreated old animals (-27%; $p < 0.01$ vs untreated adults) tended to be compensated when the animals received BIO103, for which this loss was limited to 14%. Finally, and more importantly, we showed that old BIO103-treated animals ran significantly faster than old control animals ($p < 0.05$) and that BIO103 compensated for the significant aging-related loss of running velocity. **Conclusions:** BIO103, a new orally available hemisynthetic derivative of 20-hydroxyecdysone, displayed both in vitro and in vivo anabolic properties, which translated into improved functional performance in old animals. These investigations demonstrate the potential of BIO103 in improving skeletal muscle quality in aging mammals, and warrant further studies towards its development as a drug candidate for the treatment of sarcopenia.

P218- RELATION OF SERUM 25-HYDROXYVITAMIN D STATUS WITH SARCOPENIA IN CHILEAN OLDER PEOPLE. B. Angel, L. Lera, C. Albala, H. Sánchez, C. Marquez (Department of Public Health Nutrition, Institute of Nutrition and Food Technology (INTA), University of Chile)

Background: Sarcopenia is defined as the loss of muscle mass and strength with ageing and can increase the risk for functional limitation and mortality. Severe vitamin D deficiency causes pain and loss of muscle mass resulting in weakness, which can be improved with vitamin D treatment. However, it is not clear whether an increased vitamin D deficiency impairs physical / muscular performance. Some data suggest that vitamin D deficiency may affect muscle function and is associated with sarcopenia. **Objective:** to study the association of sarcopenia with vitamin D (vitD) Insufficiency/deficiency in Chilean older people. **Method:** cross sectional design of baseline measurements from ALEXANDROS cohorts designed to study disability associated with obesity in community dwelling people 60y and older living in Santiago/Chile. At baseline 947 subjects (69% women) from 2372 participant had the necessary measurements for the identification of sarcopenia and vitD. Anthropometric measurements, handgrip strength, mobility and physical performance tests were performed. Appendicular skeletal muscle mass index (ASMMI), was calculated as ratio of appendicular skeletal muscle mass (ASMM) and height² (kg/m²). Nutritional status and obesity were defined according to WHO criteria. Sarcopenia, Pre-sarcopenia and severe sarcopenia were defined using the European Working Group on Sarcopenia in older people (EWGSOP) algorithm. ASMM was estimated with a Chilean populations prediction model. Low ASMMI was defined with cut-off points validated for the Chilean populations previously described. Low Muscle strength was defined by hand dynamometry ≤ 27 kg in men and 15 kg in women (≤ 25 th percentile). For physical performance we used 3m walking speed (m/s). VitD insufficiency was defined with serum levels of 25-hydroxyvitamin D between 50-74 nmol/l and vitD deficiency of 25-hydroxyvitamin D < 50 nmol/l. Comparison of variables was done with t-test and Pearson chi². Logistic regression was performed to study the association of sarcopenia with vitD adjusted by age, gender and nutritional state. **Results:** Prevalence of sarcopenia was 13.6% (95% CI: 11.3% to 15.9%) much higher in women than men (15.5% vs 9.7%, $p = 0.021$); pre-sarcopenia was identified in 18% (95% CI: 15.7% to 20.8%)

of the sample; no subjects with severe sarcopenia were identified. VitD deficiency was present in 45.2% of the sample, similar in both sexes. The prevalence of obesity was 32.7% higher in women (36%) than in men (25.3%), $p = 0.005$. VitD deficiency was associated with nutritional state being obese the most vitD deficient. After logistic regression analysis adjusted by age, gender and nutritional state, insufficiency of vitD was associated with sarcopenia OR=1.79 95%CI 1.08-2.98; $p = 0.024$. **Conclusion:** sarcopenia and vitD insufficiency/deficiency were highly prevalent in Chilean older people. Considering that vitamin D may play a role in the development and progression of sarcopenia; that this syndrome is a condition of high risk for health in the older people and vitD supplementation is safe, relatively inexpensive and well tolerated, these results could indicate that it is possible to consider vitD supplementation in the Chilean older people with sarcopenia. Funding: FONDEF Grant IT15i10053 and FONDECYT Grant 1130947.

P219- THE SHORT PERFORMANCE PHYSICAL BATTERY PREDICTS HOSPITALIZATION AND EMERGENCY DEPARTMENT USE IN A GERIATRIC OUTPATIENT CLINIC. A.M. Negm^{1,2}, C.C. Kennedy¹, J.M. Pritchard^{1,3}, S. Karampatos¹, G. Ioannidis^{1,4}, V.Vastis¹, A. Giangregorio¹, S. Marr^{1,4}, C. Patterson^{1,4}, B. Misiaszek^{1,4}, T. Woo^{1,4}, A. Pizzacalla³, K. Rockwood⁵, L. Thabane⁶, A. Papaioannou¹ (1. GERAS Centre, Hamilton Health Sciences, Canada; 2. School of Rehabilitation Sciences, McMaster University, Canada; 3. Department of Kinesiology, McMaster University, Canada; 4. Division of Geriatric Medicine, McMaster University, Canada; 5. Division of Geriatric Medicine, Dalhousie University, Canada; 6. Department of Clinical Epidemiology & Biostatistics, McMaster University, Canada)

Introduction: Identifying predictors of emergency department (ED) visits and hospitalizations may reduce healthcare costs and improve quality of life. In Canada, 21% of ED visits and 38% hospitalizations are made by older adults. The short performance physical battery (SPPB) has shown to be a validated and predictive measure of hospitalization in people aged 80 or older. Previous research has shown that improving SPPB scores by 1-2 points results in clinically meaningful change, which can decrease the risk of disability among older adults. The objective of this study was to evaluate the relationship between a clinical evaluation with the SPPB and ED visits and hospitalizations within one-year. **Methods:** This was a prospective, observational, one-year study. Patients attending a regional outpatient geriatric clinic in Hamilton, Ontario were recruited. Only patients who were non-English speaking (without translator) or were unable to provide informed consent were excluded. Physical function was assessed using the SPPB, which measures gait speed, chair stands and balance tests. The scores range from 0 (worst performance) to 12 (best performance). Frailty was evaluated using the Fried Frailty Phenotype (FFP). Participants who had 1 or 2 deficits were categorized as pre-frail and 3 or more deficits were categorized as frail. Other clinical assessments included the Lawton Instrumental Activities of Daily Living (IADLs) (scores range from 0 (worst performance) to 14 (best performance)), and the Timed Up and Go (TUG) (measured in seconds, higher means worse performance). **Dependent Variables:** Electronic medical records of the study participants were reviewed to identify their ED visits and hospitalizations within one-year of study entry. Binary multivariate logistic regression analyses were used to determine predictors of ED visits and hospitalizations. Odds ratios (ORs) and 95% confidence intervals are reported. **Results:** Overall, 191 patients were approached and 120 were enrolled. Our study cohort was 53% female, and had

a mean (SD) age 80.6 (6.3) years; 57% were pre-frail and 36% were frail. The mean of SPPB score was 6.3 (3.2). Within one year after the clinical assessment, 54 (45%) visited ED, 35 (29%) visited ER and were admitted to a hospital, 42 (35%) were hospitalized, and 13 (11%) were hospitalized more than once. Baseline SPPB score was a significant independent predictor of ED visits and hospitalizations over the one-year study period (Table). Per one-unit increase in SPPB score (indicating higher function) we observed an approximate 15% decrease in the odds of being hospitalized or visiting the ED. **Conclusion:** In people attending a regional outpatient geriatric clinic, the SPPB was a good predictor of ED visits and hospitalizations within one-year of a clinical assessment. Other measures (FFP, Lawton IADLs and TUG) may not have been significant predictors due to small sample size and missing data, however may be additional factors that are clinically relevant.

Characteristic	Hospitalization		Emergency Department Visits	
	Unadjusted	Adjusted	Unadjusted	Adjusted
SPPB	0.84 (0.73-0.96)*	0.89 (0.76-1.04)	0.86 (0.76-0.98)*	0.92 (0.79-1.07)
Age	1.1 (0.98-1.12)	1.0 (0.93-1.07)	1.06 (1-1.13)	1.02 (0.95-1.09)
Gender (male vs female)	0.7 (0.33-1.49)	0.79 (0.34-1.86)	0.52 (0.25-1.07)	0.56 (0.25-1.26)
Fried Frailty Phenotype (frail versus not frail)	2.6 (1.15-5.89)	2.0 (0.72- 5.6)	2.11 (0.95-4.66)	1.84 (0.68-5)
Lawton Instrumental Activity of Daily Life [†]	0.92 (0.82-1.04)		0.91 (.081-1.02)	
Timed Up and Go test [†]	1.06 (0.99-1.12)		1.04 (0.98-1.12)	

SPPB = Short Performance Physical Battery; * = Statistical Significant (P < 0.05); † = Excluded from the multivariable logistic regression analyses due to missing data

P220- MAXIMAL KNEE-EXTENSION STRENGTH MEASURES INDICATING SARCOPENIA PREDICTS HEALTH OUTCOME IN OLDER PATIENTS WITH HIP FRACTURE. M. Tange Kristensen¹, L. Kronborg² (1. *Physical Medicine and Rehabilitation Research – Copenhagen (PMR-C), Departments of Physical Therapy and Orthopedics, Hvidovre Hospital, University of Copenhagen, Denmark*; 2. *Physical Medicine and Rehabilitation Research – Copenhagen (PMR-C) and Clinical Research Centre, Hvidovre Hospital, University of Copenhagen, Denmark*)

Background: Findings of a recent paper indicate that a simple lower limb strength assessment is just as good as or better than e.g. measures of muscle mass in predicting health-related outcome measures in older people (1). We therefore examined if the same sex-specific knee-extension strength cut-points indicating sarcopenia provided similar associations with health outcomes when used in patients early after hip fracture surgery. **Method:** 19 men and 62 women with a mean (SD) age of 79.4 (7.7) years (35 with a cervical femoral neck- and 46 a trochanteric hip fracture), of whom the majority had a high prefracture functional level. Maximal isometric knee-extension strength (non-fractured limb) using cut-points from the study by Menant et al (1), being the lowest sex-specific quintile; < 23.64 kg for men and < 15.24 kg for women were compared with outcomes of 10 meter gait speed, Timed Up and Go test (TUG) for functional mobility, Cumulated Ambulation Score (CAS) for basic mobility, and the Short Falls Efficacy Scale International for fear of falling, at the time of acute hospital discharge (mean of 8.7 (1.8) days post-surgery). **Results:** The average knee-extension strength was 28.0 (9.1) kg and 18.6 (7.5) kg, respectively, for men and women, of which 6 (32%) and 23 (37%) were classified as sarcopenic, and associated with significantly (p < 0.04) worse outcome for all assessments. Thus, patients with strength signs of sarcopenia used more post-surgery days to achieve an independent CAS score (mean

of 1.4 [95%CI, 0.1-2.6] days) walked slower (mean of 0.16 [0.07-2.6] m/s), used longer time for performing the TUG (mean of 8.0 [2.8-13.1] seconds), and expressed a greater fear of falling (3.7 [1.3-6.1] points) compared to those with knee-extension strength measures above the cut-points. Of importance, differences are larger than that considered a minimal clinical important difference for all outcomes. The presence of sarcopenia was similar for the two hip fracture type groups. **Conclusion:** Our findings of lower limb strength assessments indicating sarcopenia being associated with functional performance and fear of falling in patients with hip fracture seem to confirm those of Menant et al (1) in older people without fracture. A limitation is that the patients studied, with few exceptions, all had a high pre-fracture level. Thus, the presence of sarcopenia in a consecutive group of patients with hip fracture will without doubt be markedly larger than the one third, reported in the present non-consecutive series. The latter, underlines the importance of new studies focused at improving muscle strength also for the group of older patients with hip fracture. 1. Menant JC et al. Strength measures are better than muscle mass measures in predicting health-related outcomes in older people: time to abandon the term sarcopenia? *Osteoporos Int* 2016.

P221- MEASURING THE EFFECTS OF DIFFERENT MODELS OF FRAILTY ASSESSMENT IN HOSPITAL. L. Morrison¹, M. Costello¹, C. Judge¹, S. Robinson¹, R. O’Caoimh^{1,2} (1. *Department of Geriatric Medicine, University Hospital Galway, Newcastle rd, Galway City, Ireland*; 2. *Health Research Board Clinical Research Facility Galway, National University of Ireland, Galway, Geata an Eolais, University Road, Galway, Ireland*)

Background: The National Clinical Programme for Older People in Ireland recommends the implementation of methods to identify frailty in the Emergency Department (ED) and integrate the care of frail older adults between primary, secondary and social care. Although several models of frailty assessment teams have been piloted in Ireland, research into their effectiveness is limited. A consultative model of nursing and Health and Social Care Professional (HSCP) assessment and intervention of frail older adults admitted into the ED was first developed. This was followed by the addition of a Consultant Geriatrician allowing ‘take over of care’ and medical management. The aim of this study is to (1) evaluate the effects of specialised frailty assessment on healthcare outcomes of frail older people admitted through an ED compared to usual care and (2) to assess the potential benefits of integrating a medical team with an existing nursing and HSCP shared leadership model. **Method:** Using an interrupted time series design we examined differences in hospital length of stay (LOS) and 30-day readmission rates for patients under (a) the initial nursing/HSCP consultation model (Period 1: 14 days in March 2016) and (b) the newly developed medical/nursing/HSCP ‘take-over-of-care’ model (Period 2: 14 days in October 2016), compared to usual care (medical admission with HSCP as required). Consecutive frail older adults, aged ≥75 years, who were medically stable and admitted through a single university hospital ED on service operational days were included. Frailty was screened using the PRISMA-7 (cut-off ≥3) and patients were confirmed as frail using Comprehensive Geriatric Assessment. **Results:** During Period 1, 26 frail inpatients meeting the inclusion criteria were reviewed and managed under the nursing/HSCP model. Another 54/85 (64%) patients, admitted during the same period, screened positive but received usual care due to limited service capacity and exclusionary criteria. The median LOS for patients under the nursing/HSCP model was 9 days (12-4=+/-8), similar to those receiving routine care: 10 days (20-5=+/-15), z=-0.7, p=0.5. The 30-day readmission rates were also similar: 5/26 (19%) compared to 13/54 (24%), respectively, $\chi^2=0.28$, p=0.6. During Period 2, 20

inpatients were managed under the combined medical/nursing/HSCP 'take-over-of-care' model, while a further 54/80 (67.5%) patients were confirmed as frail but again received usual care. The median LOS of those taken over was 7 days (9-5=+/-4) compared to 8.5 days for those receiving usual care (12-6=+/-6), $z=-1.2$, $p=0.23$. Likewise, no significant differences in 30-day readmission rates were found. **Conclusions:** While no statistically significant differences in outcomes were found with either model, both showed trends towards reduced LOS and readmission rates over those receiving usual care, suggesting that targeting frail older adults (≥ 75) directly after admission into an ED may improve healthcare outcomes. Further research with larger samples measured over prolonged periods is required to overcome potential sources of bias.

P222- THE PREVALENCE OF ATRIAL FRIBRILLATION IN FRAIL OLDER ADULTS IN LONG-TERM CARE. L. Morrison¹, E. Igras², A. Ramesh², B. Power³, K. O'Connor⁴, R. Liston², R. O'Caoimh^{1,5} (1. Department of Geriatric Medicine, University Hospital Galway, Newcastle rd, Galway City, Ireland; 2. Kerry General Hospital, Rathass, Tralee, Co Kerry, Ireland; 3. St. Columbanus Home & Killarney Community Hospital, Killarney, Co Kerry, Ireland; 4. Mercy University Hospital, Grenville place, Cork City, Ireland; 5. Health Research Board, Clinical Research Facility Galway, National University of Ireland, Galway, Geata an Eolais, University Road, Galway, Ireland)

Background: Atrial fibrillation (AF) increases in prevalence among frail older adults and is associated with an increased risk of stroke and mortality. A selection of risk prediction models are available to determine the risk of stroke with AF without anticoagulation and the risk of bleeding with anticoagulation. While oral anticoagulation with vitamin K antagonists (or direct oral anticoagulants) is challenging for older persons due to overlapping stroke and bleeding risk factor profiles, this is exacerbated for frail older adults. Further, it is unknown if these instruments are useful with frail patients in AF. Given this, we compared the utility of stroke and haemorrhage risk-prediction instruments in the treatment of AF among frail older adults in nursing homes. **Method:** All patients in four high dependancy nursing homes in a single country in Ireland were assessed for frailty with a Clinical Frailty Scale (CFS), a cut-off score of ≥ 5 was regarded as frail. Patients not screening as frail were excluded. The prevalence of AF was assessed by ECG and chart review was used to confirm stroke and bleeding risk factors and the use of anti-platelet medications and anticoagulants. **Results:** In total, 225 patients were included. The median CFS score was 7 (interquartile ± 0). The distribution of CFS scores was similar irrespective of AF status. The median Barthel Index score 30/100 and Standardised Mini-Mental State Examination score 18/30. Of these, 70 (point prevalence of 31%) had ECG demonstrated AF. Chart review showed that 59 residents (26%) had documented AF. Of those currently in AF, 43 had 'known persistent' AF and 27 occult AF. There were 16 cases of paroxysmal AF, diagnosed previously with AF but with sinus rhythm on ECG. Of those with documented AF, 15 were anticoagulated (all warfarin), a prevalence of 25%. No patients with occult AF were anticoagulated. Occult cases had a lower burden of comorbidity than documented cases, particularly stroke ($p=0.04$) and hypertension ($p=0.04$), suggesting that would be equally eligible for anticoagulation if their AF was known. **Conclusion:** The prevalence of AF among frail patients in long-term care in Ireland is high compared to other studies in similar settings, with large numbers of occult cases evident. While the prevalence of anticoagulation was low, it was within the range seen in other studies and reasonable in the context of residents high dependency levels. Given the improving safety profile of direct oral

anticoagulants This study supports the use of ECG surveillance of AF, especially as newer agents that do not require INR monitoring become increasingly available.

P223- STUDY PROTOCOL: PREVALENCIA Y FACTORES ASOCIADOS A SARCOPENIA Y FRAGILIDAD EN RESIDENCIA. NUTRIR STUDY (NUTRITIONAL TREATMENT INDICATION IN RESIDENTS STUDY). V. Malafarina^{1,2}, F. Gomez-Busto³, S. Cabrerizo⁴, V. Andia Muñoz⁵, N. Fernández-Gutierrez⁶, I. Artaza-Artabe⁶ (1. Department of Nutrition, Food Science and Physiology, School of Pharmacy, University of Navarra, Pamplona; 2. Department of Geriatrics, Complejo Hospitalario de Navarra, Pamplona; 3. Department of Geriatrics, Residencia San Prudencio, Ayuntamiento de Vitoria-Gasteiz, Alava; 4. Nutritionist; 5. Nutritionist, Residencia San Prudencio, Ayuntamiento de Vitoria-Gasteiz, Alava; 6. Department of Geriatrics, Orue Centro Socio Sanitario, Grupo Igurco, Amorebieta, Bizkaya)

Introduction: Sarcopenia, defined as loss of mass and muscle function is a process that is associated with age. Few studies have assessed prospectively in elderly as the loss of muscle mass influences the development of dependence. The main objective of this study is to estimate the prevalence of sarcopenia and fragility in nursing-home elderly. The secondary objective is to assess whether the presence of both sarcopenia and fragility is associated with the development of disability. **Methods:** Prospective, multicentric, observational study with 4 months of follow-up. Subjects aged 65 years or over, living in nursing homes, with MNA-SF ≤ 11 have been included. Residents who receive tube feeding, those who are in terminal condition have been excluded. Residents diagnosed with advanced dementia, Stage 7 of the Reisberg Global Impairment Scale, have also been excluded from the study. For the diagnosis of sarcopenia, the EWGSOP criteria have been used. The study of body composition has been performed with BIA. For the gait speed, the test of 4 meters has been used. The grip strength of the hand has been measured with a JAMAR portable digital dynamometer. For the diagnosis of fragility, the FRAIL-NH scale has been used. **Preliminary results:** The characteristics of the 261 residents analyzed (69% female) are presented in Table 1. The gait speed test was available in 122 residents, of which 112 residents (91.8%) had values indicative of reduced gait speed (< 0.8 m / s). For the assessment of strength, we used a digital dynamometer (205 residents), 202 had low muscle strength (98.5%) using EWGSOP cut points, and 196 (95.6%) using FNIH cut points. Of the 232 patients in whom muscle mass measurement (BIA) was available, 174 (75%) had indicative values of low muscle mass, according to the cut points proposed by the EWGSOP. For the diagnosis of sarcopenia (n 245) we used the criteria proposed by the EWGSOP. There were 71 sarcopenia patients (29%), 17 had pre-sarcopenia (6.9%), 82 moderate sarcopenia (33.5%), and 75 severe sarcopenia (28.7%). We compared the prevalence of sarcopenia using the criteria proposed by Janssen et al. (N 232), based on the values of the muscular mass index. There were no sarcopenia 58 residents (25%), 81 moderate sarcopenia (34.9%) and 93 severe sarcopenia (40.1%). The prevalence of sarcopenia was higher in males than in females (Table 2). Age was higher in residents diagnosed with sarcopenia, using the Janssen criteria (Table 2). For the diagnosis of fragility we have used a specific validated scale for the elderly in residence, the FRAIL-NH scale. Of the 229 residents, we observed a prevalence of fragility of 69%. **Conclusions:** Sarcopenia and frailty are very prevalent in nursing home adults. The relationship between nutrition and both sarcopenia and fragility is very important. Reference: Malafarina V, et al. JAMDA 2013;14(1):10-17. Cruz-Jentoft AJ, et al. Age Ageing 2010;39(4):412-423. Kaehr

E, et al. JAMDA 2015;16(2):87-89. Malafarina V, et al. Maturitas 2012;71(2):109-14. Artaza-Artabe I, et al. Maturitas 2016;93:89-99. Camina-Martin MA, et al. Maturitas 2015;81(3):414-9.

Table 1
Baseline characteristics of residents

	Total (n 261)	Women (n 181)	Men (n 80)
Age (y)	85.6±7.2	86.8±7.1	82.9±6.9
MNA-SF	9 (7-11)	10 (7-11)	9 (6.5-10)
Weight (Kg)	63.9±13.5	62.5±13.6	67.1±12.8
Height (m)	1.57±0.09	1.54±0.07	1.65±0.08
BMI (Kg/m ²)	26.0±5.4	26.6±5.8	24.6±4.2
Barthel	42 (15-65)	40 (13-60)	47 (27.5-70)
MMSE	16.3 (11-22)	15.4 (10.3-20.6)	18.2 (12.5-25.4)

Data are presented as Median (IQR) or mean ± SD.ç

Table 2
Prevalence of sarcopenia

	EWGSOP (n 245)				Janssen (n 232)		
	No Sarcopenia	Pre-Sarcopenia	Mild Sarcopenia	Severe Sarcopenia	No Sarcopenia	Mild Sarcopenia	Severe Sarcopenia
Women n(%)	62 (36.5%)	11 (6.5%)	55 (32.4%)	42 (24.7%)	41 (25.2%)	59 (36.2%)	63 (38.7%)
Men n(%)	9 (12%)	6 (8%)	27 (36%)	33 (44%)	17 (24.6%)	22 (31.9%)	30 (43.5%)
Age, y	85.4	87.5	83.7	85.6	81.6	85.1	87.4

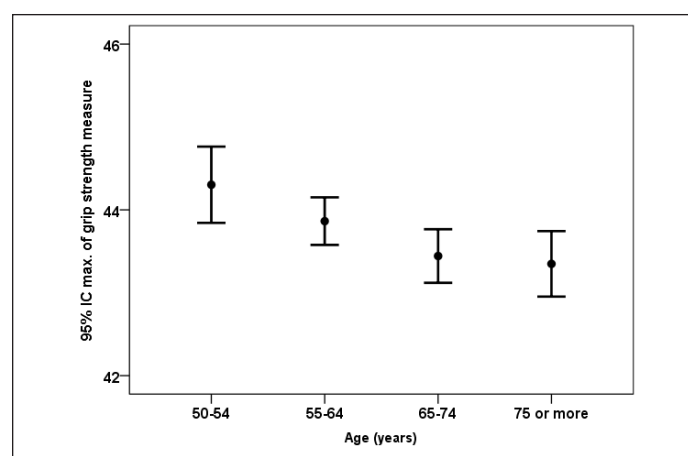
P224- CARDIOVASCULAR RISK FACTORS AND GRIP STRENGTH IN OLDER ADULT MALES ACROSS EUROPE.

J. Lourenço^{1,2,3}, A. Serrano¹, C. Afonso², P. Freitas^{5,6}, C. Paúl⁷, E. Costa⁴ (1. USF Pedras Rubras, Maia; 2. Faculty of Nutrition and Food Sciences, University of Porto; 3. CINTESIS, Porto; 4. UCIBIO, REQUIMTE and Faculty of Pharmacy, University of Porto, Porto; 5. Department of Endocrinology, Diabetes and Metabolism, Centro Hospitalar São João, Porto, Portugal; 6. Faculty of Medicine, University of Porto, Porto, Portugal; 7. ICBAS, University of Porto, Porto, Portugal)

Background: Grip strength (GS) measurement has been recommended by the European Working Group on Sarcopenia in Older People (EWGSOP) to assess muscle strength. GS has been recognized as a good predictor of disability, lower health-related quality of life and higher mortality, including cardiovascular-related mortality. There is also evidence supporting that GS declines with increasing age. Age-related decline in muscle functioning may result from the presence of chronic, low-level inflammation. The aim of this study is to assess the association between GS and cardiovascular risk factors in a population-based sample of European males aged 50 or older. The identification of factors associated with poorer performed in GS in older adults can result in the development of effective interventions to prevent sarcopenia. **Method:** In this work, we used data from SHARE (Survey of Health, Ageing, and Retirement in Europe) project, wave 4. SHARE is a European cross-national panel database, which include detailed questions on demographics, health, social and economic status from representative samples of community-based population aged 50 years and older, from 16 European countries (Austria, Belgium, France, Germany, Netherlands, Switzerland, Czech Republic, Hungary, Poland, Denmark, Sweden, Estonia, Spain, Portugal, Italy, Slovenia). Male subjects older than 50 years of age from this large survey were selected. The wide scope of information in the SHARE project led us to include a large number of putative explanatory variables, such as sociodemographic (age, gender and

education) and health. Age was calculated as the difference between the year 2010 and the date of birth. Gender response generated a dichotomous variable, male or female. The education variable results from the response to the question “years of education”, which has been dichotomized as ≤ 12 years and as > 12 years of education. Self-reported presence or absence of physician-diagnosed vascular diseases (heart attack, high blood pressure or hypertension, high blood cholesterol, stroke, diabetes or high blood sugar) as well as smoking status (current smoker or former), were recorded. The variable “number of chronic diseases” was based on the number of chronic diseases reported by each individual, dichotomized by ≤ 2 or >2 chronic diseases. BMI was calculated from self-reported height (centimeter) and weight (kilograms). Individuals with BMI below 18.5 were excluded. A hand dynamometer was used to access GP. Valid measurements were defined as the values of two measurements in one hand that differed by less than 20 kg. The exclusion criteria included GS measurements with values =0 kg or C100 kg or if GS was only measured once in one hand. **Results:** From a total of 58 489 individuals that have participated in wave 4 SHARE survey, we selected non-institutionalized males with 50 years old or more, that answered all of the questions included in this work. Accordingly, we included 13942 males in this analysis. As showed in figure a significant decrease in GP was found with increasing age. Analyzing all countries together and using multiple logistic regression analysis, we found a significant association between lower GS and increasing age, high number of chronic diseases, lower BMI, lower number of years of education, smoker or former, diabetes or hyperglycemia, history of previous heart attack or stroke, and high blood pressure. **Conclusion:** Our results confirm that decrease in GP is associated with increasing age in older adult males across Europe, being associated with multiples factors, most of which that can be prevented or treated, namely cardiovascular risk factors.

Figure 1
Unadjusted mean maximum grip strength by age groups



P225- ASSOCIATION BETWEEN THE CROSS-SECTIONAL AREA OF THE THIGH QUADRICEPS AND THE HISTORY RATES OF SEVERAL DISEASES.

Y. Matsui¹, M. Takemura¹, A. Harada¹, M. Tomita², R. Otsuka², F. Ando³, H. Shimokata⁴ (1. Department of Orthopedics, National Center for Geriatrics and Gerontology, Japan; 2. Section of NILS-LSA, National Center for Geriatrics and Gerontology, Japan; 3. Department of Sports and Health Sciences, Faculty of Health and Medical Sciences, Aichi, Shukutoku University, Japan; 4. Graduate School of Nutritional Sciences, Nagoya University of Arts and Sciences, Japan)

Introduction: We have reported the utility of the mid-thigh CT images as a new evaluation methods for sarcopenia. Sarcopenia has been suggested to be a factor of functional motility disorder and be associated with various diseases. The aim of this study is to clarify the importance of the quadriceps quantity for having several popular diseases. And here we examined the associations between muscle mass at the femoral region, particularly the quantity of the quadriceps femoris muscle, which remarkably decreases with age in the middle and old age periods, and medical history rates according to sex. **Methods:** The subjects were the participants of the 7th wave of NILS-LSA (National Institute of Longevity Science-Longitudinal Study for aging) which was conducted in the National Center for Geriatrics and Gerontology, Japan. The data of 2,083 randomly selected local residents (1,052 men 1,031 women: mean age, 60.8 years, 40–91 years). The cross-sectional area of the quadriceps femoris muscle was measured on computed tomography at the center of the thigh (intermediate position of superior pole of the patella and inguinal crease) by using the Quick Grain software and classified into sex-stratified tertiles. Also, we examined through questionnaire whether the participants have present or past histories of some diseases or not. The history rates of high blood pressure, diabetes, dyslipidemia, stroke, and ischemic heart disease were examined according to the tertiles and statistical analyses were made by using software, SAS ver.9.3 to identify trends. The analyses were conducted with and without the adjustment for age. The latter was performed by Cochran-Mantel-Haenszel method, dividing subjects into five age groups of 40s, 50s, 60s,70s and 80s. **Results:** The history rates of the first, second, and third tertile for high blood pressure were 40.6%, 28.9%, and 28.4%, respectively for men, and 36.4%, 24.2% and 18.6%, respectively for women, showing that among those with smaller cross-sectional areas in both sexes had high history rates of high blood pressure (both $p < 0.01$). As for diabetes, history rates of the tertiles were 12.4%, 6.0% and 6.8%, respectively, for men, and 5.8%, 7.9% and 3.8%, respectively, for women, showing the same trend only in men ($p < 0.01$). As for dyslipidemia, history rates of the tertiles were 18.3%, 20.9% and 19.3%, respectively, for men, and 29.7%, 23.9% and 15.4%, respectively, showing the same trend only in women ($p < 0.05$). As for ischemic heart disease, they were 10.0%, 3.4% and 4.0% respectively, for men, and 5.0%, 3.2%, and 1.5% for women, showing the same trend in both sexes (both $p < 0.05$). And as for stroke, they were 7.4%, 2.0% and 2.3%, respectively, for men, and 3.5%, 3.8% and 3.5%, respectively, for women, showing the same trend only in men ($p < 0.05$). These results, without an adjustment for age, indicated that those people who had lower muscle mass tended to have these metabolic diseases in both sexes, although the trend differed according to sex. In the meantime, the results were mostly varied after the adjustment for age. Namely, statistically significant similar trend were only found in the men's history rates of high blood pressure and dyslipidemia among the tertiles (both $p < 0.05$). (As for high blood pressure, history rates of the tertiles were 8.0%, 28.0%, and 64.0% in 40s, 9.5%, 28.6% and 61.9% in 50s, 33.9%, 40.9% and 25.2% in

60s, 60.8%, 25.5% and 13.7% in 70s, and 86.8%, 7.9% and 5.3% in 80s. And as for dyslipidemia they were 3.7%, 33.3% and 63.0% in 40s, 4.2%, 39.6% and 56.3% in 50s, 32.4%, 39.7% and 27.9% in 60s, 59.6%, 31.9% and 8.5% in 70s, 73.3%, 20.0% and 6.7% in 80s.)

Conclusions: This study showed that a tendency for both men and women with smaller cross-sectional areas of the quadriceps femoris to have high history rates of high blood pressure and ischemic heart disease (only men, diabetes and stroke; only women, dyslipidemia) when adjustment for age were not conducted, while after the adjustment for age were performed, these tendencies disappeared mostly except for men's high blood pressure and dyslipidemia.

P226- IS REDUCED AMP ACTIVATED PROTEIN KINASE ACTIVITY IMPLICATED IN AGE-RELATED MITOCHONDRIAL DYSFUNCTION IN HUMAN SKELETAL MUSCLE?

J.A Norman^{1,2,3}, G.J. Kemp^{1,3}, M. Trenell^{1,4}, D.J. Cuthbertson^{1,3} (1. MRC-Arthritis Research UK Centre for Integrated research into Musculoskeletal Ageing (CIMA); 2. University Hospital Aintree, Institute of Ageing and Chronic Disease, University of Liverpool, UK; 3. Magnetic Resonance And Image Analysis Research Centre (MARIARC), Liverpool, UK; 4. Institute of Cellular Medicine, MoveLab, University of Newcastle, UK)

Introduction: Ageing skeletal muscle is associated with a reduction in myofibre size and an impaired oxidative capacity. Ageing muscle is characterised by mitochondrial dysfunction and a pro-inflammatory environment. 5-AMP activated protein kinase (AMPK) is central for maintaining metabolic homeostasis, significant in initiating mitochondrial bioenergetic pathways. We tested the hypothesis that AMPK phosphorylation is impaired during exercise in older compared with younger human skeletal muscle and that it may underlie age-related mitochondrial dysfunction. **Methods:** 6 Young (22 yrs \pm 3, BMI 24.9 \pm 3.8) and 6 older (64 yrs \pm 3, BMI 28.2 \pm 4.9) healthy, untrained males underwent a 40-min cycling protocol at 60% of their peak oxygen uptake (VO₂ peak). Skeletal muscle biopsies were taken from the vastus lateralis prior, immediately post and 60 mins post exercise. Protein expression of AMPK α 1, AMPK α 2, AMPK γ will be assessed through Western blotting to determine the extent of kinase activity and phosphorylation across the 3 time points. The mitochondria were assessed across multi-levels: from the molecular level (mtDNA copy number), the skeletal muscle level through 31P MR spectroscopy, to whole body level through peak oxygen consumption (VO₂) during a graded exercise assessment, providing a comprehensive analysis of mitochondrial function. **Preliminary results:** Older adults had a lower skeletal muscle mass than younger adults (56.6 \pm 5.3 vs. 59.1 \pm 5.76 g respectively) and lower cardiorespiratory fitness (19.42 \pm 5.3 vs. 32.6 \pm 6 ml.min.kg⁻¹ respectively). The PCr recovery rate constants were lower in older vs younger adults (1.6 \pm 0.46 vs. 1.97 \pm 0.57 min⁻¹) suggesting reduced mitochondrial function. **Conclusion:** Older adults have evidence of impaired mitochondrial function. We will determine the role of AMPK dysregulation in this mitochondrial function.

P227- DOES SEDENTARY BEHAVIOUR CAUSE GREATER MUSCULOSKELETAL & METABOLIC DECLINE IN OLDER VS. YOUNG ADULTS? J.A. Norman^{1,2,3}, V.S. Sprung^{2,3}, K.A. Bowden-Davies^{2,3}, G.J. Kemp^{1,3}, M. Trenell^{1,4}, D.J. Cuthbertson^{1,3} (1. MRC-Arthritis Research UK Centre for Integrated research into Musculoskeletal Ageing (CIMA); 2. University Hospital Aintree, Institute of Ageing and Chronic Disease, University of Liverpool, UK; 3. Magnetic Resonance And Image Analysis Research Centre (MARIARC), Liverpool, UK; 4. Institute of Cellular Medicine, MoveLab, University of Newcastle, UK)

Background: Ageing is associated with the progressive deterioration of metabolic health and musculoskeletal function. Physical inactivity is an important independent risk factor for ill health, with chronically reduced levels of physical inactivity being associated with reduced metabolic health and accelerated musculoskeletal decline (1, 2). The extent to which the detrimental effects of physical inactivity differ across the human life-span remains unknown. We aim to determine the relative sensitivity of older vs. younger adults to the effects of sedentary behaviour by an experimental model of short-term (14 days) of physical inactivity. **Method:** 32 healthy male and females (age 18- 75y), who are physically active ($\geq 10,000$ steps per day) have undergone comprehensive assessments of i) musculoskeletal function through strength, power and gait speed ii) physical activity iii) regional body composition, leg muscle volume and bone density using MRI and DEXA scans, iv) mitochondrial function using 31P MRS v) insulin sensitivity and vi) cardiorespiratory fitness using V02 peak analysis. Assessments were completed at i) baseline ii) following a 14-day reduced step reduction protocol ($\sim 1,500$ steps/day) and iii) 14-days after subjects resume their previous activity levels ($\geq 10,000$ steps/day). Muscle biopsies taken at each three time points are to undergo examination of changes in mitochondrial function and in protein turnover. **Results:** To date 20 young (age 26y \pm 5, BMI 24.0 \pm 3.1 kg.m⁻²), 11 middle-aged (53y \pm 6.2, BMI 27.1 \pm 6.1 kg.m⁻²) and 10 older adults (65y \pm 3, BMI 27.4 \pm 4 kg.m⁻²) have completed the baseline assessments. Of those, 32 participants (young n=15, middle-aged n=9, older n=8) have successfully completed the step reduction protocol, reducing their activity by 75-95% (n=27) or 59- 65% (n= 5). Baseline data display an expected age-related decline despite similar physical activity levels. **Conclusion:** Despite displaying similar physical activity levels at baseline, older subjects display an expected age-related decline in musculoskeletal and metabolic health. This could mean that our older population will be more adverse the effects of sedentary behaviour than the younger population. Analysis is in the process of completion. 1. Lee, D. C., Artero, E. G., Sui, X., & Blair, S. N. (2010). Mortality trends in the general population: the importance of cardiorespiratory fitness. *Journal of Psychopharmacology*, p 27-35. 2. Roubenoff, R., (2003) Sarcopenia: effects on body composition and function. *Journal of Gerontology A Biological Sci Med Sci* 58(11): p. 1012-1017.

P228- ELDERLY PROTEIN INTAKE IN DIFFERENT FUNCTIONAL STATUS FROM BRAZILIAN PRIMARY CARE CITY. T.J. Mendes Cassiano¹, L. Mendes Trigueiro¹, S.M.S. de Oliveira¹, M. Starling¹, A.K. Jansen², R. Ribeiro dos Santos¹ (1. Geriatrician at Núcleo de Geriatria e Gerontologia da UFMG; 2. Nutricionist at Núcleo de Geriatria e Gerontologia da UFMG, Brazil)

Introduction: Frailty is an important geriatric syndrome. Prevention and treatment of this condition are based on nutritional

and physical activity adequacy how protein intake is associated with this. The objective of this study was to analyze protein intake pattern in elderly in different functional status. **Methods:** 1054 consecutive medical records of the geriatric outpatient clinic in which a nutritionist evaluation was performed on the same day was collected. The patient was referred to from primary care and they represent mainly working class elderly. For collecting protein intake a 24-hour dietary recall was used. Kolmogorov-Smirnov test was used to evaluate normality and determine the appropriate statistical test. P-values <0.05 were considered statistically significant. **Results:** 916 elderly patients was divided into 4 groups according to functional status: robust- fully independent (n=120 patients; mean age 72.4 years; body mass index (BMI) = 28.0; calf circumference (CC)= 34.6cm), pre-frail (n=328; 74.7 years; BMI=27.45; CC=34.45cm), dependency in instrumental ADL(n=303; 78.7 years; BMI=24.25; CC=31.9) and dependency in basic ADL group (n=165; 81.3 years; BMI=18.43, CC=28.2). Results show that aging is associated with significant functionality declining. A reduction in functionality was also followed by a significant progressive decrease in body mass index, body weight, and calf circumference but pairwise Multiple Comparison Procedures using Dunn's Method did not disclose a statistical significant difference between robust and pre-frail in BMI, weight or CC. Protein intake in this population was below recommended for all groups. The median (25.75 percentiles) of total protein intake according these 4 groups were respectively 49.2g protein/day (36, 59); 50.7g (41,61); 50.4 g (38,60); and 55.4g (40,63). Others protein intake analyses did not disclose any statically difference among group also. The following comparisons were performed: protein intake in every meal, animal vs. non-animal protein source, protein intake daily deficit and protein intake/weight. Although any group didn't reach at least 25g protein in a mean meal as recommended, the lowest values were the breakfast. Roughly protein intake at breakfast for every group was around 9g. In conclusion, functionality decline was associated with reducing body mass index, body weight, calf circumference and aging. Independent of functional status protein intake is below recommended for healthy elderly, particularly at the breakfast. There is no difference in protein distribution during the day or even the protein source. An increase in elderly protein intake awareness is mandatory for prevention and treatment of this Brazilian elderly population. Data from other regions of Brazil is necessary before any generalization.

P229- CORRELATING FRAILTY WITH PATIENT REPORTED QUALITY OF LIFE IN A COHORT OF ADVANCED HEART FAILURE PATIENTS UNDERGOING TRANSPLANT ASSESMENT. R. Prichard^{1,2,3} S.R. Jha^{1,2}, J. McDonagh², F. Li Zhao³, S. Goodall³, P.M. Davidson^{2,5}, P.S. Macdonald^{1,4}, C.S. Hayward^{1,2,4}, P. Newton^{1,2} (1. Heart Transplant Program, St Vincent's Hospital, Sydney, NSW; 2. Centre for Cardiovascular and Chronic Care; 3. Centre for Health Economic Research and Evaluation, Faculty Health, University of Technology Sydney; 4. Faculty of Medicine, University of New South Wales, Sydney, NSW; 5. Faculty of Nursing, John Hopkins University, Baltimore, USA)

Aim and background: There is growing interest in assessing patient outcomes beyond survival, to better evaluate new medical and surgical treatments and assist in health resource planning and shared decision making. Frailty assessment has useful prognostic and therapeutic implications but has not been correlated with reported quality of life in advanced heart failure patients receiving treatment or assessment for heart transplant. The aim of this sub-study was to evaluate the correlation between frailty and patient reported quality of life (QOL) in advanced heart failure (AHF) patients. **Methods:** As

part of an ongoing study evaluating longitudinal changes in frailty and prQOL, we examined 40 patients who had completed both frailty and pr QOL measurements. prQOL was assessed using the EQ5D-5L and frailty using a modified Fried Phenotype, a single item measure of frailty (hand grip strength (HGS), an assessment of cognitive impairment (Montreal Cognitive Assessment - MoCA) and depression scoring using DMI-10. A patient was classified as 'cognitively frail' if $\geq 3/7$ domains were present. **Results:** 40 patients (28 M:12F; age 53 ± 13 years, range 23-77; LVEF $30 \pm 17\%$.) were assessed for frailty and completed EQ5D-5L questionnaires. Prevalence was: frail 18 (45%) and not-frail 22 (55%). Overall prQOL utility scores were 0.62 (0.21) and differed significantly between the frail and not frail groups 0.74 (0.16) vs 0.5 (0.19) $p < 0.001$. Frailty was strongly negatively correlated with pr QOL overall $r = -0.7$ $p < 0.001$. **Conclusion:** Frailty is prevalent and strongly correlated with reduced patient reported quality of life in this cohort.

P230- SINGLE FIBER JITTER LEVEL REFLECTS DECLINE IN MOTOR FUNCTION WITH AGING. T. Chung^{1,3}, J. Walston², A. Hoke³ (1. Department of Physical Medicine and Rehabilitation, Johns Hopkins University, Baltimore, USA; 2. Geriatric Medicine Division, Department of Medicine, Johns Hopkins University, Baltimore, USA; 3. Neuromuscular Division, Department of Neurology, Johns Hopkins University)

Background: Age-associated skeletal muscle weakness is a major contributing factor to an increased late life mortality and morbidity, but its neurobiology is poorly understood. Previously, we provided histological evidence of dying-back axonal degeneration of motor neurons and denervation of neuromuscular junctions (NMJ) in age-associated muscle weakness. Given this, we compared two electrophysiological measures, single fiber jitter and compound motor action potential (CMAP) in mice of different age groups, and correlated them with various physical performance measures. **Methods:** Male C57BL/6J mice were divided into two age groups: young (3-5 months old) and old (20-24 months old). Grip strength of forelimbs and all limbs, traveling and standing activity, and treadmill exercise tests were carried out to evaluate various aspects of physical strength. Two electrophysiological measures were used: compound motor action potential (CMAP) and single fiber electromyography (EMG) jitter. The various physical performance measures were correlated with CMAP and single fiber EMG jitter levels. Pearson correlation statistics and t-test were used for statistical analysis. **Results:** Various physical performance tests show decline in muscle function with aging. Consistent with our prior study results, we found significant decline in grip strength of both forelimb and all limbs. We also found that standing activities are significantly reduced in aged mice. While walking activity was reduced in the old mice group, it didn't reach the statistical significance. On treadmill test, number of shocks (NOS) was found to be significantly higher in the old mice group. Jitter level, but not CMAP, correlates negatively with grip strength and behavioral performance test results. There is a strong, negative correlation between single fiber EMG jitter level and the grip strength of both forelimbs and all limbs (forelimb grip: Pearson correlation $r = -0.5953$, $p = 0.0007$; all limb grip: Pearson correlation, $r = -0.7769$, $p < 0.0001$). However, CMAP does not correlate with any of grip strength measures (forelimb grip $p = 0.5310$; all limbs $p = 0.1746$, both Pearson correlation). Similarly, there is a significant, negative correlation between jitter level and standing activity (Pearson correlation, $r = -0.6169$, $p = 0.0188$), while CMAP does not ($p = 0.6266$). Jitter levels didn't correlate with walking or NOS; CMAP didn't correlate with any of the above measures. **Conclusion:** Single fiber EMG jitter level inversely correlates with skeletal muscle functions,

suggesting that impaired NMJ transmission may be responsible for age-associated muscle weakness.

P231- EFFECT OF NUTRITIONAL AND EXERCISE INTERVENTION ON THE SHORT PHYSICAL PERFORMANCE BATTERY (SPPB) IN ELDERLY DIAGNOSED WITH SARCOPENIA. F. Marulanda-Mejía¹, C. H. Gonzalez-Correa², P.A. Castaño-Gonzalez³ (1. Research Group on Geriatrics Gerontology, Universidad de Caldas, Manizales, Colombia; 2. Research Group on Bioelectrical impedance, Department of Basic Sciences for Health Universidad de Caldas, Manizales, Colombia; 3. Research Group on Nutrition, Metabolism and Food Security Department of Basic Sciences for Health Universidad de Caldas, Manizales, Colombia)

Background: Sarcopenia is strongly associated with impaired mobility and a 5-fold increase in risk of falls. According to the European Working Group on Sarcopenia in Older People (EWGSOP), this syndrome implies not only loss of muscle mass, but muscle strength decrease and physical performance reduction. Systematic reviews have shown that even in older adults, strength training increases muscle mass, power and strength, as well as improves objective parameters such as gait speed. It has also been suggested that an adequate supplement of high quality proteins (1.2 g/kg/day) may compensate for metabolic alterations in the elderly. It is also known that poor nutritional status is associated with muscular disorder and physical dysfunction. Furthermore, previous studies suggest a better anti-sarcopenia effect by combining exercise and nutritional supplements than by doing exercise alone. To assess physical performance, several tests have been proposed: Gait speed, Timed Up and Go test, Balance test, 6-min walk test, 400 m walk test, Stair climb test and Short Physical performance Battery (SPPB) test. However, SPPB has gained popularity and it is highly recommended for research purposes. The present study aimed to evaluate the changes of the SPPB test in sarcopenic subjects after a double intervention through nutritional support and a physical exercise program. **Methods:** In this cross sectional study, community dwelling older adults living in Manizales-Colombia were recruited. The inclusion criteria were an age of 60 to 85 years, living in the community. The recruitment of patients was made by inviting people from a database with registries of elders of the city. Elders living at nursing homes or suffering acute or chronic decompensated conditions, chronic kidney diseases and hemodialysis, limb amputation, hemiparesis or hemiplegia were excluded. The study protocol was reviewed and approved by the Ethics Committee of the Universidad de Caldas. All participants provided written consent to participate. Twenty eight sarcopenic subjects accepted to participate. Anthropometric parameters were measured according to Lohman et al. (1988) protocol. Skeletal muscle mass was estimated by Dual-energy X-ray absorptiometry (DXA) and muscle strength was evaluated by hand dynamometry. The physical performance was evaluated with the adapted Spanish Short Performance Physical test (SPPB) before and after completion of intervention. This test included timed measures of walking speed, rising from a chair and maintaining balance. The total score ranged between 0 and 12 and was calculated by summing the results of the three tasks. A SPPB score ≤ 10 indicated a low physical performance and a score > 10 indicated a normal physical performance. Intervention consisted of an oral nutritional supplementation twice a day with high biological value amino acids and vitamin D, as well as exercise, 3 times a week for 12 weeks in 60-minute sessions of repetitive muscle strengthening exercises, with load intensity to promote hypertrophy and about 60-80% of a maximal repetition. **Results:** Eighteen sarcopenic women and ten men aged 73.2 ± 5.1

participated in the study. At baseline, women had a mean BMI 22.2 ± 3.0 and men 22.1 ± 2.3 kg / m². After intervention, women increased and men decreased 0.8 kg / m² in BMI. Normality of the data was confirmed by the Shapiro Wilk test ($p = 0.95$). When the overall results were examined by a two-sided student t-test, a significant increase from a mean of 8.1 ± 1.37 to 9.36 ± 1.25 points ($p=0.0001$) in the SPPB was found. Afterwards, a Cohen test was used to examine the magnitude of the effect of the results. The relative size of Cohen's d was 0.97 which is considered as a large effect and the relative size of % change was 15, considered as a medium increase. When the SPPB test was broken down into its components, there was no normality in the data and the Wilcoxon test was applied to examine the statistical significance. There was a significant improvement in the average physical performance related to the balance from 2.2 ± 0.9 to 3.0 ± 1.0 ($p= 0.001$). The other two components showed changes that did not reach statistical significance. **Conclusion:** With a major change in the balance subtest, a significant favorable response in the overall SPPB test was found after the dual intervention for 12 weeks in sarcopenic subjects. Physical and nutritional intervention is known to have less impact on muscle mass but significantly improves strength and, more importantly, gait-related functional performance, which can reduce the risk of falls and the development of gait disability, the two most shocking complications on the general functionality and quality of life of the elderly. It is probable that with a longer time of intervention the results may be even greater, as it takes time to recover and condition people with their muscle mass compromised. Thus, more studies should be done with a longer intervention time and a larger sample size.

P232- HAND GRIP STRENGTH AFTER NUTRITIONAL AND EXERCISE INTERVENTION IN ELDERLY DIAGNOSED WITH SARCOPENIA. C.H. Gonzalez-Correa¹, F. Marulanda-Mejía², P.A. Castaño-Gonzalez³ (1. *Research Group on Bioelectrical impedance, Department of Basic Sciences for Health Universidad de Caldas, Manizales, Colombia*; 2. *Research Group on Geriatrics Gerontology, Universidad de Caldas, Manizales, Colombia*; 3. *Research Group on Nutrition, Metabolism and Food Security Department of Basic Sciences for Health Universidad de Caldas, Manizales, Colombia*)

Background: A key concept in the definition of sarcopenia syndrome is the loss of muscle mass with aging. However, what matters most is not its quantity, but its functionality. This parameter can be obtained by measuring muscle strength which has been defined as "the maximum force generation capacity of an individual". In practice, the assessment of muscle strength can be done in several ways: lower limb muscle strength, handgrip strength, and repeated chair stands test. However, handgrip strength (HGS) is the most affordable and practical test and only requires a manual dynamometer which is a portable and suitable device for clinical and field studies. Furthermore, different studies support the use of grip strength as a vital sign especially in aging adults. Due to the importance of hand strength in the evaluation, treatment and follow-up of patients with sarcopenia, this study aimed on assessing the magnitude of the changes obtained in this parameter after a combined intervention with a nutritional supplement and a regular exercise program. **Methods:** This was a cross sectional study, community dwelling older adults living in Manizales-Colombia who were recruited by phone calls made to people registered in a database of the city. Inclusion criteria were people 60 and 85 years of age and living in the community. Elderly people living in nursing homes, who had acute or chronic decompensate conditions, hemiparesis or hemiplegia, which did not allow the potential subject to perform the test, were excluded from

the study. Twenty eight subjects aged 60-85 years were assessed for sarcopenia using the definition of the European Working Group on Sarcopenia in Older People (EWGSOP) which requires the presence of low skeletal muscle mass and low physical performance and/or low strength. Sociodemographic characteristics such as age, gender, physical activity, work activity and health insurance were registered. Anthropometric parameters were measured by a trained person according to Lohman et al. (1988) protocol. Subjects were weighed to the nearest 0.1 kg with an electronic scale PP2000 (Icob-Detecto, A&D Co, Japan). Height was measured to the nearest 1 mm with the wall stadiometer Heightronic-235 (Seca, Hamburg, Germany). Skeletal muscle mass was obtained by Dual X-ray Absorptiometry (DXA) (Hologic Discovery System). Afterwards, this estimation was expressed as skeletal muscle mass index ($SMI = \text{skeletal muscle mass} / \text{height}^2$) which has been recommended for EWGSOP as a measurement of muscle mass variable. Due to the absence of Colombian data for SMI reference cut points, the data from the National Health and Nutrition Examination Survey (NHANES III) was used. HGS was measured three times by grip strength of the dominant hand using a Baseline® dynamometer and according to the American Society of Hand Therapists protocol. The average of these three measurements was used for calculations. The intervention was carried out with a combined program consisting of consuming a nutritional supplement twice a day containing 3 g of Beta-hydroxy-beta-methylbutyrate (HMB) and performing three one-hour sessions of power, aerobic and resistance training three times a week for 12 weeks. Results of HGS were analyzed by averaging the three measurements. **Results:** The Shapiro Wilk test showed normality of the data ($p = 0.051$). Therefore, a two sided student t-test was used to analyze the results in this study in which 18 women and 10 men participated in 73.2 ± 5.1 years. At baseline, women had a mean weight of 51.8 ± 7.8 kg, height 152.7 ± 4.2 cm, BMI 22.2 ± 3.0 kg / m² and 18.9 ± 3.8 kg / f. The men had 60.2 ± 5.6 kg, 165.0 ± 4.3 cm, 22.1 ± 2.3 kg / m² and 30.6 ± 6.0 kg / f. After the intervention, women increased by an average of 1.7 kg in weight and 0.8 kg / m² in BMI. Men decreased their weight in 2.6 kg, and their BMI in 0.8 kg / m². Women did not have change ($p=0.15$) in HGS ($0.2 \pm$ kg/f). Men increased ($p= 0,044$) HGS by $2.0 \pm 2,65$ kg/f. For them, a Cohen test was used to examine the magnitude of the effect of the results. The relative size of Cohen's d was 0.42 which is considered as a medium effect and the relative size of % change was 7, considered as small increase. **Conclusion:** Even after losing weight, and with a small sample size, men had a significant improvement on HGS after 12 weeks of nutritional and exercise intervention. Although the size of the effect was considered moderate, HGS has been identified as a good predictor of oncoming outcomes in aging adults and these interventions are promising to improve the functionality of patients with sarcopenia. Women did not achieve the same effect and this result requires further research.

P233- FUNCTIONAL BALANCE RESERVE INDEX (FRI) THROUGH BALANCE REHABILITATION UNIT (BRU): OBJECTIVE EVALUATION OF REHABILITATION TREATMENT? M.V. Figueroa Souper, M. Arias Barredo (*Instituto Nacional de Geriatria/Hospital de Día/ Santiago de Chile*)

Background: The FRI measures the relationship between the stability limit and the oscillation velocity of the pressure center, without altering the support base. **Aims:** To evaluate if the FRI is modified with physical rehabilitation in elderly with gait disorder. **Methods:** A non-experimental prospective study of older adults in outpatient rehabilitation, July-October 2015. A clinical and functional evaluation was performed to determine admission criteria for BRU

rehabilitation (no cognitive impairment, no sensory deficit or slight decrease, no amputation or plegism of lower extremities). The FRI was determined by BRU before and after the rehabilitation, evaluating possible modifications. **Results:** 40 patients, 85% women. Average 77 years (range 61-88 years)/ Average number of sessions for patient 8 (range 8-12 sessions) FRI Income: Average 0.01. (Women 0.085, Men -0.265) Median 0.305. (Women 0.305 Male 0.025) Fashion 0.58 FRI egress Average 0.43 (Women 0.462, Men 0.501) Median 0.68 (Women 0.69, Men 0.56) Fashion 0.92. **Conclusions:** The FRI is modified with rehabilitation activities with an average of 8 treatment sessions, in elderly patients of both genders with gait disorder, with an improvement in the stability limit and therefore in the discharge FRI. **Discussions:** Patients who enter rehabilitation in BRU are independent in ABVD due to the activities they have to develop in the team. The FRI is an objective evaluation of the outcome of the independent treatment of the tests performed or the patient's perception.

P234- THE VETERANS' SUCCESSFUL AGING FOR FRAIL ELDERLY VETERANS (VSAFE) PROGRAM – CASE IDENTIFICATION AND ENROLLMENT OF FRAIL OLDER VETERANS. J.G. Ruiz^{1,2}, S. Dang^{1,2}, W. Valencia¹, S. Priyadarshni¹, N. Nallapeta¹, Z. Rahaman¹, R. Anam¹ (1. Miami VA Healthcare System Geriatric Research, Education and Clinical Center (GRECC); 2. University of Miami Miller School of Medicine)

Background: Frail older adults suffer from a higher prevalence of multimorbidity, geriatric syndromes and functional impairment. They are high utilizers of healthcare including hospitalizations, nursing home placements and emergency room visits and community assistance programs. A study at the Miami VA demonstrated a high prevalence of pre-frailty and frailty among older Veterans in outpatient settings. One year follow up of these Veterans demonstrated high levels of health care utilization by frail older Veterans. Interventions to reduce the burden of frailty are needed to improve quality of care while at the same time reduce health care costs. Evidence from the last decade has demonstrated that innovative outpatient geriatric models of care that address the deficiencies in current primary care practices improved clinical outcomes while reducing costs. One such approach is population health management, the proactive application of strategies and interventions to defined groups of individuals across the continuum of care in an effort to improve the health of the individuals within the group at the lowest necessary cost. Population health management holds particular promise for a cost-effective approach at improving the health care in frail older Veterans. Our group has recently implemented a GRECC demonstration project consisting of a co-management care model between PACT and GRECC clinicians. It uses a geriatric assessment approach to assess and treat community-dwelling frail older Veterans with complex health care problems. Those older Veterans identified as frail are referred to the Frailty Clinic staffed by a geriatrician and geriatric medicine fellow and undergo a complete geriatric assessment and completion of the Frailty Index. For pre-frail older Veterans, the procedure will be to implement a variety of eHealth technologies to support PACT clinicians in assessing and managing pre-frail older Veterans beyond education and training and as needed consultation. For frail older Veterans, population health management will enhance the reach of the frailty clinics to the community and patients' homes building a robust community-based program than improves the care of frail older Veterans. The program includes care coordination, physical activity and exercise recommendations by a team experienced in the delivery of exercise interventions to older veterans, and overall coordination, interdisciplinary team meetings, development and implementation of educational interventions. Components of the

program include for Primary Care Clinicians will include clinical detailing and eConsults whereas for patients and caregivers will include telephone care coordination, telehealth, MyHealthVet and the creation of a patient registry. In the first phase, we have embarked in wide case identification of older Veterans using the FRAIL scale. The plan is to screening older Veterans in all primary care clinics at our medical center. We present preliminary data from this screening effort. **Methods:** Participants and Setting: Veterans 65 years and older coming to the Miami VA Medical Center for outpatient visits. **Study design:** Cross-sectional study. **Outcomes and Measures:** We collected socio-demographic information (age, gender, race, and ethnicity) and administered the 5-item FRAIL Scale. We conducted chart reviews in the VA electronic health record (EHR) for information about BMI, and number of illnesses. Frailty was diagnosed in patients with a score 3 or greater; a patient with a score of 1 or 2 was considered as pre-frail. Robust patients had a score of zero. Data Analysis: We reported descriptive statistics and then compared demographic and health care utilization data between robust, pre-frail and frail groups. We used one-way ANOVA for parametric data. **Results:** We have so far assessed 545 older Veterans (97% male). The mean age was M = 76.83, SD = 8.52 years. The mean age-adjusted Charlson score was M = 5.85, SD = 2.91, and mean BMI was M = 27.26, SD = 4.82. The frequency of robust, pre-frail and frail patients was 56% (n = 305), 29% (n = 158) and 15% (n = 82) respectively. There were statistically significant differences between group means as determined by one-way ANOVA in terms of mean age, age-adjusted Charlson comorbidity index scores, and mean number of hospitalizations. Frail Veterans were significantly older (M=79.27, SD= 10.31), than prefrail (M=78.70, SD=9.00) and robust Veterans (M=75.22, SD=7.39), have a higher age-adjusted Charlson comorbidity index score Frail (M=7.07, SD=2.81), pre-frail (M= 6.80, SD=3.00), and robust (M=5.03, SD=2.59), and had more hospitalizations in the year before the determination of frailty (M=0.93, SD=1.82), prefrail (M=0.58, SD=1.60), robust (M=0.18, SD=0.61). There were no differences in the BMI between the groups. **Conclusion:** This study shows that frail older Veterans are older, have more comorbidities and have had more admissions to the hospital than prefrail and robust veterans. All frail older Veterans were enrolled in the VSAFE population management program. We will assess the impact of the intervention on frailty status and health care utilization (emergency room visits, hospitalizations and outpatient visits) at 6 months and 1 year.

P235- FRAILTY IN THE GERIATRIC SURGICAL POPULATION. S.E. Wozniak, Y.T. Chou, J. Coleman, M.R. Katlic (Sinai Hospital, Baltimore, USA)

Introduction: As the older patient population continues to increase in age and number in the population, it also continues to represent an increasing number in the general surgical spectrum. Hence, it is wise to address factors uniquely impacting their surgical outcomes. One of these often unrecognized factors is frailty. Initially, frailty may appear as a simple concept. However, upon reviewing the literature, one finds a plethora of definitions, quantification attempts, and theories attempting to explain its most pertinent attributes. **Objectives:** Irregardless of the spectrum of definitions attributed to frailty, the literature establishes a strong correlation between frailty and suboptimal surgical outcomes. While this link is strong, the exact utility and impact of preoperative frailty assessments is still being understood in the spectrum of general surgery and its subspecialties. **Discussion:** We reviewed frailty and its attributes (such as resilience, multi-morbidity, and accelerating factors of aging) in relation to the geriatric surgical population. Comprehending the distinguishing

features allows for a greater understanding of frailty's clinical impact on geriatric surgical patients. **Conclusion:** Ultimately, when including frailty in the preoperative assessment of older surgical patients its consideration permits modification preoperatively, intraoperatively, and/or postoperatively in order to optimize surgical outcomes in the geriatric population.

P236- VASCULAR CEREBRAL DAMAGE AMONG FRAIL ELDERLY: THE AMIMAGE STUDY. J.A. Avila-Funes^{1,2,3}, A. Pelletier^{1,2}, C. Meillon^{1,2}, G. Catheline^{4,5,6}, I.T. Frenk⁸, J.-F. Dartigues^{1,2}, K. Pérès^{2,3}, M. Allard^{4,5,6,7}, H. Amieva^{2,3} (1. Department of Geriatrics, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, Mexico; 2. Univ. Bordeaux, ISPED, Centre INSERM U897, F-33000 Bordeaux, France; 3. INSERM, ISPED, Centre INSERM U897, F-33000 Bordeaux, France; 4. Univ. Bordeaux, INCIA, UMR 5287, F-33000 Bordeaux, France; 5. CNRS, INCIA, UMR 5287, F-33000 Bordeaux, France; 6. EPHE, F-33000 Bordeaux, France; 7. CHU de Bordeaux, F-33000 Bordeaux, France; 8. Department of Neurology and Psychiatry, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, Mexico)

Frailty has been associated with increased risk of adverse-health related outcomes including cognitive impairment. However, little is known about the pathogenesis relating frailty to cognitive decline. Therefore, we conducted a cross-sectional study involving 176 community-dwelling subjects aged 67-86 years to investigate the association between vascular cerebral damage and frailty. Frailty was defined as proposed by Fried. 3T Magnetic resonance imaging (MRI) examination was performed and includes anatomical, diffusion, and fluid-attenuated inversion recovery sequences. Evaluation included the assessment of white matter hyperintensities (WMH) volumes and of microstructural white matter integrity through exploration of diffusion tensor imaging (DTI) parameters. The analyses showed that WMH volumes were higher in frail subjects compared with nonfrail subgroup. Frail participants presented DTI modifications in extensive areas of white matter. In comparison with nonfrail persons, frail participants showed a strong association between WMH volumes and DTI changes. These results show that subclinical cerebrovascular damage is present in the frail elderly, which supports the hypothesis that frailty is a prodromal state of central nervous system vascular injury.

P237- SARCOPENIA: SHORT-TERM IMPACT ON PATIENTS AT THE GERIATRIC OUTPATIENT CLINIC IN A POOR COMMUNITY LATIN AMERICAN HOSPITAL. C. Zuniga-Gil¹, C. Peralta-Alarcón¹, S. Rojas-Mariscal¹, R. Valdez-Rosas¹, N. Beltrán-García¹, C. Meza-Ruiz¹, L. Rendón-Quiroz¹, M.U. Perez-Zepeda² (1. Department of Geriatrics of Hospital General de Tijuana; 2. Instituto Nacional de Geriatria. Mexico)

Background: Life expectancy in Mexico is approximately 80 years, and the Mexican National Population Council estimates that by the year 2050 the proportion of adults over 65 will be 21% of the total Mexican population. It does not seem that Mexican economy will get better as time goes by, and in recent years health budget has gone down. That is also true for many developing countries, which is why it is very important for them to develop elderly friendly health systems that are cost effective, specially for frail patients. Tijuana's General Hospital is typical Latin American community hospital, with a low budget, over 100% occupancy ratio and high demand. To increase the quality of care of elderly patients in 2006 we created the Geriatric Department that consists of an acute geriatric care unit (inpatient) and

an outpatient clinic. We take care of poor elderly patients that live in Tijuana Baja California, the third most populated county in all of Mexico. Sarcopenia prevalence increases with age, being observed in 5 to 13% in those from 60 to 70 years of age, and can reach up to 11 to 50% in those over 80 years. In Mexican community dwelling patients it is reported that 33% have sarcopenia. We did not have information on patient characteristics before we conducted a series of studies that helped us understand our population. We did not know sarcopenia prevalence nor impact in our patients. This study assessed prevalence sarcopenia in first time patients in our outpatient clinic and the risk of poor outcome (functional decline, all-cause hospitalization and all-cause death) one month after the first consultation. **Method:** We conducted a cohort study, all patients that came in to the Geriatric Outpatient Clinic of Tijuana's General Hospital were evaluated. We included patients over 60 years of age that accepted to participate, and only exclude those that could not give the information required or could not follow the entire evaluation. Trained interviewers evaluated each patient and on the first visit got information on variables such as age, gender, schooling, Activities of Daily Living (ADL), Instrumental Activities of Daily Living (IADL), body mass index (BMI), Mini Nutritional assessment (MNA), Mini-Mental Status Exam (MMSE), Geriatric Depression Scale (GDS), Diagnosis, Medications, Muscle Mass (calf circumference), Muscle Strength (grip strength) and Physical Performance (gait speed). Subjects were evaluated one month after the first consultation adding to the interview outcome variables: Functional decline (more than 10 point decline in Barthel index), all-cause hospitalization (if the subject was admitted at least one time during the first month period) and all-cause death (if the subject died during the first month period). Like in other Latin American studies muscle mass was determined by calf circumference measured by a millimeter graded tape, registering it in centimeters, a cut-point of less than 31 cm was considered lower muscle mass. Muscle function was measured by dominant hand grip strength, with cut-points adjusted for gender: 20 kg for women and 30 kg for men, and physical performance was assessed with gait speed calculated from the 4 m walk with a cut-point of less than 0.8 m/s for low physical performance. Presarcopenia was defined as low muscle mass only, moderate sarcopenia as the combination of either low physical performance or low muscle strength in addition to low muscle mass and severe sarcopenia when the three conditions were present, as described in the EWGSOP report. Descriptive statistics were reported; for continuous variables, mean and standard deviations (SD) and for dichotomous or ordinal variables, absolute and relative frequencies. Hypothesis tests were used, T-test for non-paired variables to those continuous variables and x2 test for dichotomous variables. We calculated the RR for the different outcomes and considered a P < 0.05 to be statistically significant. SPSS 22 program was used for data analysis. The ethics committee at our institution approved this study. All subjects in the study signed informed consent. **Results:** A total of 117 subjects were included, 60% female, mean age 77 years (60-96), 34 subjects (29%) had sarcopenia, 9 male and 25 female. There were no deaths in the one month period. A total of 31 (26.5%) subjects developed at least one poor outcome (functional decline and or hospitalization). Subjects with sarcopenia had a RR of 2.9 (95%CI 1.6-5.3) p < 0.05 of developing a poor outcome. **Conclusion:** Subjects that came in for a first time consultation with sarcopenia had almost triple the risk of developing a poor outcome in a one month period.

P238- DECLINE IN MUSCLE STRENGTH DURING HOSPITAL STAY IN A GERIATRIC ACUTE CARE UNIT IN A POOR COMMUNITY HOSPITAL. C. Zuniga-Gil¹, C. Peralta-Alarcón¹, S. Rojas-Mariscal¹, R. Valdez-Rosas¹, N. Beltrán-García¹, C. Meza-Ruiz¹, M.A. García-Grimshaw¹, M. Espinoza-Flores¹, M.U. Perez-Zepeda² (1. Department of Geriatrics of Hospital General de Tijuana; 2. Instituto Nacional de Geriatria. Mexico)

Background: Many hospitals in developing countries face the problem of an increasing number of hospitalized elderly patients in hospitals that have a very limited budget, and with life expectancy increasing in the region, this problem is going to get worse every day. This is why it is very important for them to develop elderly inpatient programs that are cost effective, especially for frail patients. Imperative also to find markers of high risk of poor outcome that are easy and inexpensive to perform, in order to detect as early as possible the patients that are in need of more intensive care. Tijuana's General Hospital is typical Latin American community hospital, with a low budget, over 100% occupancy ratio and a high demand. To increase the quality of care of elderly patients in 2006 we created the Geriatric Department that consists of an acute geriatric care unit (inpatient) and an outpatient clinic. We take care of poor elderly patients that live in Tijuana Baja California, the third most populated county in all of Mexico. This study was performed to assess if a simple marker/maneuver as grip strength can detect a high risk patient. **Method:** We conducted a cohort study, all patients that were admitted to the acute geriatric care unit of Tijuana's General Hospital during a 3 month period were evaluated. We included patients over 60 years of age that accepted to participate, and only exclude those that could not give the information required or could not follow the entire evaluation. Trained interviewers evaluated each patient at admission and got information on variables such as age, gender, schooling, Activities of Daily Living (ADL), Instrumental Activities of Daily Living (IADL), body mass index (BMI), Mini Nutritional assessment (MNA), Mini-Mental Status Exam (MMSE), Geriatric Depression Scale (GDS), Diagnosis, Medications, Muscle Mass (calf circumference), Muscle Strength (grip strength) and Physical Performance (gait speed) in patients that could walk. Subjects were evaluated every 24 hr and at discharge, the difference in grip strength was calculated. Descriptive statistics were reported; for continuous variables, mean and standard deviations (SD) and for dichotomous or ordinal variables, absolute and relative frequencies. SPSS 22 program was used for data analysis. The ethics committee at our institution approved this study. All subjects in the study signed informed consent. **Results:** A total of 112 subjects were included, 50% female, mean age 72 years (60-95), a mean of 1.4 chronic diseases and 1.6 medications at admission. Mean grip strength for all subjects was 18.4 Kg at admission and 16.6Kg at discharge, with a mean difference of 1.82. we found that 57 subjects (52%) of admitted patients had a decline in grip strength. Of 56 women, 32 had a decline in grip strength while 25 of the 56 males deteriorated. There were no differences in strength decline depending on number of chronic diseases, number of drugs nor other variables. **Conclusion:** More than 50% of patients admitted to our acute geriatric unit deteriorated in grip strength. It is probable that these patients are at higher risk of poor outcome, fact that will be evaluated in further studies.

P239- INTRODUCING PRESSURE AREA ASSESSMENT TOOL IN GERIATRIC HOSPITAL WARDS; A PRACTICE DEVELOPMENTAL APPROACH. B. Al Asfoor (Ministry of Health/ Kingdom of Bahrain, Nil, Manama, Bahrain)

Historical evidences showed that pressure ulcers have been known to exist since ancient times and probably for as long as man has been on earth. Old aged, in specific, thought to be at a greater risk of developing pressure sores due to the reduction of functional capacity of body systems including the integumentary system. Pressure ulcer reduces the individual's quality of life, and considered as a significant financial burden to the healthcare system. In geriatric hospital in the kingdom of Bahrain, the fast progression of pressure ulcer, after its onset, is found to be significant. This progression indicates lack of regular assessment of elderly patients' skin condition. This project aims to introduce pressure ulcer assessment tool (PAT) in geriatric hospital as a practice developmental approach. It is expected to promote and facilitate change through educating nurses about doing proper assessment in a sustainable manner. The strategy used to identify the training need is the observation. This idea comes from the perspective that health promotion and disease prevention are of great importance for elderly people, the fact that pressure ulcer is a preventable hospital-acquired condition, and the lack of such vital assessment tool in this area of nursing. Facilitators are trained to reinforce coping skills and help nurses by monitoring the process of change in the field. As the practice development is systematic in nature, McCormack and Manley (2005) practice model of training is adopted in order to implement the change through education. Objectives of the PAT educational program are designed based on Bloom's Taxonomy (1960) behavioural objectives. In order to maintain quality standards of health, a policy to use PAT is enrolled to ensure the nurses' professional conduct and accountability. The training program is evaluated carefully and regularly to help rolling the training cycle. The evaluation focus is on nurses acquired new skills, knowledge, and attitudes.

P240- DAILY LIFE EXPERIENCE OF INSTITUTIONALIZED ELDERLY PEOPLE. B. Al Asfoor (Ministry of Health/ Kingdom of Bahrain, Nil, Manama, Bahrain)

There is a continuous increase in the number of elderly people moving in to residential care facility in the Kingdom of Bahrain. Admission in to the residential facility perceived in Bahrain society as stigma, rejection for elders by their family members and a violation to Bahrain family values. Many adverse effects of institutionalizing elderly people were reported in literatures. It is therefore important that elders' admission experience be studied, so that nurses can generate appropriate interventions to smooth the transition in to the residential facility. This study aimed to explore the lived experience of institutionalized elderly people. A qualitative, phenomenological approach was used. The study was carried in one of the elderly residential health care institutions in the kingdom of Bahrain. The sample composed nine participants, were interviewed and audio recorded. The five themes emerged from the data analysis included: no choice, no freedom, killing routine, home of negligence, and elderly refuge. The conclusion involved implication for clinical practice, education and management. Implications for clinical practice were formulating comprehensive elders' assessment before and throughout their residency, planning an appropriate coping strategy, promote nurse- elder effective communication and nurses considering ethical issues. The implications for education involved education of both health care providers and elders regarding the transition process. The implications for management were maintaining gradual relocation

process, maintaining social connection, maintaining elder's autonomy and maintaining sufficient activities. Future research in the same area was recommended to study temporary residential experience, involve health care providers and significant others and to consider variables like elders' living arrangement before relocation.

P241- THE EFFECT OF HIGH DOSES OF VITAMIN D ON MUSCLE STRENGTH, GAIT, AND PHYSICAL PERFORMANCE IN FRAIL OLDER ADULTS. AT PHASE 2 FEASIBILITY, OPEN-LABEL STUDY. M. Montero-Odasso^{1,2}, A. Islam¹, S. Muir-Hunter¹, G. Duque³, R. Crilly², M. Speechley², T. Doherty⁴ (1. Gait and Brain Lab, Parkwood Hospital, Lawson Health Research Institute; 2. Schulich School of Medicine & Dentistry, Department of Medicine and Division of Geriatric Medicine, University of Western Ontario, London, ON, Canada; 3. Australian Institute for Musculoskeletal Sciences, University of Melbourne, Melbourne, Australia; 4. Department of Physical Medicine and Rehabilitation, University of Western Ontario, London, ON, Canada)

Background: The effect of vitamin D supplementation to improve physical performance in individuals with frailty remains controversial. Specifically, it has been hypothesized that higher doses than the current recommended dose (800 IU/day) may be needed to achieve a neuromuscular effect. **Methods:** We conducted a pilot Phase 2, feasibility, open-label study, to assess the effects of 4000 IU of Vitamin D daily in community-dwelling frail older adults (ages ≥ 75 years). Frailty was defined using the five criteria of the validated Frailty Phenotype (weight loss, weakness, exhaustion, slow gait, low activity level). Participants were tested on measures of physical performance and balance and using the Short Physical Performance Battery (SPPB), muscle strength (hand grip and knee extension test), cognition, and blood biomarkers. They were also tested for quantitative gait variables using an electronic mat (GaitRITE®) under usual, fast, and dual-task conditions. Participants then received a daily dose of Vitamin D3 (4000IU) and Calcium (1200mg) for 4 months, after which all assessments were repeated. Logistic regression models were run to evaluate the effect of vitamin D supplementation in the outcomes of interest adjusted for age, sex, comorbidities, body mass index (BMI), physical activity levels, and baseline vitamin D levels. **Results:** Forty older adults with pre-frailty or frailty were included [Mean Age (SD): 84.20(4.88), 78% female]. Fifteen were pre-frail (1-2 components present, 37%) and twenty-five were frail (≥ 3 components, 67%). Analysis of co-variance showed, after four months of intervention, significant improvement in grip strength ($p=0.004$), SPPB ($p=0.013$), and dual-task gait velocity ($p=0.004$) in the frail group. Next, the sample was stratified by baseline vitamin D serum levels as follows: insufficient ($n=17$) ≤ 75 nmol/L, and normal ($n=23$) > 75 nmol/L. After intervention, participants in the insufficient group (≤ 75 nmol/L) significantly increased their performance in the SPPB ($p=0.018$), fast gait velocity ($p<0.05$), and grip strength ($p=0.043$), in the adjusted analysis. Pearson correlations showed a significant association between the increase in Vitamin D levels after intervention and improvement in knee strength ($r=0.446$, $p=0.006$) in all participants. **Conclusion:** A daily supplementation of 4000 IU of Vitamin D over four months improved physical performance in individuals with frailty, particularly in those with vitamin D insufficiency. This preliminary phase II trial show feasibility and efficacy of daily supplementation for improving physical performance in individuals with frailty. Participants who achieved levels over 75nmol/L showed more improvement than those with Vitamin D deficiency. Also participants classified as frail experienced more improvement than the pre-frail groups even after adjusting for covariates. This suggests that Vitamin D supplementation may serve as

a beneficial treatment for those that are frail with suboptimal Vitamin D serum levels.

P242- CLINICAL CONSEQUENCES OF LOW MUSCLE MASS, DEFINED BY ASM/BMI, IN MEN AND WOMEN USING DATA FROM KOREAN NATIONAL HEALTH AND NUTRITIONAL EXAMINATION SURVEY (KNHANES) IV (08'-11'). S.H. Min, K.M. Kim, S. Lim, H.C. Jang (Department of Internal Medicine, Seoul National University Bundang Hospital and Seoul National University College of Medicine)

Background: Sarcopenia is known to be associated with increased risks of various diseases or mortality, particularly in elderly persons. This study was aimed to evaluate the cardiovascular and skeletal consequences of sarcopenia defined by ALM/BMI in men and women. **Methods:** Using the Korea National Health and Nutrition Examination Survey (KNHANES) 2008-2011, 12,637 individuals aged 50 years and older (5355 men and 7282 women) were included. Appendicular lean mass (ALM) was measured by dual energy X-ray absorptiometry and ALM/BMI index was used for evaluating muscle mass. Sarcopenia was defined as 2 SD below the means of healthy young individuals. Clinical issues were assessed regarding cardiovascular disease (CVD), as a composite of non-fatal MI and angina, stroke and osteoporotic fractures. **Results:** The rates of sarcopenia were 17.7% in men and 20.3% in women. Age adjusted odds ratios for clinical consequences per 1SD decrease of three muscle mass indices (ALM/BMI, ALM/Height, ALM/Weight) in men and women were calculated. In terms of vascular events, ALM/BMI was significantly associated with increased risks of CVD and stroke in men (OR 1.38, 95% CI 1.13 to 1.68, and OR 1.52, 95% CI 1.23 to 1.88, respectively), while ALM/BMI was significantly related only with stroke (OR 1.34, 95% CI 1.10 to 1.62), not CVD in women. Meanwhile, ALM/BMI was tended to be associated with increased risk of osteoporotic fractures in women, although it was not statistically significant. **Conclusions:** In conclusion, sarcopenia defined by low muscle mass using ALM/BMI index was associated with diverse clinical consequences in adults. However, the clinical impacts of sarcopenia could be different according to the gender.

P243- FRAILTY AND RISK OF DISABILITY IN CHILEAN ELDERLY POPULATION. N. Bustamante^{1,2}, L. Jara¹ (1. Department of Public Health, Pontificia Universidad Católica of Chile; 2. Advanced Center for Chronic Diseases - ACCDiS)

Background: Frailty is the physical vulnerability that results from an alteration in multiple systems, and entails a decrease in the capacity of homeostatic reserve and adaptation of the organism. Frailty is a risk factor for disability in the activities of daily living in the elderly and could be attenuated or delayed with adequate prevention programs. The first objective of the study was to evaluate the factors associated with frailty in the Chilean elderly population. The second objective was to evaluate the association between frailty and disability in this population. **Method:** An analysis was conducted of 1330 participants' ≥ 60 years incorporated in the National Health Survey 2009-2010. Frailty was defined as ≥ 3 Fried criteria: exhaustion, weight loss, muscle weakness, slow walking speed, and low physical activity. Disability was defined by a Pfeffer test ≥ 6 points and cognitive impairment (Mini Mental < 13 points). Risk factors associated with frailty and disability (multivariable logistic regression) adjusted for confounding variables (age, sex, educational level and cognitive function) were analyzed. The SPSS v20 program was used. **Results:** In the expanded sample for the Chilean population (54% women and mean age 69.3 ± 0.3 years), the prevalence of frailty was 13.5%

(9.9%, 18.8% and 18.9% for 60-69 years, 70-79 years and ≥80 years respectively, $p = .035$), without differences between sex. The risk factors associated with frailty were cognitive impairment (OR = 3 CI95% 1-8.3), presence of falls (OR = 2.4 95% CI: 1.7-4.7) and high or very high cardiovascular risk (OR = 3.6, 95% CI: 1.7-5.9). The prevalence of disability was 4.2% (2.6% in 60-69 years, 3.2% in 70-79 years and 12.8% in ≥80 years, $p = .017$), with a higher prevalence in men (6.4% vs. 2.3% in women, $p = .023$). Frailty (OR = 9.9, 95% CI, 2.6-37.2) and male gender (OR = 6.5, 95% CI 1.9-22.6) were associated with a high risk for disability. **Conclusion:** The prevalence of frailty in Chile was similar to that of other Latin American countries. The frail population presented high risk for disability, an adverse outcome that leads to dependence and other associated health costs. There is a need to develop and evaluate prevention strategies for frailty, such as regular physical activity programs, focused on improving physical condition and sustained over time. This is a challenge for countries with accelerated aging like Chile.

P244- VITAMIN C DEFICIENCY IN SKELETAL MUSCLE SWITCHES MUSCLE FIBER TYPES FROM SLOW TO FAST. Y. Kondo, S. Takisawa, A. Ishigami (*Molecular Regulation of Aging, Tokyo Metropolitan Institute of Gerontology (TMIG), Tokyo, Japan*)

Background: L-ascorbic acid (AA, reduced form of vitamin C) is a water-soluble electron donor which can act as a free radical scavenger and an essential cofactor in the enzyme reactions for collagen polymerization. Recently, we have reported that plasma AA concentrations in community-dwelling elderly women were related well to their muscle strength and physical performance (Saito, K. et al., 2012, *J. Gerontol. A Biol. Sci. Med. Sci.*). However, physiological role of AA in muscle is poorly understood. To clarify the physiological functions of AA in skeletal muscle, we investigated the effect of AA deficiency in skeletal muscle using senescence marker protein-30 (SMP30)/gluconolactonase (GNL)-knockout (KO) mice that lacks AA biosynthesis ability just like a human being. **Method:** SMP30/GNL-KO female mice were given sufficient AA (1.5 g/L AA water) until age of 8 weeks. Then, mice were divided into two groups: AA-deficient group (AA-) given tap water and AA-sufficient group (AA+) given 1.5 g/L AA water. All mice were sacrificed at 16-weeks of experimental period (age of 24 weeks), and gastrocnemius, soleus, plantaris, tibialis anterior, and extensor digitorum longus (EDL) muscle were collected. AA level of skeletal muscles were measured by using high performance liquid chromatography coupled to electrochemical detection. To identify the muscle fiber types, ATPase staining was performed using frozen sections of soleus muscle. **Results:** At 16-weeks of experimental period, AA were not detected at all in skeletal muscles of AA-deficient mice. The gastrocnemius, soleus, plantaris, and tibialis anterior muscle weights of AA-deficient mice were significantly lower than those of AA-sufficient mice, but EDL muscle weight showed no difference. In soleus muscles, type I fiber (slow-twitch fiber) and type IIa fiber (fast-twitch fiber) showed almost equal percentage (50:50) in AA-sufficient mice. However, the percentage of type I fiber decreased in AA-deficient mice when compared to AA-sufficient mice and along with that percentage of type IIa fiber was increased in AA-deficient mice. Moreover, the area of muscle fiber was decreased in AA-deficient mice when compared to AA-sufficient mice. **Conclusion:** These results strongly suggested that VC deficiency in skeletal muscle leads to muscle atrophy and switches muscle fiber types from slow to fast.

P245- IDENTIFY THE PREVALENCE OF AND RISK FACTORS FOR KNEE PAIN AND RADIOGRAPHIC KNEE OSTEOARTHRITIS (RKO) AND TO INVESTIGATE THE RELATIONSHIP BETWEEN DECREASED LOWER EXTREMITY MUSCLE MASS (DLEM) AND KNEE PAIN SEVERITY. K.S. Park (*Gyeongsang National University, Jinju, South Korea*)

Objective: To identify the prevalence of and risk factors for knee pain and radiographic knee osteoarthritis (RKO) and to investigate the relationship between decreased lower extremity muscle mass (DLEM) and knee pain severity. **Methods:** Using data from the Korea National Health and Nutrition Examination Survey, 3,278 participants who were ≥50 years old and who underwent dual x-ray absorptiometry, plain knee radiographs and completed a knee pain questionnaire were enrolled. Lower extremity muscle mass (LEM) was defined as the sum of the fat-free soft tissue mass of the legs, and lower extremity muscle mass index (LMI) was calculated as LEM/body weight (%). DLEM was defined as an LMI more than two standard deviations below the mean of a gender-matched young reference group. Categorical variables were presented as numbers (weighted %). **Results:** The prevalence of knee pain and RKO were 22% (n=721) and 34.7% (n=1,234), respectively. Multivariate logistic regression analysis showed being female (OR 2.15, 95% CI 1.67-2.79), older (OR 1.03, 95% CI 1.01-1.04), less educated (OR 1.72, 95% CI 1.09-2.71), stiffness (OR 16.15, 95% CI 12.04-21.66), bed rest (OR 2.49, 95% CI 1.81-3.43), RKO (OR 2.20, 95% CI 1.78-2.74) and DLEM (OR 1.54, 95% CI 1.09-2.17) were associated with knee pain. Participants with simultaneous RKO and DLEM complained of more severe pain (pain score 7.18 ± 2.48) than those with knee pain without RKO or DLEM (5.02 ± 2.44), those with only RKO (6.29 ± 2.50), or those with only DLEM (6.78 ± 2.18) ($P < 0.001$). These results remained after multivariate analyses of variance (MANOVAs). **Conclusion:** The prevalence of knee pain and RKO were 22% and 34.7%, respectively, in the general Korean population. DLEM was an independent risk factor for knee pain and it was associated with increased pain severity, regardless of RKO

P246- EFFICACY OF ACUTE IN-HOSPITAL PHYSIOTHERAPY WITH KNEE-EXTENSION STRENGTH TRAINING IN REDUCING STRENGTH DEFICITS AFTER HIP FRACTURE: A RANDOMISED CONTROLLED TRIAL. L. Kronborg¹, T. Bandholm¹, H. Palm², H. Kehlet³, M.T. Kristensen⁴ (*1. Physical Medicine and Rehabilitation Research – Copenhagen (PMR-C) and Clinical Research Centre, Hvidovre Hospital, University of Copenhagen, Denmark; 2. Hip Fracture Unit, Department of Orthopaedic Surgery, Copenhagen University Hospital, Hvidovre, Denmark; 3. Section for Surgical Pathophysiology, Rigshospitalet, Copenhagen University, Denmark; 4. Physical Medicine and Rehabilitation Research – Copenhagen (PMR-C), Departments of Physical Therapy and Orthopedics, Hvidovre Hospital, University of Copenhagen, Denmark*)

Background: Frail elderly patients with a hip fracture (HF) experience knee-extension strength deficit in the fractured limb of more than 50% and impaired physical function immediately after HF surgery. This is likely to contribute to the long term loss of physical function, change of residence and high mortality seen after HF. A recent systematic review provides some evidence for a positive effect on mobility of structured exercise interventions including progressive strength training after HF. Still, it is unclear if systematic strength training in the acute ward as a supplement to functional exercises can reduce the strength deficit in the fractured limb in the

acute phase. The purpose of this study was to determine whether acute in-hospital physiotherapy (PT) with progressive knee-extension strength training of the fractured limb is more efficacious in reducing knee-extension strength deficit at follow-up compared to PT without strength training in frail elderly patients with a HF. **Methods:** The study was a randomized, assessor-blinded efficacy study with parallel assignment to PT with or without strength training after HF surgery following our initial feasibility study. 90 patients with a HF (mean age 79.6 (7.5) years, 69 women, 52 with a trochanteric fracture) admitted to the acute orthopedic Hip Fracture Unit at Hvidovre Hospital between October 2013 and May 2015 were enrolled for the study. The intervention consisted of PT with or without progressive knee-extension strength training (10RM) of the fractured limb using ankle weight cuffs in 3 sets of 10 repetitions, daily during hospital stay. The primary outcome was the change in maximal isometric knee-extension strength in the fractured limb in percentage of the non-fractured limb from 1-3 days after surgery (baseline) to postoperative day 10 or discharge (follow-up). Secondary outcomes were the Timed Up and Go test measured early after surgery and at follow-up, fast speed walking test and concern of falling at discharge, and the time spent upright in the acute ward. **Results:** In the intention-to-treat analysis of between-group differences, the primary outcome improved 8.1%, CI (-2.3; 18.4) by additional strength training from baseline to follow-up versus significant improvements by 10.5%, CI (0.3; 20.7) in the per-protocol analysis of non-missing data. No significant between-group differences were found in any other outcome. **Conclusion:** PT with strength training was not more efficacious than PT without strength training in reducing the knee-extension strength deficit at follow-up in patients with HF and the participants had a substantial strength deficit at follow-up despite targeted early PT. It is debatable whether larger improvements than the observed 8-10% can be expected given that only five exercise sessions, on average, were completed. In frail elderly patients with a HF in the acute phase, where the ability to participate in functional exercise is compromised, we still consider progressive strength training a relevant possibility to improve outcomes, especially if continued after hospital discharge. The present data provides an important basis for future investigations.

P247- AN EVALUATION OF A PHYSICAL ACTIVITY PROGRAMME DESIGNED FOR ELDERLY PEOPLE. G. Lefebvre (*Siel Bleu Europe, Strasbourg, France*)

This study is an assessment of a programme of physical activity for the elderly. The programme offers to residents of retirement homes several physical activities designed to avoid falls, and light gym regimes. The programme is evaluated using a randomised controlled trial protocol in around 30 retirement homes in Europe. The results show a clear reduction in falls and a significant improvement in subjective health indicators. A cost-benefits analysis suggests that the introduction of such programmes could be very positive, thanks to the reduction of costs generated by falls by old people in residence, notwithstanding the benefits for their wellbeing.

P248- ASSOCIATIONS BETWEEN VITAMIN D, SYSTEMIC INFLAMMATION AND SYNBIOTIC SUPPLEMENTATION: A RANDOMIZED CLINICAL TRIAL. S.M. Lima Ribeiro^{2,3}, L. Alves Luzia², P.H. Rondó², C.M. Resende Gonçalves de Carvalho¹ (*1. Federal University of Piauí; 2. University of São Paulo, School of Public Health, Department of Nutrition; 3. School of Arts, Sciences and Humanities, University of São Paulo, Brazil*)

Background: There is a strong association between vitamin D status and inflammaging on sarcopenia and frailty. In addition,

Vitamin D, aging and intestine-derived systemic inflammation are interconnected. **Objectives:** To evaluate the effects of a symbiotic substance on the vitamin D status of elderly, and the association with systemic inflammation. **Subjects/Methods:** This was a randomized, double-blind controlled clinical trial, lasting 24 weeks, with 49 participants, randomly assigned in two groups; the S-group received a synbiotic substance, and the P-group received placebo. Participants were evaluated at the beginning and at the end of the study for body mass index, body fat percentage, and; plasma ratio between anti and pro-inflammatory cytokines (specifically IL-10 and IL-6), plasma markers of gut permeability (LPS, I-FABP and DAO), and plasma levels of vitamin D. **Main Results:** The P-group reduced vitamin D, while the S-group did not; the S-group presented a significant reduction in DAO, while the P-group did not. The interaction of time x treatment was not significant. When analyzing the regression models together, the inflammatory balance (IL-10/IL-6) and two markers of intestinal permeability (DAO and LPS) correlated with the final values of vitamin D. In addition, the variation in vitamin D throughout the study period, together with the I-FABP, explained the inflammatory balance. **Conclusions:** we found a slight effect of synbiotic supplementation on vitamin D status in community-dwelling elderly, with a significant role of inflammation on this effect. **Key-words:** vitamin D, systemic inflammation, aging, synbiotic, randomized double-blind clinical study.

P249- LIGHT PHYSICAL ACTIVITY AND FRAILTY IN AN AGRICULTURAL COMMUNITY, MAULE COHORT (MAUCO). N. Bustamante-Ara^{1,2}, C. Ferreccio^{1,2} (*1. Department of Public Health, Pontificia Universidad Católica of Chile; 2. Advanced Center for Chronic Diseases - ACCDiS*)

Background: Older people spend more time in light physical activity and sedentary behavior than in moderate-vigorous physical activities. Frail people have low physical activity levels, however, the relationship between frailty and light physical activity in an agricultural community with high chronic diseases and low-income has not been studied. Our aim was to evaluate the association between frailty and light physical activity. The study was approved by the Ethics Committee of the Pontificia Universidad Católica de Chile (Grant: Conicyt- Fondecyt 3150197). **Method:** We systematically evaluated 208 older adults aged 60 to 74 years old from the Maule Cohort (MAUCO), a prospective population-based cohort of an agricultural community. Participants were enrolled from March 2015 to March 2016. They answered a survey about risk factors and health history and performed physical condition tests. Then, all participants wore a tri-axial accelerometer on their right hip for 7 days. Valid data were defined as ≥ 3 days of wearing (≥ 10 hours of daily wear). Light activity was defined as 100 to 1951 counts/minute. Frailty was defined as meeting 3 or more of the following criteria: exhaustion, weight loss, muscle weakness, slow walking speed, and low physical condition. We analyzed all factors associated with frailty in univariate analyses. Significant variables were then included in a multivariable logistic stepwise regression model, adjusted by age and sex. **Results:** Among participants, 63% were women, mean age was 66.2 \pm 4.0 years, and the prevalence of frailty was 6.7% (3.9% men and 9.9% women). Mean hours of light physical activity per day was 5.9 \pm 1.4 (range 2.1 – 10.8 hours/day), with no difference by sex. In univariate analyses, the prevalence of frailty was lower among those reporting higher levels of light physical activity (OR: 0.62; 95% CI: 0.42- 0.93, p= 0.02), and higher cognitive functioning (OR: 0.86; 95% CI: 0.77- 0.94, p= 0.002). In addition, frailty increased with the number of comorbidities (OR: 2.5; 95% CI: 1.5- 4.2, p=0.001), number of falls (OR: 1.4; 95% CI: 1.1- 1.7, p= 0.007), BMI (OR: 1.2; 95% CI: 1.1- 1.3, p= 0.001),

and worse self-reported health status (OR: 9.0; 95% CI: 3.1-26.4, $p=0.001$). Finally, in the multivariate model, significant factors that independently associated with increased frailty were comorbidity, number of falls, cognitive function score, and low levels of light physical activity. Regarding the latter, for each hour/day spent in light physical activity frailty was 40% lower (OR: 0.60, 95%CI: 0.38-0.93; $p=0.02$). **Conclusion:** Older people who spend a large proportion of the day performing light physical activities have lower frailty, however reverse causality cannot be ruled out given the cross-sectional design of the study. Prospective designs could confirm the direction of this association, providing the evidence required to design frailty prevention and treatment strategies in populations with accelerated aging such as Chile.

P250- EFFECTS OF 50 DAYS OVOMET® (EGGSHELL MEMBRANE) SUPPLEMENTATION ON ACHILLES TENDON STIFFNESS AND SUBJECTIVE PAIN PERCEPTION IN OLD INSTITUTIONALIZED PATIENTS. I. Setuain^{1,2}, I. Garcia-Tabar¹, L. Jauregi¹, I. Garcia¹, I. Leoz¹, M. López Sáez de Asteasu¹, A.B. Bays-Moneo¹, A. Aguirre González³, E. Gil-Quintana³, M. Izquierdo¹ (1. Public University of Navarre. Department of Health Sciences. Spain; 2. TDN. Orthopedic surgery and advanced rehabilitation centre. Clinical research department. Spain; 3. EGGNOVO S.L., Navarre, Spain)

Background: Introduction: The use of eggshell membrane supplementation has risen in the recent years in order to alleviate joint and/or tendon pain conditions. To date, the effects of eggshell membrane supplementation on tendon mechanical properties such as linear stiffness has not been researched so far. **Objective:** To examine the effects of 50 days ovomet® (eggshell membrane) supplementation on Achilles tendon linear stiffness and Likert scale scores among elderly institutionalized patients. **Methods:** A preliminary double-blinded randomized controlled study among 6 women and 2 men (mean \pm sd 85 \pm 7 years; 155 \pm 7.9 cm and 72 \pm 12.8 kg) institutionalized patients was carried out (control $n=4$ and intervention $n=4$ patients). Participants completed the Likert subjective functional scale and were assessed for Achilles tendon linear stiffness before and after 50 days eggshell membrane supplementation (a daily capsule containing 300 mg, OVOMET® Health, Egnovo S.L Spain). Non regular physical training was administered during the supplementation period. Two by two Anova (group by time) with bonferroni post hoc corrections as well as Magnitude based inferences analysis (Cohen's d) were performed for between groups' means comparisons. **Results:** The linear stiffness (measured in N/mm) increased around 12% after the 50 days of the study in the control group while it was maintained stable in the intervention group (from 6.91 \pm 2.61 to 7.26 \pm 2.84 vs 5.95 \pm 1.96 to 6.64 \pm 1.0 N/mm from pre to post supplementation period on intervention and control groups respectively). Furthermore, a moderate ($d=0.4$) effect of 20% of pain reduction on the Likert scale was not present among control participants was found (from 6.03 \pm 2.63 to 4.87 \pm 2.46 vs. 5.06 \pm 1.97 to 5.00 \pm 1.00 points from pre to post supplementation period on intervention and control groups respectively). **Conclusions:** Supplementation with ovomet® was shown to be effective for reducing pain and it seems that helps to maintain the elasticity in tendons. At the sight of this results the effects of eggshell membrane in tendon and/or joint health needs to be further researched.

P251- THE REACHES STUDY: DESIGN OF AN INNOVATIVE PATIENT CENTRIC TRIAL IN A NOVEL SETTING.

M. Mc Carthy¹, B. Byrom¹, B. Reginatto², S. Donnelly², B. Greene³, J.P. Bewley⁴, W. Muehlhausen¹ (1. ICON PLC, Dublin Ireland; 2. ARCH, Dublin, Ireland; 3. Kinesis Health Technologies, Dublin, Ireland; 4. Big Cloud Analytics, Atlanta, Georgia, USA)

Background: The REMote Assessment of elderly in a Care Home Setting (REACHES) project is an observational study to determine the feasibility and acceptability of conducting a clinical trial within a residential care home setting. The focus of this study is to evaluate the practicalities and burden on both the site and the individual care home residents when conducting a variety of longitudinal assessments using mobile and wearable technologies within the care home setting. Assessments will include instrumented performance tests using wearable devices (Performance Outcomes (PerFOs), electronic patient reported outcomes (ePRO), and daily assessment of activity and sleep and heartrate using a wearable device. This is essentially a feasibility study, evaluating the acceptance of a multifaceted trial in a research-naïve setting. The burden, acceptability and practicalities of participation will be assessed by semi-structured interview and observation of study participants and care home staff. It is generally accepted that within the context of clinical trials, recruitment and retention of patients is challenging. This is particularly true of trials conducted with older adults, who are poorly represented in clinical trials. The traditional clinical trial design of centralised sites is particularly burdensome to this population, who have more difficulties with travel and may need caregiver assistance, particularly for frail patients who have concerns regarding falls and mobility. Designing a trial that could be conducted in a non-traditional setting such as residential care homes could greatly reduce the need to travel. A combination of wearable sensors ePROs and PerFOs that could be used to generate sensitive and responsive endpoints and reduce the requirement to travel to a centralised study site has the potential to create a trial that is more patient-centric. This may be particularly important for patients with Sarcopenia and other diseases of aging and may potentially increase both recruitment and retention rates. **Objectives:** • The project has three core objectives; 1) To assess the operational feasibility (i.e. logistics and impact on staff and patients) and technical feasibility (i.e. data capture and data transfer) of collecting clinical outcomes data remotely using the above mentioned mobile and wearable technologies in a care home setting. 2) To understand and measure the impact of "place-shifting" on care home staff and physiotherapists involved in the trial. 3) To assess the acceptability, burden and practical considerations associated with conducting trial procedures and using mobile and wearable technologies in a care home setting. **Methods:** • 25 care home residents will be recruited into the REACHES study from a nursing home in Ireland. • Patient Reported Outcomes (PROs) will be collected using an electronic form of the "Age-Related Muscle Loss Questionnaire", delivered using ICON's "Aging Research App" developed with mProve Health (Arlington, VA) using Apple Research Kit. • Risk of falls and frailty will be assessed at baseline and study-completion, using Kinesis QTUG™ wearable sensor technology for assessment of mobility and fall risk, based on the Timed Up and Go (TUG) test. • Daily activity and sleep patterns will be collected using the Garmin Vivosmart HR device. • Use of the PRO instrument as applied to patients in the non-independent-living setting of this trial will be investigated by semi-structured interview with the participants. • The acceptability, practical considerations and patient burden will be assessed by semi structured interview and observation of participants and care home staff. **Conclusions:** Clinical trial participation may be restricted in certain patient populations due to limitations in

mobility and independence. There is a drive to design more patient-centric clinical trials that make participation more engaging and convenient. One possible approach to consider is how assessments that are traditionally conducted at a clinic visit can be performed within alternative settings that are more convenient to the study participant. This “place-shifting” may result in enabling wider participation and engagement in clinical trials. Facilitated by technology solutions that can be easily administered remotely, it may be possible to deliver objective and clinically relevant health outcomes. For this new model to succeed, however, it is vital to understand the impact of this “place-shifting” on the stakeholders involved as this may greatly affect clinical trial outcomes.

P252- SOCIAL CAPITAL AMONG PEOPLE WITH FRAILTY IN RURAL AREA. K.-S. Park (*Department of Preventive Medicine, Gyeongsang National University, Jinju Korea; Center for Farmers Safety and Health of Gyeongsang National University Hospital*)

Background: Recent studies have found that social capital and social connectedness are important to the health. However, there is little research examining social capital and the perception of social connectedness among people with frailty. To examine and compare perceptions of social capital (network diversity, civic engagement, community belonging, trust in others and the health care system) in three groups of adults: 1) those with frailty; 2) those with frailty and with activity limitations; and 3) those without frailty. **Methods:** We analyzed data from the Namgang Cohort data. Three mutually exclusive groups were created consisting of individuals with: 1. Frailty (definition of frailty, Fried and colleagues); 2. Frailty with activity limitations (AL) (i.e., AL reported as limiting the amount or kind of activity at home, work, school or other activities because of a physical or mental condition or health problem); 3. No frailty. Social capital was assessed by measures of community belonging, trust in others, confidence in the health care system, civic engagement, and network diversity. **Results:** Frailty with and without activity limitations was reported by 12.0% and 4.7% of the sample, respectively, with increasing frequency with age. No significant differences between the three groups were found for network diversity, civic engagement, or community belongingness. However, people with frailty and activity limitations were significantly less likely to report being trusting of others and individuals with frailty both without and with activity limitations had significantly less confidence in the health care system than those without frailty, with the frailty and activity limitation group having the lowest confidence. **Conclusions:** Although people with frailty (with or without activity limitations) felt equally well connected to the community, lower levels of trust of others and confidence in the health care system they report are concerning. Future research needs to examine the link between trust and health as well as whether there are implications for seeking or adhering to the health care treatment and disease management. References: Oksanen T, Kouvonen A, Kivimäki M, Pentti J, Virtanen M, Linna A, Vahtera J. Social capital at work as a predictor of employee health: multilevel evidence from work units in Finland. *Soc Sci Med.* 2008;66(3):637-49; Kouvonen A, Oksanen T, Vahtera J, Stafford M, Wilkinson R, Schneider J, Väänänen A, Virtanen M, Cox SJ, Pentti J, Elovainio M, Kivimäki M. Low workplace social capital as a predictor of depression: the Finnish Public Sector Study. *Am J Epidemiol.* 2008;167(10):1143-51; Suzuki E, Takao S, Subramanian SV, Komatsu H, Doi H, Kawachi I. Does low workplace social capital have detrimental effect on workers' health? *Soc Sci Med.* 2010;70(9):1367-72. Acknowledgement: This work was supported from the Ministry of Agriculture Food and Rural Affairs in Korea.

P253- PREVENTION OF POST-INFLUENZA MUSCLE DECLINES WITH AGING. J.M. Bartley^{1,2}, S. Keilich¹, G.A. Kuchel¹, L. Haynes^{1,2} (*1. UConn Center on Aging; 2. Department of Immunology, University of Connecticut Health Center, Farmington, CT 06030*)

Background: Influenza (flu) infection in the elderly is associated with an enhanced risk of severe infection, hospitalization, catastrophic disability and death. Flu infection is limited to pulmonary epithelial cells; yet post-flu muscle weakness is common. Nevertheless, our 2016 study (*Aging*, 8:620-35) was the first to demonstrate an impact of pulmonary flu infection on muscle health and the first to highlight an enhanced vulnerability with aging to such declines involving mobility, muscle-localized inflammation and atrophy. Here, we expand on these studies by exploring potential ways to mitigate observed decrements through vaccination. **Methods:** Young (10 wk old) and aged (20 mo old) male C57BL/6 mice were inoculated intranasally with a sublethal dose of PR8 influenza virus. Functional testing (open field and gait analysis) testing was performed at baseline, 3, 7, 11, 15, and 20 days post infection (DPI) and mice were sacrificed prior to, 3, 7, 11, and 15 DPI to identify the kinetics of flu-induced muscle decrements. A separate cohort of young and aged male C57BL/6 mice were vaccinated with either PBS (control) or recombinant flu nucleoprotein (NP) with either alum or addavax as an adjuvant at day -30 and boosted at day -20 then inoculated at day 0 with a sublethal dose of PR8 influenza. Functional testing was performed and mice were sacrificed at 9 DPI to determine if vaccination can reduce post-flu decrements. Gastrocnemius muscle was harvested and RT-qPCR was performed to examine gene expression of inflammation, muscle atrophy and myogenesis pathways. Gene expression was calculated using a modified Pfaffl method, with data log-transformed and analyzed via 2-way ANOVA with Bonferroni posthoc correction ($p < 0.05$). **Results:** Flu infected mice had decreased voluntary activity as measured by open field assessment and altered gait kinetics. These effects were prolonged and elevated in aged mice. Gastrocnemius gene expression of inflammatory cytokines (IL-6, IL-6R, TNF, CXCL10) was elevated post-flu infection, with more dramatic and prolonged alterations in aged mice. Similarly, genes involved in muscle degradation and proteolysis (Atrogin1, MuRF-1, ubiquitin B, ubiquitin C) were upregulated with infection and remained elevated for longer in the aged mice. In contrast, positive regulators of muscle mass and myogenesis (IGF-1, Pax7, MyoD) were downregulated during infection and to a greater extent in aged mice. Vaccination with NP/alum partially protected young mice from these decrements. **Conclusion:** In both young and aged mice, flu infections leads to reduced locomotor activity and altered gait kinetics, as well as induction of muscle-localized inflammatory and muscle degradation genes. These functional deficits and gene alterations are prolonged through later points of infection in aged mice indicating that the systemic effects of flu infection on muscle health are more dramatic with aging. These observations provide a molecular link between flu infection and disability with aging. Thus, flu infection may represent a previously unrecognized common contributor to sarcopenia and frailty in the elderly. Despite decreased vaccine efficacy with aging, vaccination may be a potential strategy to prevent flu-induced disability with aging.

P254- IMBALANCED MITOCHONDRIAL DYNAMICS IN MUSCLES OF VERY OLD HIP-FRACTURED PATIENTS.

A. Picca, R. Calvani, M. Lorenzi, A. Menghi, M. Galli, F. Landi, R. Bernabei, E. Marzetti (*Department of Geriatrics, Neurosciences and Orthopedics, Catholic University of the Sacred Heart School of Medicine, Teaching Hospital "Agostino Gemelli", Rome, Italy*)

Background: Understanding the biology of very old individuals is relevant for unraveling the signaling pathways involved in extended longevity. The present work sought to investigate the age-related changes of myocyte quality control (MQC) signaling in skeletal muscle from old (OL) and very old (VOL) patients with hip fracture. **Method:** Twenty-three patients were enrolled as part of the Sarcopenia in Hip Fracture (SHIFT) study and subsequently divided into two groups according to their age: OL (7 women and 1 man; mean age 79.8 ± 1.6 years) and VOL (12 women and 3 men; mean age 88.8 ± 0.7 years). Intraoperative biopsies of the vastus lateralis muscle were obtained and assayed for the expression of a set of MQC signaling proteins. **Results:** No differences were found between groups for the protein content of mitochondrial fusion optic atrophy protein 1 (Opa1), lysosome-associated membrane protein 2 (LAMP-2), the master regulator of mitochondrial biogenesis peroxisome proliferator-activated receptor- γ coactivator-1 α (PGC-1 α), and the autophagy mediator microtubule-associated protein 1 light chain 3B compared (LC3B). A marked increase, instead, was found in the VOL group for the mitochondrial dynamics factors mitofusin 2 (Mfn2) and fission protein 1 (Fis1). More interestingly, the calculation of individual fusion indexes (i.e., Mfn2/Fis1), although presenting high interindividual variability, showed higher values in VOL individuals. **Conclusion:** Collectively, these findings support the hypothesis that an imbalance in mitochondrial dynamics toward fusion may be necessary for the maintenance of the muscle mitochondrial pool in very advanced age.

P255- RESOURCE BASED COMMUNITY DEVELOPMENT AS AN ASSET FOR INTEGRATED LONG TERM CARE FOR CHRONICITY AT COMMUNITY LEVEL. S. Tsartsara (*SEEH, Athens, Greece*)

Introduction: Chronicity is the first cause of healthcare cost burden and will continue to increase due to the growing longevity worldwide. National and local care budgets are already experiencing severe cuts not only in EU countries under crisis (Greece, Karanikolos et al) but also in advanced economies such as the UK (NHS recent social care cuts, The Guardian Social Care 2016). A solution must be found imminently that it is not dependent neither on state funding that is in constant decline in social care which is the primary driver of Chronic Care nor on Private Equity managing LTC, a high risk option that has failed dramatically over the last years to assure community based care (Four Seasons closing residential care in UK, The Guardian Social Care, 2016). The burden in finding a solution is transferred to the local communities that either are offered slim resources such as the increase in local tax for social care of 2% in the UK or not at all as in Greece. The national and local authorities are defensive in moving forward with care reforms as those demand serious investment from state resources. None of the care reform proposals actually proposes how to generate income to build a sustainable community based system for long term care especially. In this research we are proposing a community based integrated care model that is established on local resources that are lateral to the care services provided to the local population such as for instance senior tourism, health tourism and thermal rehabilitation in natural springs, or secondary housing of retirees relocated after pension or prevention services for the

whole population. Although frailty is the Chronicity's final stage of disease development, people with mild frailty whose rate to the Comprehensive Geriatric Assessment for Instrumental Living is quite high, are pursuing an active and healthy living and they are also travelling quite a lot. The choice of those senior travellers is conditioned by settings that are matching their individual diseases or conditions and their care plans. The region that will prove that has the provisions for those travellers that are in similar conditions for the care that is provided to the local population as well, for them to travel safely, properly accompanied and facilitated throughout their whole journey by experienced carers and medically supervised staff, will of course attract more of those travellers over 60. The more the care is embedded in the existing care system for the local population, the larger the revenue margin will be for the care structure. If this is managed by PPP and provided by private companies that adhere to a New Care Model that encompasses also a type of Social Contract between all parties including the segments receiving care, then there might be a solution for local authorities that have potential for Local Resource Based Community Care Development to sustain self – financed structures providing long term care to the local population in a sustainable manner. And this can function as a strong motivation for the authorities to move on and reform care to integrate services and professionals in their localities in such a way that while integrated care structures are created those to serve the facilitation of the senior travellers/dwellers segment in the area. The 1st pilot was in Greece at the region of Aegean islands. The pilot now will be transferred to UK. **Methods:** 1. Extraction of epidemiological data and Risk Factors Assessment; 2. VES -13 self-administered CGA questionnaire to measure i-ADL of the >65y.o. cohort. GIS mapping of population in a scale of primary and secondary prevention and care needs embedded in a care monitoring E-Health platform (existing and tested product); 3. Regression analysis of care means to the needs per CGA risk factor. Desk research analysis on the local health resources of the region; 4. Alignment of the local Health and Care services and professionals of the area ; drawing the lines for vision and strategy; 5. Focus Groups and structured interviews to establish a Memorandum of Understanding between mayors of the area to create the Care Hub managed by Private Public Partnership with the local health ecosystem and with the Twinning and support of EU Regions with advanced experience; 6. Setting the Investment Facility between the Municipal Authorities, a Bank in Greece and the public and private providers ;elaborating the Business Plan of the entire Care Hub operations incl. Silver Economy service management and provision organization e.g. Senior tourism, retirement real estate, home care for senior dwellers, professionalized Living Labs, prevention services etc.; 7. proposing the Investment blending and assuring private equity, crowd funding, VC and impact investment at different stages of the Care Hub deployment until stabilization of the RoI and the cashable savings. **Results:** 1. Needs analysis for care service and HR for the local population delivered; primary and social care services aligned. Telemedicine for acute care and 2nd opinion deemed possible. 2. Care Hub structure and business plan delivered. 3. Senior Tourism and Health Tourism model designed and delivered. 4. Investment blending, investment familiarization tour to health resorts organized. Further results were compromised due to the banking crisis in Greece and the refugee crisis (as the pilot area was at the Aegean islands, entry gate of the refugee waves in 2015 and 2016) hence the relocation plans and transfer of the pilot to other touristic area of Europe, where the health and care costs are covered by the EU Social Security Regulation and the CBHD 24/2011/EC. **Key Conclusions:** 1) In order to kick off integrated care reform in a locality it is necessary to provide the means that will cover the reform cost and assure sustainability of operations in the long run. 2) For that it is necessary to apply a PPP

structure to manage a Care Hub that will centralize organization, coordination and management of all Long Term Care services. 3) This structure does not depend on neither health nor social policy central authorities and it is run locally by a new institution built to cover both health and care for at least the primary care, social and long term care of the population. If secondary healthcare can also be aligned with hospitals and clinics this is all the better but it concerns usually advanced countries with well-organized systems, abundance of resources and investments such as Israel, N. Ireland or Netherlands for instance. 4) Investment and innovative financing and business innovation is necessary for any community care structure that wants to run sustainable care operations be it in low- middle or high income countries. 5) the first priorities to implement integrated care by order of priority are: a. leadership awareness and on the job training; b. Deliberation of the integrated care plan with all the local health ecosystem stakeholders, not only those concerned by health sector. The vision, strategy and action plan have to be endorsed by the entire ecosystem; c. build the right investment blend until the Care Hub is sustainably run with constant RoI d. the Care Hub management has to be independent from central authorities and abide to local control for commissioning services; e. Workforce training and patient empowerment are the next step to engage to.

P256- DEMONSTRATION OF THE CLINICAL UTILITY OF THE “FUNCTIONAL STATUS ASSESSMENT OF SENIORS IN THE EMERGENCY DEPARTMENT (FSAS-ED)” WITH INDEPENDENT SENIORS CONSULTING EMERGENCY DEPARTMENT (ED) FOR MINOR INJURIES. N. Veillette^{1,2,3}, M.-J. Sirois^{3,4,5} (1. Faculty of medicine, Montreal University, Montreal, Canada; 2. Research Center, Institut universitaire de gériatrie de Montreal(CRIUGM) , Montreal, Canada; 3. Canadian Emergency Team Initiative (CETI), Québec, Canada; 4. Centre d'excellence sur le vieillissement de Québec (CEVQ), Québec, Canada; 5. Centre de recherche du CHU de Québec, Québec, Canada)

Background: An Emergency Department (ED) visit is a «sentinel event» which reveals fragility and functional decline of older people. However, once the medical examination is completed, the majority of seniors returned home without an assessment of their functional status. The Functional Status Assessment of Seniors in the Emergency Department (FSAS-ED) was developed for this purpose. The Canadian Emergency Team Initiative (CETI) showed a cumulative incidence of 15% of persistent functional decline six months after minor injuries in previously independent seniors. As part of the CETI program, the objective of this study was to assess the clinical utility of the «Functional Status Assessment of Seniors in Emergency Department (FSAS-ED)» for older people. **Method:** A prospective case-control pilot study was conducted within the CETI cohort research program with a group of subjects (the cases) and matched subjects (the controls) recruited in two Quebec hospitals. Inclusion criteria were to be ≥ 65 years old, to have sustained a minor trauma and to have been previously independent in basic activities and domestic life (BADL), as well as to show a high risk of mobility decline based on a risk assessment by ED professionals (MDs, Nurses). Participants were evaluated at the ED according to current methods in ED practice. All subjects were assessed according to the CETI program (socio-demographic measures, medical assessment in the ED, medication status, frailty, cognitive status, walking speed, fear of falling, scores in ADL and IADL, social participation, use of health services in the ED and post-DU, social support, etc.). In addition, subjects of the cases group were assessed by an occupational therapist trained for using the FSAS-ED. Analyses compared various characteristics,

treatment plans and recommendations made by emergency physicians or those based on the FSAS-ED. **Results:** 50 cases and 56 controls were recruited. Both groups were similar in many characteristics (age, gender, number of comorbidities, proportion of individuals living alone without help, social support, number of GP consultations and number of ED visits in the previous 3 months), as well as levels of autonomy and mobility (number of outings/week, occasional use of a walking aid, IADL score on the OARS, number and types of falls in the previous 3 months, scores on the Short Fall Efficacy Scale, scores in seconds at the Timed-Up-and-Go and frailty status (on the CETI clinical decision rule). Based on their frailty status, participants were assigned into 3 sub-groups: (1) low risk, (2) moderate risk and (3) high risk. Differences were observed between the type of recommendations made by emergency physicians and those based on the FSAS-ED. The treatment plans of emergency physicians included rest/analgesia (45%), recommendation to see family doctor (35%) and return to ED PRN (30%). The recommendations of the occupational therapist based on the FSAS-ED included return to their home, fall prevention program, assistive mobility device, community resources and home care services. Patients at moderate and high risk received more numerous and specific recommendations compared to treatment plans suggested by MDs. The treatment plans of emergency physicians targeted short-term interventions compared with those based on the FSAS-ED which extended to the medium and long-term, including preventive approaches and physical activity. **Conclusion:** This was the first study demonstrating the clinical utility of the FSAS-ED with previously independent seniors who visit the ED for minor traumas. We found the nature and number of recommendations vary depending on the level of fragility. Recommendations by Emergency Physicians target short-term intervention, while those of occupational therapists based on the FSAS-ED aim to maintain and improve mobility in the mid/long-term. These are key elements in limiting functional decline.

P257- THE CLINICAL UTILITY OF THE FUNCTIONAL STATUS ASSESSMENT OF SENIORS IN THE EMERGENCY DEPARTMENT (FSAS-ED) AMONG FRAIL PATIENTS: A LONGITUDINAL CASE-CONTROL STUDY. N. Veillette^{1,2}, M.-C. Beaudoin³ (1. Faculty of medicine, Montreal University, Canada; 2. Research Centre, Institut Universitaire de Gériatrie de Montreal, Canada; 3. Centre intégré de santé et de services sociaux de la Montérégie-Est, Canada)

Background: The Emergency Department (ED) is one of the primary means of accessing health services. For each ED visit, the treatment team must quickly make decisions about whether admission is appropriate, what post-discharge follow-up is required or the feasibility of a return home. ED practitioners consult occupational therapists (OTs) to assess the functional status of elderly patients. A number of studies have found that functional status assessment in ED and follow-up interventions generate positive outcomes for older patients. Accurate data on functional status is required for resource planning and monitoring of elderly discharged from the ED. The assessment tools used lack specificity for the ED setting. However, screening tools designed and validated for ED help identify seniors at risk of decline, but do not provide information about their functional status. To fill this gap, The Functional Status Assessment of Seniors in Emergency Departments (FSAS-ED) was developed specifically for this purpose. The tool addresses functioning through 40 items that cover the basic activities of daily living and some environmental factors. From the information gathered, the evaluator makes recommendations concerning guidance and monitoring, and then transmits these to the interdisciplinary team of the ED. The objective of this study was to assess the clinical utility of the FSAS-

ED for frail people. More specifically, we also wanted to assess whether or not using the FSAS-ED could help the treatment team in the ED to determine the feasibility of a return home, identify any unmet needs, suggest a post-discharge intervention plan and transmit the relevant information to the health care resources in the community. **Method:** In a longitudinal case-control study, a group of older patients identified as frail by the ED team were referred to occupational therapy and assessed with the FSAS-ED (n=92). This group of patients was compared to a control group (n=110). Patients in the control group were randomly selected and, based on medical chart review, were matched to subjects of the FSAS-ED group on specific criteria (age, gender, residence, chief complaint/ reasons for ED consultation, diagnostic in ED, and number of comorbidities). Comparisons between groups were made in 3 instances: upon discharge from the ED (destination after ED visit), and after 3 and 6 months following the initial ED visit (return to ED, hospitalization, transfer to long term care and death rates). **Results:** 92 cases and 110 controls have been recruited. Both groups were similar in many characteristics, including level of autonomy prior to ED visit and reason for ED consultation and categories of diagnoses at discharge by ED physicians. Upon discharge from the ED, results suggest that using the FSAS-ED may be beneficial in ED settings by reducing hospital admissions (34% in FSAS-ED group vs. 55% in controls) and increasing return-home rates (49% vs. 37%). In addition, reducing rates of hospitalization and increased returns home did not come at the price of increasing the number of repeat visits to ED (33.6% vs. 39%) or hospitalization rates (20.6% vs. 33.6%) in the 6 months following the initial ED visit. Results also suggest that the recommendations provided by occupational therapists helped prevent deterioration of general conditions and falls, unnecessary or prolonged hospitalizations as well as risk to the safety of others. The impacts of the assessment of frail elders were many: (1) patients and families were by and large interested in, open to and appreciative of the recommendations provided, (2) the conclusion of the assessment facilitated access to home-care services or day hospital by documenting the need for prioritization, (3) the presence of an occupational therapist in the ED provided some opportunities for real-time training of ED staff (related to reduction of the use of restraints, prevention of pressure ulcers, promoting patient mobility with a focus on maximizing patient's participation) and (4) collaboration with liaison nurses helped ensure effective service implementation and referral to the various professionals required. **Conclusion:** Results suggest that using the FSAS-ED may be beneficial in ED settings by reducing hospital admissions and increasing return-home rates without increasing repeat visits to ED or hospitalization rates in the 6 months following initial ED visit, identifying patient's unmet needs and undiagnosed functional impairments, participating in discharge planning to prevent unsafe discharges and to improve safety upon discharge.

P258- IMPACT OF SARCOPENIA ON FALLS AND HOSPITALIZATIONS IN COMMUNITY DWELLING OLDER ADULTS. K. Du^{1,2}, S. Goates¹, M.B. Arensberg¹, S. Pereira¹, T. Gaillard³, R. Hegazi¹ (1. *Abbott Nutrition, Columbus, Ohio, USA*; 2. *Division of Nutritional Science, University of Illinois, Urbana-Champaign, Champaign, Illinois, USA*; 3. *College of Nursing, University of Cincinnati, Cincinnati, Ohio, USA*)

Background: With people living longer than ever before and older adults making up a larger proportion of the population, it is a critical time for bringing attention to extending quality of life and independence. The loss of lean body mass and frailty in sarcopenic individuals contributes to increased risks of various deleterious health outcomes leading to falls and hospitalization. The objective of this

study was to examine the prevalence of sarcopenia and its association with falls and hospital stays among community dwelling older adults in the U.S. **Methods:** Data was extracted from the National Health and Nutrition Examination Survey (NHANES) from 1999-2004 (the dataset from this timeframe allowed identification of sarcopenia). Sarcopenia was defined using the criteria recommended from the Foundation for the National Institutes of Health (FNIH) and included subjects that had low appendicular lean mass adjusted for body mass index (< 0.789 kg/m² for males and < 0.512 kg/m² for females) and having functional limitations. The impact of sarcopenia on reported falls and having one or more hospital stays was assessed using multivariate logistic regression analysis, controlling for age, gender and race. The marginal impact on the number of hospital stays was assessed using a two-step regression model, controlling for age, gender and race. The first step was a logistic regression on the probability of having any hospital stays, and the second step was a negative binomial regression on the number of hospital stays conditional on having at least one hospital stay. **Results:** The prevalence of sarcopenia in individuals ages 40-64 years is 9.2% for males and 8.6% for females. Prevalence rates increased for adults age 65 years and older to 15.8% for males and 15.3% for females. In older adults with sarcopenia, the odds of falling are 2.4 times greater compared to those without sarcopenia (OR: 2.4, P<0.001). The odds that a sarcopenic older adult has stayed overnight in a hospital in the past year is nearly twice that of non-sarcopenic older adults (OR: 1.93, p<0.001). Furthermore, older adults with sarcopenia have, on average, 0.18 more hospital stays than those without sarcopenia in a given year (P<0.001). **Conclusion:** These results confirm increasing prevalence of sarcopenia with age. Additionally, older adults with sarcopenia have increased risk of staying overnight in the hospital and are more likely to have more hospital stays compared to those without sarcopenia. Increased incidences of falling and hospitalization in sarcopenic individuals not only compromise quality of life, but also increase health care costs. Given that the average cost of a hospital stay for adults over age 40 is \$10,589, a 0.18 increase in the average number of stays for sarcopenia patients increases their annual hospital expenditures \$1906. These findings emphasize the need for early identification of at-risk older adults in the community and early intervention prior to hospitalization.

P259- THE ROLE OF OLFACTORY FUNCTION IN SEVERE SARCOPENIA ON ELDERLY. Y.S. Handajani¹, Y. Turana², N.T. Widjaja¹ (1. *Department of Public Health and Nutrition of Faculty of Medicine & Center for Health Research, Atma Jaya Catholic University, Jakarta, Indonesia*; 2. *Department of Public Health and Nutrition of Faculty of Medicine, Atma Jaya Catholic University, Jakarta, Indonesia*; 3. *Department of Public Health and Nutrition of Faculty of Medicine & Center for Health Research, Atma Jaya Catholic University, Jakarta, Indonesia*)

Background: Aging is a worldwide issue with various outcome, one of which is sarcopenia. It has been shown to result in adverse health outcome, i.e. cognitive impairment, disability, and chronic disease. Genetic factor, such as APOE ε4 genotype, is known to play role in the development of sarcopenia. Recent studies showed that olfactory deficit is related to the progression of sarcopenia and vice versa.. Olfactory function is also known to have an effect in brain integrity, which reflects central nervous system changes in older adults which structure and function are physiologically declined with age. The aim of this study was to investigate possible association between sarcopenia with APOE ε4 genotype, olfactory function and other risk factors along with the adverse outcome of this age-related muscle loss disease. **Method:** This is a cross-sectional study, involving 209 participants aged ≥60 years old who met the inclusion criteria.

APOE measurement was completed using Restriction Fragment Length Polymorphism (RFLP) method. In this study, we used High Pure Polymerase Chain Reaction (PCR) Template Preparation Kit for extraction and PCR was performed using Fast Start Taq DNA Polymerase (Roche Applied Biosystem). Examination of olfactory nerve function was performed using 10 odors commonly found in Indonesia: cajuput oil, coffee, jasmine, menthol, tobacco, kerosene, pandan, camphor, chocolate, and orange. **Results:** By multinomial logistic regression analyses, after adjusted for confounding variable, there were significant relationship between age (OR=0.15), gender (OR=0.27) and olfactory nerve function with severe sarcopenia (OR=0.09), likewise IADL-disability (OR=7.9), BMI (OR=3.1) and dislipdemia (OR=4.8) with sarcopenia ($p \leq 0.05$). **Conclusion:** Skor of olfactory function was higher in man of younger elderly without severe sarcopenia or normal olfactory function in man of younger elderly was protective factor of severe sarcopenia. For that reason, the examination of olfactory function can be included in the screening of sarcopenia.

P260- TOTAL AND SEGMENTAL BODY COMPOSITION AND HAND GRIP STRENGTH IN PATIENTS WITH ALZHEIMER'S DISEASE. E. Mereu¹, V. Succa¹, O. Catta², R.M. Mereu², P. Lussu¹, E. Marini¹ (1. Department of Life and Environmental Sciences, University of Cagliari, Italy; 2. Geriatric Division, SS Trinità Hospital, ASL 8, Cagliari, Italy)

Background: Muscle-mass reduction is indicative of sarcopenia, if associated to low muscle strength and/or low physical performance. Patients with Alzheimer's disease (AD) show body composition variations and physical functioning impairments that can be linked to a sarcopenic condition. **Method:** 134 patients (50 men, 78.3 ± 6.3 years; 84 women, 81.4 ± 6.5 years) with mild to moderate stages of AD were selected from the Geriatric Division, SS. Trinità Hospital, ASL 8 of Cagliari (Italy). A sample of 135 healthy age-matched individuals (74 men, 77.3 ± 5.3 years; 61 women, 80.4 ± 5.5 years) was chosen as control group. Anthropometric measurements were taken and body mass index (BMI) was calculated. Bioelectrical measurements were taken on the right side of the body for both the whole-body and the arm, using a BIA 101 analyser (RJL systems). Body composition was assessed by means of specific bioelectrical impedance vector analysis (BIVAsp). Hand grip strength was measured using a hydraulic hand dynamometer. The comparison between patients and the control group was performed by two-factor analysis of variance and Hotelling's T2 test, as well as Pearson's correlation coefficient. **Results:** In comparison with the control group, patients with AD showed similar anthropometric characteristics, including BMI, but lower lean tissue mass and higher percent fat mass, as indicated by the lower phase angles and longer specific vectors. The same body composition peculiarities were detected considering only the right (and dominant) arm. Hand grip strength was lower in patients with AD, but it was not correlated with bioelectrical variables. **Conclusion:** Patients with AD show mean characteristics – weaker hand grip and lower lean mass/higher percent fat mass – that indicate a tendency to sarcopenic conditions. The association of specific BIVA and muscle strength (or, when possible, physical performance) measurements can represent a suitable procedure to detect sarcopenia in patients with Alzheimer's disease. The similar results obtained using total body and segmental approaches suggest the possibility of a new, quicker, and simpler experimental procedure for body composition assessment.

P261- CHANGES IN FRIED'S FRAILTY DOMAINS POST-VENTRICULAR-ASSIST DEVICE IMPLANTATION AND HEART TRANSPLANTATION. R. Jha^{1,2}, MK. Hannu¹, P.J. Newton², K. Wilhelm³, C.S. Hayward¹, E. Kotlyar¹, A. Keogh¹, K. Dhital¹, M. Connellan¹, E. Montgomery¹, A. Smith¹, M. Harkess¹, P.M. Davidson⁴, P.S. Macdonald¹ (1. St Vincent's Hospital, Heart and Lung Transplant Unit, Sydney, Australia; 2. University of Technology Sydney, Sydney, Australia; 3. St Vincent's Hospital, Psychiatry, Sydney, Australia; 4. Johns Hopkins University, School of Nursing, Baltimore, United States of America)

Aim: The aim of this study was to identify changes in frailty amongst advanced heart failure (AHF) patients undergoing bridge-to-transplant ventricular-assist-device (BTT-VAD) implantation or heart transplantation (HTx). **Methods:** Since 2013, all AHF patients referred to our centre were assessed for frailty. Fried's five physical domains: exhaustion, grip-strength, mobility, appetite and physical inactivity (frail $\geq 3/5$), as well as cognitive impairment (MoCA ≤ 26) and depression (DMI > 9) were assessed. Over this time there have been 97 interventions (31 frail: 67 not-frail). Amongst those who were frail pre-intervention, follow-up frailty assessments were conducted >2 months post-intervention. **Results:** To date, 26 frail pre-intervention patients were followed-up post intervention: 12 VAD (124 (80-133) days post-VAD) and 14 HTx (173 (96-323) days post-HTx). Among the VAD patients there was a significant improvement in frailty score (4.2 ± 0.8 to 1.7 ± 1.1 , $p < 0.003$); with significant improvements across all frailty domains except grip-strength after pump implant. Among the HTx patients, there was also a significant improvement in frailty score (3.2 ± 0.4 to 0.9 ± 0.9 , $p < 0.001$); with significant improvements seen in exhaustion, appetite and physical activity after HTx. A non-significant improvement was seen in depression, and less so cognitive impairment in the frail pre-VAD patients; depression significantly improved post-VAD. **Conclusion:** Whilst frailty is predictive of worse outcomes amongst AHF patients referred for transplantation, frailty is partly or completely reversible amongst those identified as frail pre-intervention. Improvements in appetite and physical activity were the major contributors to improved frailty score. In contrast, improvement in HGS was small and non-significant.

	Baseline	Follow-up	p-value
Frail Pre-VAD (n=12)			
Frailty score	4.2±0.8	1.7±1.1	0.003
Exhaustion	10 (83%)	4 (33%)	0.031
HGS*	9 (75%)	8 (67%)	1.000
Mobility	10 (83%)	3 (25%)	0.016
Appetite	12 (100%)	4 (33%)	0.008
Physical Activity	10 (83%)	1 (8%)	0.012
HGS score(kg)	22.6±11.5	26.9±10.0	0.099
MoCA score	24±5	25±3	0.306
DMI score	10±7	5±5	0.066
Frail Pre-HTx (n=14)			
Frailty score	3.2±0.4	0.9±0.9	<0.001
Exhaustion	10 (71%)	3 (21%)	0.016
HGS*	8 (57%)	7 (50%)	1.000
Mobility	6 (43%)	1 (7%)	0.063
Appetite	12 (86%)	2 (14%)	0.002
Physical Activity	9 (64%)	0 (0%)	0.004
HGS score(kg)	25.0±8.4	27.2±8.7	0.116
MoCA score	25 ± 3	26 ± 4	0.280
DMI score	9±8	4±4	0.002

P262- THE ASSOCIATED RISK FACTORS OF LOW MUSCLE MASS IN WORKING POPULATION IN SOUTHERN TAIWAN. M.H. Lee¹, P.Y. Chou² (1. Department of Family Medicine, Chi Mei Medical Center, Taiwan; 2. Department of Obstetrics and Gynecology, An-An Women and Children Clinic, Taiwan)

Background: Sarcopenia is characterized by age-related decline of skeleton muscle mass and low muscle function (either muscle strength or physical performance). It is associated with multiple

unfavorable clinical outcomes, such as falls, disability, hospital admission, and mortality, in the elderly people. Although the prevalence of sarcopenia may increase with age, there are still limited data about the associated risk factors of low muscle mass in middle-aged adults. This study aims to evaluate the related factors of low muscle mass in working population in southern Taiwan. **Method:** We conducted a cross-sectional study by analyzing the database from the annual health examination of a company in southern Taiwan in 2014. Anthropometric measurements, sex, age, medical history (hypertension, diabetes mellitus, and dyslipidemia) and smoking (or not) were recorded. Body mass index (BMI) and body composition (body fat percentage and skeletal muscle mass) were measured using bioimpedance analysis. Low muscle mass was defined as an appendicular skeletal muscle mass index (appendicular skeletal muscle mass/height²) less than two standard deviations below the normal sex-specific mean for young people in Taiwan. **Results:** A total of 266 workers (Male/Female=218/48, mean age=42.47±9.35 year-old) with completed data were enrolled for final analysis. Multiple logistic regression analysis showed that gender (male vs. female, OR: 5.391, 95%CI: 2.053-14.156) and BMI (OR: 0.638, 95%CI: 0.566-0.720) were independent factors of low muscle mass. Otherwise, people with hypertension (OR: 0.301, 95%CI: 0.167-0.540) or low HDL (OR: 0.385, 95%CI: 0.153-0.967) had lower risk of low muscle mass. Diabetes mellitus, hypercholesterolemia, or smoking do not have statistical significance with the risk of low muscle mass. **Conclusion:** In working population, those who are male or with lower BMI have higher risk of low muscle mass. On the other hand, people with hypertension or low HDL have lower risk. The mechanism is still unclear. Further studies are needed to clarify if low muscle mass in middle-aged adults leading to sarcopenia, even adverse clinical outcome, in their later life. Timely screening and intervention may be helpful for the higher risk groups.

P263- DEVELOPMENT OF AN INTEGRAL ASSESSMENT TOOL FOR THE FRAIL PATIENT IN PRIMARY CARE SETTING: STUDY PROTOCOL.

C. Güell^{1,2,3}, M. Machón^{1,4,2}, M. Mateo¹, L. Rico¹, O. Miranda^{1,5}, I. Rodríguez^{1,6}, A. Etxeberria⁷, M.J. Goñi⁸, A. Uranga⁹, I. Antón¹⁰, I. Vergara^{1,2,4} (1. Primary Care Research Unit Gipuzkoa, Osakidetza, San Sebastián-Donostia, Spain; 2. Biodonostia Health Research Institute, San Sebastián-Donostia, Spain; 3. Alza Health Center, Donostialdea Integrated Healthcare Organization, San Sebastián-Donostia, Spain; 4. Health Services Research on Chronic Patients Network (REDISSEC); 5. Bidebieta Health Center, Donostialdea Integrated Healthcare Organization, Osakidetza, San Sebastián-Donostia, Spain; 6. Donostia Hospital, Donostialdea Integrated Healthcare Organization, Osakidetza, San Sebastián-Donostia, Spain; 7. Donostialdea Integrated Healthcare Organization, Osakidetza, Hernani, Spain; 8. Sociosanitary Coordination, Donostialdea Integrated Healthcare Organization, San Sebastián-Donostia, Spain; 9. Public Health Department of Gipuzkoa, Government of the Basque Country, San Sebastián-Donostia, Gipuzkoa, Spain; 10. Matia Fundazioa, San Sebastián-Donostia, Spain)

Background: Ageing is accompanied by a series of physiological changes which lead to a gradual loss of adaptation to the demands of the environment and increased vulnerability. The most severe expression of ageing is the clinical condition of frailty, whose integral approach begins in primary care setting. Therefore, it is of vital importance to provide assessments tools adequate to be used in such healthcare system. Frailty is a wide and complex concept very well trapped in the comprehensive geriatric assessment, which is considered a gold standard for complex and frail patients. However,

the requirement of expert knowledge and the time required for its fulfillment limits its generalization in primary care. In this study, we are searching for a tool that also captures the complexity of frailty and that is achievable in everyday clinical practice. The objective of this project is to develop an integral assessment model of the frail patient that includes the most relevant variables and determinants of frailty and also specific therapeutic actions, adequate to be used in primary care. **Methods:** The integral assessment model for the frail patients will be developed by a multidisciplinary team composed by general practitioners, geriatricians, nurses, social workers and pharmacists. The following tasks will be fulfilled: 1. To define the key areas and the most relevant and approachable variables that determine the frailty condition. In a preliminary way, we will consider four principal dimensions: physical, mental, social and functional. For each dimension, several different variables, identified from medical records, will be considered. 2. To develop specific and individualized action plans to intervene in the identified determinants of frailty that are affected. 3. To pilot the integral assessment model in a patient's sample. A total of 25 frail older people (Short Physical Performance Battery <10 points) over the age of 75 will be randomly selected from a previous cohort study of community dwelling older people. The information about the variables and action plans previously identified will be collected by general practitioners. They will also assess the level of satisfaction with the proposed tool. 4. To design the definitive version of the model and initiating a universal, interactive, and visual app that it will be integrated in the electronic medical record of the patient. **Results:** As a result, this project will intrinsically reveal temporary frailty condition and its fluctuations that in other way would be hard to identify; it will define relevant and manageable variables and how to find them in medical records and it will associate a feasible action plans for each of them. This new approach places the health professional at a glance at the level of frailty of the patient and helps managing frailty in its different aspects. It also makes collected practical data useful, visible and organized. Our idea goes further than making the job easier, it's about motivating the professional to generate more interventions with better outcomes leading to a generally improved health status of the patient. This project opens a door to the possibility of further design of new tools that adjust to the needs of a good medical practice and that could be applied to other healthcare ambits. Lastly, in the future, we will develop an app visible in the medical record of the patient. **Conclusion:** Frailty is a wide and complex concept that must be considered in primary health care settings. There is a need to develop an integral, dynamically updated and universal tool to facilitate managing frailty and to illustrate the status of frailty in the framework of Primary Health Care. In this project, a working model tool for the daily clinical practice to facilitate the integral assessment of the already identified frail patient in primary care settings will be created. It converts any visit from the patient into an opportunity to improve their condition of frailty and prevent dependency.

P264- IN VITRO PHENOTYPIC COMPARISON BETWEEN YOUNG AND AGED HUMAN MYOTUBES.

J. Young, E. Duchemin-Pelletier, M. Flaender, P. Poydenot, M. Raul (CYTOO SA, Grenoble, France)

Background: Muscle wasting can result from a wide range of dysregulations in muscle physiology. Muscle loss is present systemically in the elderly (sarcopenia); it can result from acute or chronic illness (cachexia), or appear in various pathologies such as dystrophies or diabetes. During the last 15 years, extensive research has led to a better understanding of the signaling pathways implicated in the loss of muscle mass (atrophy) and offered promising drug

targets. However, to date, muscle is the last remaining undrugged organ of the body due to animal models that poorly phenocopy human skeletal muscle diseases, but also, most importantly because there is still no relevant in vitro model established. **Method:** In this context, we developed MyoScreen™, a drug discovery engine that provides a physiological human in vitro model of skeletal muscle. The model relies on micropatterns that control the microenvironment and thus guide and orientate the differentiation of human primary myoblasts. The resulting myotubes show a high level of maturation (striation, calcium flux, clustering of acetylcholine receptor (AChR), peripheral nuclear alignment) together with an extremely standardized morphology that allows the development of a panel of phenotypic readouts that can be used as primary or secondary screening tools. To demonstrate that MyoScreen™ is a sensitive and predictive model with a potential for discovering new compounds, three healthy donors with a range of ages (4, 20, and 37 years old) and a diabetic donor (68 years) were systematically assessed in terms of proliferation, differentiation, calcium flux, acetylcholine receptor clustering and response to atrophy and hypertrophy inducers. **Results:** Primary myoblast populations were characterized before initiating differentiation: although all four donor cell populations are 80-90% desmin positive, myoblast proliferation decreased with age while myoblast size increased. Once seeded on the MyoScreen™ platform, all four donor cells differentiate and form myotubes, however the capacity to differentiate (fusion index) and myotube area were reduced with age. All donor myotubes were striated and undergo calcium release after Acetylcholine or 4 Chloro-m-Cresol addition. AChR clusters are detected after 8 days of differentiation in the three youngest donors, and clustering is increased after induction with agrin, especially in myotubes from the infant donor. The four models were then challenged with several biological inductions to further investigate their sensitivity. The younger donor myotubes responded less to atrophy (TNF- α , dexamethasone or TGF- β) and hypertrophy (IGF-1) stimulation, compared to the older donors, and especially the oldest diabetic donor. To demonstrate the benefits of our approach for targeting muscle waste disorders, we established a model for muscle wasting correction using the 20 years old donor. To do so, atrophy was induced using different reference compounds known to lead to muscle loss or to impair renewal such as myostatin or TNF- α . Then, compounds that could counteract this phenotype were screened, and IGF-1 and Trichostatin A were identified as potent suppressors of the sarcopenic phenotype. **Conclusion:** First, the present study highlights a gradient of different features depending on patient age and health. On the other hand, the results of the age-stratified analysis demonstrate the capacity of the MyoScreen™ drug discovery platform to discriminate between donors and to measure the impact of compounds, based on High Content Screening. By combining a higher relevance to the in vivo situation with access to a rich panel of phenotypic readouts, MyoScreen™ represents a new paradigm that can improve our understanding of the molecular mechanisms driving muscle disorders using healthy or diseased donor cells and increase confidence in the validity of target hits from drug discovery screening campaigns.

P265- LATE-LIFE ENALAPRIL ADMINISTRATION AFFECTS MITOCHONDRIAL MASS IN THE HEART OF OLD RATS. A. Picca¹, V. Pesce², G. Sirago², R. Calvani¹, C.S. Carter³, G. Chimienti², A.M. Serena Lezza², E. Marzetti¹ (1. Department of Geriatrics, Neurosciences and Orthopedics, Catholic University of the Sacred Heart School of Medicine, Teaching Hospital "Agostino Gemelli", Rome, Italy; 2. Department of Biosciences, Biotechnologies and Biopharmaceutics, University of Bari, Bari, Italy; 3. Department of Aging and Geriatric Research, Institute on Aging, Division of Biology of Aging, University of Florida, Gainesville, FL, USA)

Background: Inhibition of the renin-angiotensin system produce beneficial effects against mitochondrial alterations in several aged rat tissues. Here, we investigated the effect of late-life enalapril administration on mitochondrial content and antioxidant defenses in rat hearts and explored the effects of enalapril mediated by nitric oxide (NO) from those independent from NO signaling. **Methods:** Fischer 344xBrown Norway rats were randomly assigned to receive enalapril (n=4), the NO synthase (NOS) inhibitor NG-nitro-L-arginine methylester (L-NAME; n=4), enalapril + L-NAME (n=4), or placebo (n=4) from 24 to 27 months of age. **Results:** Enalapril, in combination or not with L-NAME, induced an increase in mitochondrial citrate synthase activity, a marker of mitochondrial mass. Accordingly, a higher content of the mitochondrial antioxidant enzyme Peroxiredoxin III (PrxIII) protein in the same two groups was found. Conversely, no variations either in the protein contents of the peroxisome proliferator-activated receptor gamma coactivator 1-beta (PGC-1 β) and the oxidized PrxIII (Prx-SO₃) were observed among groups. **Conclusion:** Our results indicate that, as a result of a concerted modulation of NO and angiotensin II signaling, enalapril mitigates oxidative stress and amplifies the mitochondrial pool in the heart of old rats.

P266- MUSCLE AND TENDON CONTRIBUTIONS TO REDUCED RATE OF TORQUE DEVELOPMENT IN OLD AGE. J.I. Quinlan¹, M.V. Franchi¹, P. Greenhaff², N. Szewczyk¹, P.J. Atherton¹, K. Smith¹, C.N. Maganaris³, M.V. Narici¹ (1. MRC-ARUK Centre of Excellence for Musculoskeletal Ageing Research, Division of Medical Sciences & Graduate Entry Medicine, School of Medicine, University of Nottingham, Derby, UK; 2. MRC-ARUK Centre of Excellence for Musculoskeletal Ageing Research, School of Life Sciences, University of Nottingham, QMC, Nottingham, UK; 3. Research Institute for Sport and Exercise Sciences, Liverpool John Moores University, Liverpool, UK)

Background: The ability to generate, and transfer, muscle force quickly is essential for effective corrective movements in response to postural perturbations such as arresting a fall after tripping over an obstacle. Three key-determinants govern this process: 1) time of muscle activation (by motor unit recruitment and frequency of firing), 2) speed of muscle contraction (fibre composition and MHC distribution), 3) effectiveness of force transmission, by the tensile stiffness of the tendon. The aim of this study was to establish the muscle and tendon contributions to differences in rate of torque development (RTD) between younger (YM) and older males (OM). **Methods:** Twenty-two older males aged 65-73 yrs and 28 younger males, aged 18-35 yrs, were recruited for this study after informed consent and Ethical approval. Data are reported as mean \pm SEM, statistical significance of differences was assessed using the Student-t-test. Quadriceps maximum muscle cross sectional area (CSA) measured by MRI, isometric maximum voluntary contraction (MVC), RTD from 0 to 200 ms and tendon stiffness (measured by dynamometry and ultrasonography) were measured. Neuromuscular function variables including muscle twitch time contraction time

(CT), activation capacity (AC) and time to peak EMG amplitude (TTPE) were also assessed through interpolated twitch and surface EMG respectively. **Results:** Absolute RTD (aRTD) was significantly lower (-53%, $p < 0.0001$) in OM (577.5 ± 34.6 N/s) than in YM (881.7 ± 45.6 N/s). RTD was still lower in OM once normalized (nRTD) for muscle CSA (17.4%, $p < 0.03$). All neuromuscular function variables were negatively affected in OM, including muscle twitch CT (-16.5%, $p < 0.002$, 79.6 ± 2.4 ms vs 66.5 ± 2.8 ms), AC (-6.2%, $p < 0.01$, 80.1 ± 0.9 vs 75.8 ± 1.3) and TTPE (-29.3%, $p < 0.05$, 109.2 ± 8.6 ms vs 154.6 ± 16.6 ms). Tendon stiffness was found to be 45% lower ($p < 0.004$) in OM (1222 ± 78.4 N/mm) than in YM (1771 ± 154.1 N/mm). aRTD correlated to AC ($r = 0.44$), TTPE ($r = -0.34$), CSA ($r = 0.43$) and tendon stiffness ($r = 0.62$). Notably, however nRTD was only found to be significantly correlated with tendon stiffness ($r = 0.48$). **Conclusion:** These observations provide evidence that in absolute terms, a lower RTD in the elderly is caused by a slower muscle contraction speed, slower TTPE, a reduction in muscle CSA and a decrease in tendon stiffness. Significantly, however, the only variable to remain correlated once the RTD is normalized to quad CSA, is tendon stiffness. This strongly reinforces the importance of both muscle and tendon characteristics when considering RTD, but especially the stiffness of the tendon. This has implications for the design of interventions aiming at improving postural stability and preventing falls in older people.

P267- FACTORS RELATED TO PHYSICAL PERFORMANCE IN FRAIL ELDERLY. E. Bozoglu¹, U.K. Ertan², N. Kirdi², A. Ozturk¹, G. Buyukturan³, H. Doruk¹ (1. *Gulhane Military Medical Academy, Division of Geriatrics, Ankara, Turkey*; 2. *Hacettepe University, Faculty of Health Sciences, Department of Physical Therapy and Rehabilitation, Ankara, Turkey*; 3. *Gulhane Military Medical Academy, Turkish Armed Forces Rehabilitation Center, Ankara, Turkey*)

Background: Introduction: Reduced grip strength, slow walking speed and low physical activity is known to negatively impacts individuals' physical performance levels of elderly. In this study, we aimed to examine other parameters affecting the performance levels of frail elderly. **Methods:** In this study, forty-eight frail elderly were included. Grip strength, hip flexion and abduction, knee extension and ankle dorsiflexion strength was measured. Additionally, walking speed, balance situation, foot sense and fear of falling were also recorded. **Results:** Individuals' mean age, BMI, education status, their drugs, the number of falls in the last year; 84.7 ± 5.5 years, 28.2 ± 5.8 kg/m², 9.7 ± 3.2 years, 7.2 ± 2.7 drugs and 1.3 ± 2.6 times, respectively. There were significant correlations between physical performance and muscle strength of hand-grip ($p = 0.002$, $r = 0.427$), knee extension ($p = 0.015$, $r = 0.350$), hip flexion ($p = 0.005$, $r = 0.400$), hip abduction ($p = 0.004$, $r = 0.404$) and ankle dorsiflexion ($p = 0.005$, $r = 0.403$). There were also significant correlations between physical performance and walking speed ($p = 0.000$, $r = -0.673$), balance ($p = 0.000$, $r = 0.701$) and fear of falling ($p = 0.018$, $r = -0.340$), on the other hand, not correlated with foot sensation ($p = 0.978$, $r = -0.004$). **Conclusions:** In our study, reduced grip strength, slow walking speed, decreased lower extremity muscle strength; increased balance disorder and the fear of falling were found to adversely affect physical performance levels in frail elderly. However, the foot sense has no effect on the physical performance level. In order to improve their physical performance and maintain healthy life of older people muscle strengthening exercise programs including balance and gait training should be implemented.

P268- EFFECTS OF ESSENTIAL AMINO ACIDS SUPPLEMENTATION ON FUNCTIONAL OUTCOMES IN HIP FRACTURED PATIENTS: RESULTS OF A 2 MONTHS MULTIDISCIPLINARY REHABILITATIVE AND NUTRITIONAL RANDOMIZED STUDY. M. Invernizzi¹, F. D'Andrea², D. Carrara², F. Renò³, M. Rizzi³, C. Cisari¹ (1. *Physical and Rehabilitative Medicine, Department of Health Sciences, University of Eastern Piedmont "A. Avogadro" Novara, Italy*; 2. *Clinical Nutrition Unit, AOU "Maggiore della Carità" Novara, Italy*; 3. *Innovative Research Laboratory for Wound Healing, Department of Health Sciences, UNiversity of Eastern Piedmont "A. Avogadro" Novara, Italy*)

Background: Osteoporotic hip fractures are the most dramatic consequence of osteoporosis being a major cause of disability in the elderly population as well as one of the largest health care costs and social burden [1]. Sarcopenia, an age-related muscle condition characterized by loss of skeletal muscle mass and strength, share many contributory (and causative) factors with osteoporosis being both associated with higher risk of mobility limitation, fractures and disability [2]. Previous studies showed a high prevalence of Sarcopenia in hip-fractured women with important implications on disability and functional recovery. Moreover, general malnutrition has long been recognized as both highly prevalent (40 – 80% of hospitalized patients with hip fracture) and a strong predictor of poor outcomes after hip fracture [3]. Thus, physical exercise and nutrition represent treatment strategies crucial in hip fractures management and a multidisciplinary approach to treat this condition has been strongly recommended [4]. However at present time few studies investigated the impact of a multidisciplinary treatment combining exercise and nutrition interventions in hip fractured patients. The aim of this study was to evaluate the impact of a rehabilitative exercise protocol combined with dietetic counseling with or without essential amino acids supplementation on functional status, handgrip strength (HGS) and health-related quality of life in hip fractured patients. **Methods:** 32 osteoporotic hip fractured patients of both sex aged more than 65 were enrolled in the Rehabilitation Unit of the University Hospital in Novara 3 weeks after hip fracture. Patients were randomly assigned to one of the treatment arms using a randomization scheme generated by software with a 1:1 allocation and without blocks. Patients in Group A performed a physical exercise rehabilitative program with a concomitant dietetic counseling plus essential amino acids supplementation (Aminotrofic®, Errekappa Euroterapici, Milano, Italy) 4g twice a day. Patients in Group B performed a physical exercise rehabilitative program and dietetic counseling only. The following variables were evaluated at baseline (t₀) and after two months (t₂) of treatment: height, weight, bioelectrical impedance analysis (BIA), Timed Up and Go test (TUGT), The Iowa Level of Assistance scale (ILOA), HGS assessed with an handheld dynamometer, SF-12 and nutritional assessment. The presence of Sarcopenia, defined according to the European Working Group on Sarcopenia in Older People (EWGSOP) criteria was assessed in both groups. Data analysis has been performed on whole group A and B and on sarcopenic and non-sarcopenic patients in both groups. Lastly a subgroup of 20 patients performed serum myostatin evaluation at baseline and after 2 months. Due to the small sample size, we supposed a non-gaussian distribution of variables. Differences between each variable in each group have been evaluated with Wilcoxon's signed rank test. Differences between single variables in different groups were evaluated with the Mann-Whitney U- test. A type I error level of 0.05 was chosen. The Bonferroni correction for multiple comparisons was applied considering three primary outcome variables, which resulted in a new alpha-error level of 0.017. **Results:** Patients

in both Group A and B, showed statistically significant improvements in HGS, TUGT, ILOA and SF-12 at t2 evaluation ($p < 0.017$). There were no statistical differences for any variable considered between the two groups. Serum myostatin decreased significantly in both Groups at t2 but without significative differences between groups. Sarcopenic patients in group A showed statistically significant improvements in HGS, TUGT and SF-12 at t2 ($p < 0.017$) while Sarcopenic patients in group B showed no significant changes in all the variables considered at t2. **Conclusions:** A multidisciplinary rehabilitative program combining physical exercise and nutritional assessment/intervention is mandatory to treat a complex and multifactorial condition like hip fracture. Data emerging from this study showed a positive impact of a multidisciplinary approach on functional outcomes in hip fractured patients after two months of treatment. In particular essential amino acid supplementation provide significative improvements in the sarcopenic sub-population of the study, suggesting a greater efficacy of this intervention in these patients. References: [1] Cummings SR, Melton LJ. Epidemiology and outcomes of osteoporotic fractures. *Lancet* 2002;359(9319):1761-7. Review. [2] Ferrucci L, Baroni M, Ranchelli A et al (2014) Interaction between bone and muscle in older persons with mobility limitations. *Curr Pharm Des* 20(19):3178–3197. [3] Botella-Carretero JI, Gomez-Martin JM, Calanas A et al. Oral supplementation & in elderly patients with hip fracture: a review. *Nutr Ther Metab* 2012; 30:170 – 175. [4] Blain H, Masud T, Dargent-Molina P et al. A comprehensive fracture prevention strategy in older adults: the European Union Geriatric Medicine Society (EUGMS) statement. *Aging Clin Exp Res*. 2016 Aug;28(4):797-803

P269- THE USE OF A NOVEL MECHANISTIC BIOMARKER TO PREDICT THE DRIVER OF HDL SUPPRESSION OBSERVED WITH SELECTIVE ANDROGEN RECEPTOR MODULATORS. A. Hinken¹, G. Luo¹, A. Walker², D. Neil¹, A. Russell¹ (1. *Muscle Metabolism DPU, GlaxoSmithKline, Philadelphia, USA*; 2. *PCPS – Clinical Statistics, GlaxoSmithKline, Philadelphia, USA*)

Background: Clinical studies using Selective Androgen Receptor Modulators (SARM) have demonstrated alterations in lean mass. In addition, changes in lipid profiles have also been observed, including decreased HDL. We performed a post hoc analysis to identify if changes in enzymes responsible for HDL catalysis were altered in subjects treated with a SARM (GSK2881078). Hepatic lipase (HL) catalyzes the hydrolysis of triacylglycerol and phospholipids of lipoprotein particles. Specifically, HL catalyzes the conversion of large buoyant high-density lipoprotein HDL2 particles to small, dense HDL3 by modulating the triglyceride (TG) and phospholipid content of these particles. **Methods:** To assess HL activity we developed assay conditions to selectively determine HL in postheparin plasma, as commercially available assays do not display selectivity and specificity for HL. A fluorometric assay was established to differentiate HL from Lipoprotein Lipase (LPL) and endothelial lipase (EL). To detect HL activity, a PED6 substrate was determined to be more selective than other commonly used substrates. In addition, high salt and pH assay conditions, previously described to aid HL selectivity, were employed to provide specificity. **Results and Conclusions:** Hepatic lipase activity can be specifically determined in human post-heparin plasma using identified assay conditions. Additional results and implications for further research will be presented at the meeting. This was a GSK sponsored study and all authors are GSK employees and have stock/stock options in the company.

P270- COMPARISON OF RESPIRATORY MUSCLE STRENGTH BETWEEN SARCOPENIC AND NON-SARCOPENIC COMMUNITY-DWELLING ELDERLY WOMEN. T. Campos Duarte¹, L. Paccini Lustosa², L. Augusto Teixeira¹, F. Pereira Brant³, A. Netto Parentoni¹ (1. *Master's Degree student of the Programa de Pós Graduação em Reabilitação e Desempenho Funcional, UFVJM, Diamantina, MG, Brazil*; 2. *Physiotherapy Department, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil*; 3. *Undergraduate student of Physiotherapy, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina, MG, Brazil*; 4. *Physiotherapy Department, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina, MG, Brazil*)

Background: Sarcopenia is a geriatric syndrome characterized by loss of muscle mass, decreased muscle strength, and functionality. Several criteria have been developed to diagnose sarcopenia more easily and accurately. Sarcopenia has also been associated with changes in respiratory muscle strength that, in turn, may lead to impairment of lung function. The respiratory muscle strength (RMS) is an inexpensive and affordable measurement that could be better explored in studies of sarcopenia once has provided high prognosis value. Objectives: The objectives of this study were (1) to identify and to classify community-dwelling elderly women as sarcopenic (SA) or non sarcopenic (NS) according to the algorithm proposed by Cruz-Jentoft et al. (2010); (2) to compare the RMS of the SA and NS groups using the Maximum Inspiratory Pressure (PiMax) and Maximum Expiratory Pressure (PeMax). **Methods:** From a total of 80 community-dwelling elderly women living in Diamantina (Brazil) evaluated, only 24 were included in this study. They were divided in two groups of 14 women, matched by age. The exclusion criteria were: cognitive impairment using the Mini-mental state examination (MMSE), neurological sequel, hospitalization for less than three months, fractures for less than six months, exacerbated musculoskeletal conditions, decompensated respiratory and cardiac diseases, those who could not to perform respiratory maneuvers, use of anti-inflammatory drugs or drugs that act on the immune system, who are using the drug Digoxin, who perform physical activity on a regular basis (at least three times a week), serious visual and auditory difficulty. Sarcopenia was diagnosed using the algorithm of Cruz-Jentoft et al. (2010), measuring handgrip strength (HS), gait speed (GS), Short Physical Performance Battery (SPPB), and assessing the body composition by Dual Energy X-ray absorptiometry (DXA), which measures the skeletal muscle mass index (SMI) that was given by the Skeletal Appendicular Muscle Mass/height² (ASM/h²). The RMS (PiMax and PeMax) was evaluated using an analogue manovacuometer (model MV-150/300, Ger-Ar Comércio e Equipamentos Ltda®). Descriptive analyses of the sample have performed. The Shapiro-Wilk test was used to test normality. It was used T-Test for independent samples to compare PiMax and PeMax in both groups. **Results:** There was no differences between groups in relation to mean age in years (SA= 76.21 ± 6.70 ; NS= 75.93 ± 6.6) and MMSE scores (SA= 24.10 ± 3.65; NS = 24.30 ± 2.73). The SA group had lower values of body weight ($P < 0.0001$), BMI ($P < 0.0001$), total lean mass ($P < 0.0001$), total fat mass ($P < 0.005$), SMI ($P < 0.0001$), HS ($P < 0.005$) and SPPB scores ($P < 0.05$) than NS group. There was no significant difference between groups in GS. Regarding to RMS, the SA group presented a worse PiMax compared to the NS group ($P < 0.05$) and there was a tendency to present worse PeMax ($P = 0.052$). **Conclusion:** Preliminary data suggests that SA group presented worse values in the HS and in the SPPB scores when compared to the NS group, which indicate a reduction of global muscle strength and a reduction in physical performance. It is

interesting to note that as sarcopenic elderly presented worse values of PiMax and PeMax, which refers to a possible prognostic value of these measures. Therefore more research is needed to confirm these findings. Keywords: elderly, sarcopenia, respiratory muscle strength

P271- RISK PROFILE FOR SARCOPENIA IN COMMUNITY-DWELLING WOMEN LIVING IN DIAMANTINA-BRAZIL.

L. Augusto da Costa Teixeira¹, T. Campos Duarte¹, L. Paccini Lustosa², F. Pereira Brant³, A. Netto Parentoni⁴ (1. Master's Degree student of the Programa de Pós Graduação em Reabilitação e Desempenho Funcional, UFVJM, Diamantina, MG, Brazil; 2. Physiotherapy Department, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil; 3. Undergraduate student of Physiotherapy, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina, MG, Brasil; 4. Physiotherapy Department, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina, MG, Brasil)

Background: The world is experiencing an accelerated demographic aging, which increases the occurrence of age-related health complications. Sarcopenia is a geriatric syndrome consisting of the quantitative, progressive and generalized loss of skeletal muscle mass, strength and physical function, affecting mainly women. According to the European Working Group on Sarcopenia in Older People -EWGSOP- (2010), it is possible to classify individuals as non-sarcopenic, pre-sarcopenic, sarcopenic and severe sarcopenic, however there is no universal consensus on the criteria for the identification of sarcopenia or the establishment of cut-off points for skeletal muscle mass index (SMI). Sarcopenia is recognized as a distinct clinical syndrome with its own biological basis, and cannot be considered as a result of senescence or explained by greater longevity. It is known that the presence of sarcopenia may be related to adverse health outcomes such as falls, fractures, disability, dependence, hospitalization and death. **Objective:** (1) to evaluate and classify community-dwelling women, regarding to gait speed, handgrip strength, physical performance, SMI and to the body mass index (BMI); (2) to evaluate the prevalence of sarcopenia following the criteria proposed by the EWGSOP; (3) to verify the presence of sarcopenia regarding to the age groups. **Methods:** This was a preliminary study. From a total of 200 community-dwelling elderly women aged over 65 years, living in Diamantina (Brazil) visited up to now, only 80 were included. The exclusion criteria were: cognitive impairment using the Mini-mental state examination (MMSE), neurological sequel, recent hospitalization for less than three months, fractures in lower or upper limbs less than six months, exacerbated musculoskeletal conditions and physical activity on a regular basis (at least three times a week). The participants were evaluated for SMI given by the Skeletal Appendicular Muscle Mass / Height² based on Dual-energy X-ray absorptiometry (DXA) data and according to the following cut-off points for sarcopenia: SMI ≤ 5.54 kg / m², gait speed (GS < 0.8 m / s) and handgrip strength (HS < 20 Kg), Short Physical Performance Battery test (SPPB ≤ 8) and BMI. Results: The mean age of the 80 elderly women was 74.96 (± 7.12 years). The percentage of elderly women in the following age groups: 65-75; 76-85; 86-96 years was, respectively, 57.5%; 35%; and 7.5%. The SMI was low in 21.3% of the elderly and normal in 78.7%. HS was low in 53.3% and within normality in 46.7%. In GS, 86.7% of the elderly had GS above the cut-off point and only 13.3% had GS below. In the SPPB, 42.7% had performance compatible with a suggestive sarcopenia, while 57.3% had a score < 8 , which is considered as an mild performance. The prevalence of sarcopenia was 21.3%. With respect to BMI, 18.8% of the sample presented low weight, 41.3% were eutrophic and 40% were overweight or obese. **Conclusion:** The prevalence of sarcopenia was

21.3%. Regarding BMI 12.5% of sarcopenic individuals presented low weight and 8.8% normal weight. Most of the sample, 57.5% were in the age range between 76 and 85 years old. In these, lower values of muscle mass and HS were observed. In the age range between 86 and 96 years old was found the worst values of the GS and in the age group between 65 and 75 years old was found the elderly presenting the worse physical performance. Preliminary data suggests that there is no preferred age range for the development of risk of sarcopenia. Therefore more research is needed to confirm these findings. Keywords: elderly woman, sarcopenia, handgrip strength, physical function.

P272- ASSOCIATION BETWEEN SARCOPENIA AND INFLAMMATORY CYTOKINES IN COMMUNITY-DWELLING WOMEN-PRELIMINARY STUDY.

T. Campos Duarte¹, L. Paccini Lustosa², V. Amaral Mendonça³, L. Augusto Teixeira,¹ F. Pereira Brant⁴, A. Netto Parentoni³ (1. Master's Degree student of the Programa de Pós Graduação em Reabilitação e Desempenho Funcional, UFVJM, Diamantina, MG, Brazil; 2. Physiotherapy Department, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil; 3. Physiotherapy Department, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina, MG, Brazil; 4. Undergraduate student of Physiotherapy, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina, MG, Brazil)

Background: Sarcopenia is a disorder generally found in elderly individuals characterized by reduced mass, muscle strength and functional performance. Its development is one multifactorial process, including malnutrition, sedentarism, use of some medications, endocrine dysfunctions and chronic-degenerative diseases. With the aging process there is chronic inflammation state of low degree called «inflammaging»; characterized by increased plasma concentrations of some inflammatory mediators such as interleukin 6 and tumor necrosis factor alpha (TNF α) and their soluble receptors sTNFr1 and sTNFr2. This inflammatory state seems to be inversely related to muscle mass and muscle strength, and with the functional performance. In other words, as worse as the degree of sarcopenia, more inflamed the individual is expected to be. **Objectives:** The objectives of this study were (1) to classify elderly women into two groups, sarcopenic (SA) and non-sarcopenic (NS) according to the algorithm proposed by Cruz-Jentoft et al. (2010); (2) to classify the elderly as regards their Body Mass Index (BMI), according to the Lipischitz (1994) classification, which is specific for the elderly (3) to evaluate the association of sarcopenia with inflammatory markers receptors TNFr1 and sTNFr2. **Methods:** After visiting 200 community-dwelling elderly women living in Diamantina (Brazil), a total of 80 was evaluated and only 24 were included in this study. They were divided in two groups of 14 women, matched by age. The exclusion criteria were: cognitive impairment using the Mini-mental state examination (MMSE), neurological sequel, hospitalization for less than three months, fractures for less than six months, exacerbated musculoskeletal conditions, decompensated respiratory and cardiac diseases, use of anti-inflammatory drugs or drugs that act on the immune system, who perform physical activity on a regular basis (at least three times a week), difficulty serious visual and auditory. Sarcopenia was diagnosed using the algorithm of Cruz-Jentoft et al. (2010), measuring handgrip strength (HS), gait speed (GS), Short Physical Performance Battery (SPPB), and assessing the body composition by Dual Energy X-ray absorptiometry (DXA), which measures the Skeletal Muscle Mass Index (SMI) that was given by the Skeletal Appendicular Muscle Mass/height² (ASM/h²). Plasma concentrations of the inflammatory cytokines were evaluated, using the Enzyme-Linked Immuno Sorbent

Assay (ELISA) (DuoSet, R & D Systems, Minneapolis, USA) as recommended by the fabricator. The normality was tested using the Shapiro-Wilk test and the student t-test for independent measures was used to compare the plasma concentrations of sTNFr1 and sTNFr2 data between both groups: SA and NS. **Results:** There was no difference between groups in terms of mean age in years (SA= 76.21 ± 6.70; NS= 75.93 ± 6.6) and MMSE scores (SA= 24.10 ± 3.65; NS = 24.30 ± 2.73). In the SA group, 7 elderly women were considered eutrophic and 7 were underweight; already in the group NS 8 elderly were eutrophic and 6 obese. There was no difference in any of the two inflammatory markers evaluated (sTNFr1 p = 0.084 and sTNFr2 p = 0.105). **Conclusion:** In this preliminary study, there were no significant changes in the inflammatory parameters of sarcopenia between SA and NS groups, probably because to the fact that in the NS group there was more obese elderly women than in SA, and is well established in the literature that there is one direct relationship between the degree of obesity and the higher concentrations of inflammatory markers. Therefore more research is needed to confirm these findings. Keywords: elderly, sarcopenia, inflammation, soluble receptor of tumor necrosis factor

P273- CORRELATION BETWEEN FUNCTIONALITY, ALLOSTATIC LOAD AND SOCIO-ECONOMIC STATUS OF COMMUNITY-DWELLING SENIORS AGE 80 YEARS AND OLDER. M.M. Marques², T. Campos Duarte³, L. Augusto Teixeira³, F. Pereira Brant², T. Roberta do Nascimento², L. Souza Máximo Pereira⁴, L. Paccini Lustosa⁴ (1. *Physiotherapy Department, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina, MG, Brazil*; 2. *Undergraduate student of Physiotherapy, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina, MG, Brazil*; 3. *Master's Degree student of the Programa de Pós Graduação em Reabilitação e Desempenho Funcional, UFVJM, Diamantina, MG, Brazil*; 4. *Physiotherapy Department, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil*)

Introduction: Population aging is a worldwide phenomenon and the proportion of older people has increased considerably, especially in the population older than 80 years old. This fact has important implications mainly in the health area, since longevity can present more comorbidities cognitive and functional declines. The knowledge about this specific population is scarce. Therefore it is important to know the socio-economic status, clinical and functional profile of the aged people over 80 years old. In addition to comprehend the influence of lack or neediness suffered throughout the life (called here Allostatic load) on their functionality. **Objective:** To evaluate community-dwelling people 80 years or older registered in five basic health units of Diamantina, Brazil, regarding clinical and functional status, Allostatic load, and socio-economic status. **Methods:** It was included in the study all elderly 80 years or older, who obtained scores compatible with their scholarship in the Mini Mental State Examination and excluded those who were dependent for ambulation. To access the functional performance was used the Timed Up and Go (TUG) and Short Physical Performance Battery (SPPB) and socio-economic status and allostatic loading questionnaires. **Results:** In a population of 1096 elderly over 65 years old, eighty five completed the questionnaires and performed all the tests. From these 85 elderly only twenty one were aged over 80 years old, 66.67% were female. There were, 76.19% (illiterate), 66.67% (belonged to poor class), 47.61% (widowers), 90.47% (retired) and 52.38% were pensioners. Nevertheless 61.90% considered themselves having sufficient income and self reported their health as "being good". Regarding the tests results, 71.43% had a high TUG performance and 61.90% had an intermediate performance in SPPB. The bivariate association analysis

showed that the functional performance in the TUG (timed in seconds) and the TUG performance (low and high performance) were not significantly associated with the allostatic load (p> 0.05). On the other hand, the SPPB score was associated with the «health variable» (p = 0.024) and there was a tendency of inverse association with «hungry» (p = 0.07). In other words, as the SPPB score increased, the health condition goes from excellent to good. There is a tendency for the SPPB scores to improve with the condition of "not starving". The performance on SPPB test was not associated with the allostatic load (p> 0.05). **Conclusion:** The 80 years and older population who lives in Diamantina, Brazil are mostly female, illiterate, widowed, retired and belong to the underprivileged class. Most of them had a starved childhood, that was correlated inversely with the SPPB score, suggesting that the functional performance was influenced by the self-perception of health. Therefore more research is needed to confirm these findings. Keywords: elderly, physical function, allostatic load, socio-economic status.

P274- FUNCTIONAL PARAMETERS AND PHYSICAL ACTIVITY AMONG NURSING HOME RESIDENTS: POSITIVE ASSOCIATIONS WITH QUALITY OF LIFE AND VERBAL MEMORY. H. Arrieta¹, C. Rezola¹, S.M. Gil¹, J. Irazusta¹, J.J. Yanguas², M. Iturburu², A. Rodriguez¹ (1. *Department of Physiology, University of the Basque Country, Leioa, Bizkaia, Spain*; 2. *"Matia Instituto Gerontológico" Foundation, Donostia, Guipuzkoa, Spain*)

Background: Due to the higher prevalence of chronic conditions along with age-related morbidities in later life, the number of nursing home residents is increasing. The aging process is often associated with functional limitations, disability and has been shown to negatively correlate with quality of life (QoL) (Miyakoshi et al., 2007). Cognitive performance exerts a dose-response relationship with objectively measured physical activity (Kerr et al., 2013) suggesting a protective effect against early clinically relevant cognitive decline (de Souto Barreto et al., 2016). In this context, changes in working memory as well as quality of life were associated with positive changes in strength of lower extremities in older adults (Williamson et al., 2009; Hsu et al., 2013). Nevertheless, there is a lack of studies associating physical fitness and cognitive parameters conducted in nursing home residents. In this context, the aim of the present study is to assess the relationship between functional outcomes and usual physical activity of institutionalised older people with QoL or short-term verbal memory. **Methods:** 90 participants from 10 Long-term Residential Care Facilities that met the following criteria: aged ≥ 70 years, scored ≥ 50 on the Barthel Index, scored ≥ 20 on MEC Test (an adapted version of MMSE in Spanish) and who were all capable to stand up and walk independently for 10 metres were included in the study. The studied variables were the 6 test (arm curl, chair stand, 6-minutes walking, chair sit-and-reach, back scratch and 8 foot-up-and-go tests) of Senior Fitness Test battery, QoL-AD Test and Rey Auditory Verbal Learning Test (RAVLT) and steps/day measured with an accelerometer. The objective measure of steps/day was recorded with a monitor (Actigraph GT3X model, Actigraph LLC, Pensacola, FL, USA) that was worn on the hip with a belt for a 7 day period. Multiple linear regressions were performed (backward elimination) to indicate the proportion of variance in the QoL and verbal memory explained by daily physical activity and the 6 tests of Senior Fitness Test battery while controlling for the effect of age and gender. **Results:** When the 6 tests of SFT and steps/day variables were entered in a backward stepwise elimination equation adjusted for age and gender, in the last model, arm curl test (β=0.35; p<0.001) and the number of steps/day (β=0.2; p=0.05) remained significantly related to

QoL-AD (adjusted R²=0.181). Same variables, also adjusted for age and gender, were analysed for the dependent variable RAVLT. In this model, arm curl ($\beta=0.229$; $p=0.037$) and chair stand tests ($\beta=0.24$; $p=0.03$) were independent predictors of RAVLT (adjusted R²=0.21).

Conclusion: This study described the association between QoL or working memory and functional parameters and daily physical activity in nursing home residents. This association has also been reported by studies conducted in other populations (Williamson et al., 2009; Hsu et al., 2013; Kerr et al., 2013). Taking into account that strength of upper and lower extremities and number of steps per day are predictor variables of QoL-AD or RAVLT, exercise programs focused on strength training along with encouragement strategies to become more physically active could be appropriate to improve both parameters in this population and to minimize the age-related decline in fitness. References: Miyakoshi N. et al. (2007). *Osteoporos Int*, 18, 1397. Balboa-Castillo T. et al. (2011). *Health and Quality of Life Outcomes*, 9(1), 47. Williamson J. D. et al. (2009). *J Gerontol A Biol Sci Med Sci*, 64A (6), 688-694. Hsu W. H. et al. (2014). *Clin Interv Aging*, 9, 1573-1579. Kerr J. et al. (2013). *J Am Geriatr Soc*. 2013 November, 61(11). de Souto Barreto P. et al. (2016). *Mayo Clin Proc*, 91 (11), 1515-1524. Keywords: Physical Fitness, Physical Activity, Quality of Life, Verbal Memory, Nursing Home.

P275- CENTRAL OBESITY IS LINKED TO A COMBINED PHENOTYPE OF FRAILTY WITH FUNCTIONAL LIMITATIONS IN OLDER SUBJECTS (≥ 65YRS): A CROSS SECTIONAL NATIONAL SURVEY.

A. Buch^{1,2,3}, E. Carmeli^{1,4}, Y. Berner^{2,5}, L. Keinan Boker^{6,7}, O. Kis¹, G. Shefer^{1,2}, Y. Marcus^{1,2}, R. Goldsmith⁸, Y. Stein⁹, L. Gold⁹, N. Stern^{1,2} (1. *Institute of Endocrinology, Metabolism and Hypertension, Tel Aviv Sourasky Medical Center, Tel-Aviv, Israel*; 2. *The Sackler Faculty of Medicine, Tel-Aviv University, Israel*; 3. *Robert H Smith Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Rehovot, Israel*; 4. *The Department of Physical Therapy, University of Haifa, Haifa, Israel*; 5. *Meir Medical Center, Kfar Saba, Israel*; 6. *School of Public Health, University of Haifa, Haifa, Israel*; 7. *Israel Center for Disease Control, Israel Ministry of Health, Ramat Gan, Israel*; 8. *Nutrition Department, Ministry of Health, Israel*; 9. *School of Mathematical Sciences, Statistics & Operations Research Department, Tel-Aviv University, Israel*)

Background: Increased muscle fat and decreased muscle mass, strength and function are present in the elderly; however, it is presently unclear which of the phenotypes of obesity in older subjects is related to frailty and functional limitations. Our objective was to evaluate the association of body mass index (BMI) and waist circumference (WC) with frailty and functional limitations. **Methods:** A post hoc estimation model to detect frailty likelihood and direct questionnaire to assess functional limitations using a national survey in community dwelling subjects aged ≥65 (n=1845). Data were analyzed according to BMI and WC. **Results:** BMI was 1.42 kg/m² higher in frailty-prone (FP) subjects and 4.58 kg/m² higher in subjects with several functional limitations. WC was 3.04cm larger in FP subjects and 7.44 cm larger in subjects with functional limitations, respectively. High WC was 1) linked to functional limitations in subjects with either high (OR 2.04) or low BMI (2.15); 2) associated with increased propensity for likelihood of frailty in all BMI classes. Strikingly, though, it is the co-presence of frailty likelihood and functional limitation (n=164; 9.13%) that most steeply increased as a function of WC, rising curvilinearly from OR of 0.2 for WC of 79cm to 3.2 (16 folds) for a WC of 132cm. **Conclusions:** Elderly with high WC have increased OR for a combined phenotype of frailty with functional limitations. WC should

be used for early detection of individuals at-risk for this devastating, new entity of both frailty and functional incapacity, which is possibly a late sequel of obesity.

P276- CIRCUIT RESISTANCE TRAINING IS AN EFFECTIVE MEANS TO ENHANCE MUSCLE STRENGTH IN OLDER ADULTS: A SYSTEMATIC REVIEW AND META-ANALYSIS.

A. Buch^{1,2,3}, O. Kis¹, E. Carmeli^{1,4}, L. Keinan-Boker^{5,6}, Y. Berner^{2,7}, Y. Barer², G. Shefer¹, Y. Marcus^{1,2}, N. Stern^{1,2} (1. *Institute of Endocrinology, Metabolism and Hypertension, Tel Aviv Sourasky Medical Center, Tel-Aviv, Israel*; 2. *The Sackler Faculty of Medicine Tel-Aviv University, Israel*; 3. *Robert H Smith Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Rehovot, Israel*; 4. *The Department of Physical Therapy, University of Haifa, Haifa, Israel*; 5. *School of Public Health, University of Haifa, Haifa, Israel*; 6. *Israel Center for Disease Control, Israel Ministry of Health, Ramat Gan, Israel*; 7. *Geriatric Medicine, Meir Medical Center, Kfar Saba, Israel*)

Background: Physical exercise, particularly resistance training (RT), is presently the only proven means to reduce the accelerated decline in muscle strength exhibited by older adults, but its effect is hindered by low adherence rate, even under well-structured programs. Here we investigate the efficacy of circuit resistance training (CRT) on muscle strength, lean mass and aerobic capacity in older adults. MEDLINE (Ovid), EMBASE, ClinicalTrials.gov, Cochrane electronic databases were systematically searched including references of pertinent articles up to August 2016. The search yielded a total of 237 articles, 106 of which did not meet the inclusion criteria. Sensitivity analysis was conducted using studies with higher likelihood for bias. Ten articles were included with a total of 362 patients (average age of 64.51±7.39 years). The intervention programs averaged 3±1.15 sessions/week and 41.78±15.89 minutes/session. Upper body strength modestly increased, by 1.14 Kg (95% CI; 0.28-2.00), whereas larger increment was seen in lower body strength (11.99; 1.02-2.61). A subgroup analysis revealed that higher program volume (> 24 sessions) positively influenced upper body strength and aerobic capacity. CRT is a valid alternative to conventional RT. Because of its shorter duration and lower intensity relative to traditional RT, it may increase adherence to training in older adults.

P277- DEFINITION AND COMPARISON OF SARCOPENIA CUTOFFS FOR CT MUSCLE AREA FROM RENAL DONOR CANDIDATES: A RETROSPECTIVE CROSS-SECTIONAL STUDY.

B.A. Derstine, R.L. Goulson, B.E. Ross, N.C. Wang, J.A. Sullivan, S.A. Holcombe, S.C. Wang (Department of Surgery, University of Michigan, USA)

Background: Sarcopenia is the age- and disease-related decline in muscle mass and function. The Foundation for the National Institutes of Health (FNIH), European Working Group on Sarcopenia in Older People (EWGSOP), and Asian Working Group for Sarcopenia (AWGS) have recommended the use of both low muscle mass and poor physical performance in diagnosing sarcopenia. To classify individuals as sarcopenic, EWGSOP recommended using a «normative (healthy young adult)» reference population with clinical diagnostic cutoffs for low skeletal muscle mass set to «two standard deviations below the mean reference value». Although computed tomography (CT) is a gold standard for evaluation of muscle mass, sarcopenic cutoffs were only reported for dual-energy x-ray (DXA) and body impedance analysis (BIA) measurements. To our knowledge, there have been no consensus definitions based on CT. Using young, healthy kidney donor candidates for reference, this study defines

CT-based male and female sarcopenia cutoffs in two thoracic and two lumbar cross-sectional muscle area (CSA) measures and evaluates the impact of IV contrast enhancement on CSA measurement. Our goal is to define multiple individually useful cutoffs that can be used for the broad array of clinical situations encountered by researchers in this field. **Methods:** We retrospectively studied 1,233 patients who underwent CT scans at the University of Michigan as part of evaluation for kidney donation between 1999 and 2010. Those between the ages of 18 and 40 (N=602) were used to compute cutoffs. Patient sex and height were obtained from their medical record proximal to the date of evaluation. Patients were scanned on a GE Discovery or GE LightSpeed model CT scanner using GE's 'Standard' reconstruction algorithm, at 120kVp, and slice thickness of 2.5mm (1999-2002), 1.25mm (2002-2008), and 0.625mm (2005-2010) for enhanced scans and 5mm for non-enhanced scans. The non-enhanced and enhanced (arterial) phases of each exam were processed independently as separate image volumes. The CSA (cm²) of total psoas muscle (TPA) at L4, skeletal muscle (SM) at L3 and T12, and dorsal muscle group (DMGA) at T12 were measured, as shown in Figure 1. Indices (TPAI, SMI, DMGAI) of each measure were computed as CSA / height². Q-Q plots were used to check for extreme deviations from normality. The difference in mean CSA between males and females were compared using independent t-tests assuming unequal variance. Next, the within-subject difference between enhanced and non-enhanced CSA were assessed using paired t-tests and plotted for visual evaluation (Figure 2). Finally, the mean and standard deviation of each measure were computed for males and females separately and cutoffs were selected as the mean minus two standard deviations. An alpha level of .01 was used to determine statistical significance. **Results:** Male and female ages were not significantly different (p>0.76), but their heights and mean CSA measures were (p<0.001). Comparing the mean difference (μd) between enhanced versus non-enhanced CSA (cm²) for males and females respectively, SM L3 was -0.39 (p>.281) and -.26 (p>.328), TPA L4 was .13 (p>.240) and .18 (p>.017), SM T12 was 1.95 (p<.001) and .67 (p>0.070), and DMGA T12 was -2.57 (p<.001) and -1.12 (p<.001). DMGA T12 non-enhanced area was significantly larger than the enhanced area in both males and females. The mean difference in DMGA represents 5% of the non-enhanced mean area which may very well be clinically meaningful. On the other hand, SM T12 enhanced area was significantly larger than non-enhanced area only in males but the mean difference was only 1.4% of the non-enhanced mean area which is likely not clinically meaningful. Sarcopenia cutoffs for muscle areas and indices, by sex and scan phase, are presented in Table 1. **Conclusion:** Consensus definitions for the diagnosis of sarcopenia use cutoffs for low muscle mass based on DXA or BIA measurements. We defined sarcopenia cutoffs for CT measurements using a young (18-40), healthy renal donor candidate reference group. Different lumbar and thoracic CSA measures were compared. Each muscle area measure may have its own unique place in clinical and research practice. We found that IV contrast enhancement has little meaningful impact on TPA and SM, but that DMGA shows significant enhancement bias. We conclude that SM is a more robust measure than DMGA in the thoracic region. We believe that these cutoff values provide an essential reference which is currently lacking, and against which individual study results can be compared.

Table 1

Sarcopenia cutoffs for CSA and CSA Index, by sex and enhancement

Area (cm ²)	Females				Males			
	enhanced	N	Cutoff	non-enhanced	enhanced	N	Cutoff	non-enhanced
DMGA T12	343	19.9	345	20.2	250	31.8	251	33.2
SM T12	176	58.6	175	56.4	129	94.7	127	92.6
SM L3	178	91.0	176	91.2	130	142.4	128	142.6
TPA L4	314	14.4	343	14.3	222	23.9	244	23.5
Height-Normalized								
Area (cm ² /m ²)								
DMGAI T12	343	7.3	345	7.5	250	9.7	251	10.3
SMI T12	176	21.6	175	20.8	129	29.6	127	28.8
SMI L3	178	34.1	176	34.2	130	44.6	128	44.5
TPAI L4	314	5.2	343	5.3	222	7.6	244	7.5

Figure 1

CSA defined for SM between -29 and 150 Hounsfield Units (HU), DMGA between 0 and 100 HU, TPA all HU

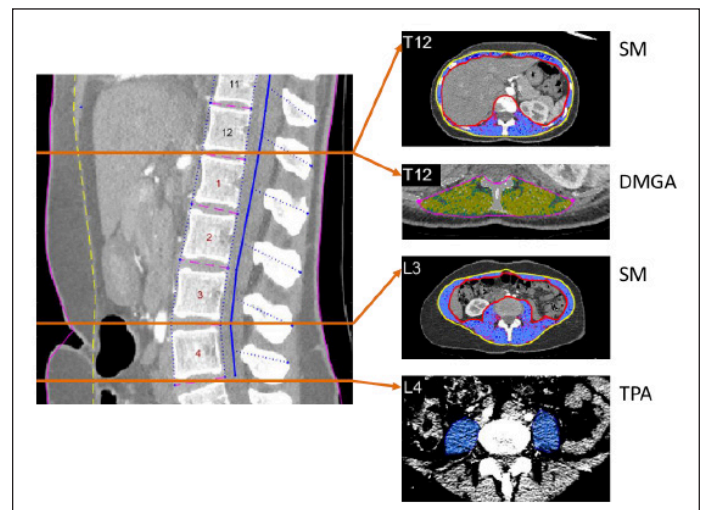
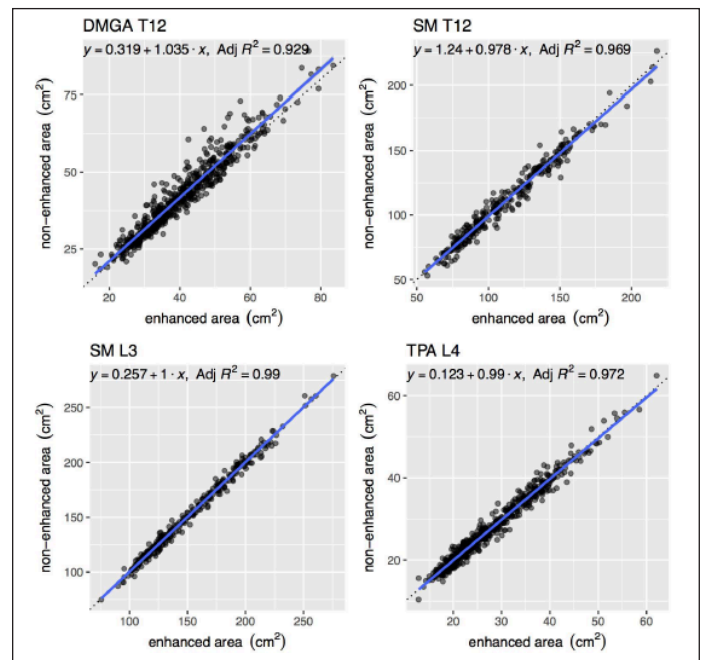


Figure 2

Cross-sectional muscle area measured on enhanced (arterial phase) vs. non-enhanced CT scan. Each point represents one patient and two scans



P278- MITOFRAILITY AS A BIOMARKER OF AGING.

E. Calabria, M. Venturelli, F. Schena (University of Verona, Verona, Italy)

Introduction: Measures of physical function are good predictors of morbidity and mortality. Aging is associated to a progressive decline of physical function with associated health consequences. In healthy aging the main limiting factors are the progressive loss of muscle mass (sarcopenia), immunosenescence and cognitive impairment. The biological mechanisms underlying this decline are not yet understood. It has been proposed that mitochondrial dysfunction is at the basis of the aging process. Furthermore bioenergetic dysfunction is implicated also in several age-related disorders such as neurodegenerative diseases, diabetes, cardiovascular disease and myopathies. The main source of biological samples to identify mitochondrial dysfunction usually are mitochondria rich tissues, such as muscle biopsies. However biopsies implies a number of ethical issues that make them a difficult starting point for research, that is interested not only in diagnosis of the dysfunction, but also in the physiology of the healthy mitochondria, or to unveil the effects of drugs and nutrients on the core of cell metabolism. Recent studies showed that its possible to measure of mitochondrial function in human blood cells and that this can be associates to the level of fitness (Tyrrell et al. 2015). We have recently shown that aging results also is the down-regulation of a set genes associated to mitochondrial electron transport system in blood cells (Calabria et al. 2016). **Objectives:** The aim of this study is to investigate the reciprocal connections existing between human aging, progressive inactivity and mitochondrial function. We are using an interdisciplinary approach evaluating both whole body physiological parameters and mitochondrial respiratory capacity in PBMCs in two groups of men and women of different ages (adult - 40 years old ; elderly 69 years old; n=16). Evaluations consist in a battery of test to assess physical performance (SPPB test), cardio-respiratory capacity (VO₂peak) measured with a ramp test on the cycle-ergometer and mitochondrial function with in vivo high resolution respiration (HRR) on PBMCs. The preliminary data collected show that there is a progressive decay of mitochondrial coupling efficiency (1-L/E) is negatively correlated to age for men (p 0.030; r -0.561) and it is particularly evident in elderly men when compared to the group of adults or elderly women (p 0.044; p 0.026 respectively). The concentration of lactate accumulated at the peak is negatively correlated to mitochondrial routine metabolism (p 0.024; r -0.786). Furthermore in these groups of men and women, as expected, "age" negatively correlates also with functional parameters associated to the cardio-respiratory function and to mechanical power (VO₂peak and Wattpeak). **Discussion and conclusion:** The results reported here are still preliminary, however it is interesting that mitochondrial efficiency is differently modulated by aging depending on gender. It appears that while there is no difference between adult men and women, and between adult and elderly women, in elderly men ETS coupling efficiency is significantly reduced. There is an interesting negative association between lactate and mitochondrial respiratory capacity of blood cells: the lactate measured most probably derives from anaerobic metabolism at the periphery of the body, during skeletal muscle fibers work during the ramp test. The mitochondrial routine oxygen consumption is evaluated in circulating PBMCs, but our data sustain the idea that at some extent metabolic adaptations occurring in blood cells are partially reflecting the metabolic properties of skeletal muscle.

P279- EARLIER MORPHOLOGICAL ADAPTATIONS TO MODERATE-LOAD ECCENTRIC VERSUS CONCENTRIC EXERCISE IN OLDER MEN.

M.V. Franchi, J.I. Quinlan, P.J. Atherton, K. Smith, N. Szewczyk, P. Greenhaff, M.V. Narici (MRC-ARUK Centre of Excellence for Musculoskeletal Ageing Research, Division of Medical Sciences & Graduate Entry Medicine, School of Medicine, University of Nottingham, Derby, UK)

Exercise-based approaches for developing muscle hypertrophy and combating age-related muscle weakness are particularly relevant for older adults considering the crucial effort towards the prevention of falls and loss of function. Moderate-load eccentric (ECC) exercise has been recently advocated as a relatively novel and efficient way to achieve increases in muscle strength and volume similar to the ones brought by conventional resistance training (RT), but by requiring up to four -fold smaller metabolic cost. Here we investigated the extent and the time course of the muscle morphological and structural remodeling to moderate-load ECC RT vs. concentric (CON) RT in elderly men. 12 older males aged 65-73 yrs were recruited for this study after informed consent and ethical approval. Data are reported as mean±SEM, statistical significance of differences was assessed using a two way ANOVA. The subjects were randomly assigned to either an ECC (n=6) or CON (n=6) RT group: volunteers were trained 3 times/wk for 8 weeks (12-15 reps x 4 sets) at the 60% of either the ECC or CON 1RM. Changes in vastus lateralis (VL) architecture (fascicle length -Lf, and pennation angle - PA) were assessed by b-mode ultrasound technique. Quadriceps mid-thigh (50% of VL length) cross sectional area (CSA) was measured by extended field of view (EFOV) ultrasound technique. The data acquisition was performed at 0, 2, 4, 6 and 8 weeks of the training regime. Fascicle length significantly increased since after 4 weeks ECC RT and in a greater way compared to CON RT after 6 weeks (Wk4 = 4.3±0.7% vs. 1.6±0.7%, P= 0.07; Wk6 = 5.2±1% vs. 0.8±0.5%, P<0.01; Wk8 =5.3± 0.8% vs. 1 ± 0.8%, P<0.01). Conversely, PA significantly increased since after 6 weeks of CON RT and in a greater manner compared to ECC RT (Wk6 = 5.1±0.4% vs. 2±1.3%, P=0.05; Wk8 = 6±0.4% vs. 2±0.9%, P<0.01). Greater changes in muscle CSA were observed after 4 and 6 weeks of ECC compared to CON RT (Wk4 = 5±0.5% vs. 2.3±0.5%, P<0.05; Wk6 = 6.3±1.2% vs. 3.7±0.6%, P<0.05), with no significant changes observed at 8 weeks between loading modalities. These observations support the evidence that, even in the elderly, architectural adaptations to moderate-load exercise are contraction-specific. However, these morphological and structural changes were achieved earlier through moderate-load ECC compared to CON RT. The more rapid increase in muscle CSA in response to ECC RT supports the contention of moderate-load ECC exercise being a more time-efficient and potent hypertrophic stimulus than moderate CON RT. This has implications for the design of interventions aiming at feasibly counteracting the rapid loss of muscle mass in elderly, frail and clinical populations.

P280- DETERMINANTS OF INCIDENT FRAILITY AMONG ADULTS AGED 50 OR OLDER WITH HUMAN IMMUNODEFICIENCY VIRUS.

A. Zamudio-Rodriguez¹, P.F. Belaunzaran-Zamudio², J.A. Avila-Funes^{1,3} (1. Department of Geriatrics, National Institute of Medical Sciences and Nutrition Salvador Zubirán. Mexico City, Mexico; 2. Department of Infectology, National Institute of Medical Sciences and Nutrition Salvador Zubirán. Mexico City, Mexico; 3. Univ. Bordeaux, Inserm, Bordeaux Population Health Research Center, UMR 1219, Bordeaux, France)

Backgrounds: Older adults living with human immunodeficiency virus (HIV) is growing. The advent of highly active antiretroviral therapy has improved the survival of HIV-infected persons and the evidence suggests that geriatric syndromes, as frailty, occur earlier

among them. Frailty is associated with higher morbidity and premature mortality among HIV-uninfected older adults. However, knowledge is limited regarding the risk factors of frailty in people living with HIV, which will be critical in order to prevent adverse health-related outcomes in these persons currently aging with treated HIV infection. Therefore, the main objective of this study was to determine the correlates of incident frailty among Mexican community-welling older adults living with HIV. **Methods:** Prospective cohort study (median of follow-up: 48.2 months) including 143 participants aged 50 or older living with HIV and attend in a HIV clinic of a tertiary care hospital in Mexico City. Frailty score was defined by the five components proposed by the Cardiovascular Health Study (weight loss, weakness, exhaustion, slowness, and low physical activity) The following variables were selected as possible determinants of the dependent variable: socio-demographic characteristics (sex, age, schooling, unemployment), health status (e.g.: medications, disability, etc.), other geriatric syndromes (cognitive status, depressive symptoms, falls, etc.), co-morbidity non-AIDS (dyslipidemia, diabetes, hypertension, osteoarthritis, hepatitis c virus) and previous opportunistic infections, as well as variables HIV-associated (current CD4+ T-lymphocytes cell count, HIV-RNA levels, time from HIV-diagnosis, and time on HAART). Cox proportional hazards models were conducted to identify the determinants of incident frailty. **Results:** At baseline, 82.5% of participants were men, and the mean age was 59.1 years (SD 7.0). The prevalence of frailty was 5.7% (n=13). The incidence of frailty was 3.8% (n=6). At follow-up, in comparison to participants with an unchanged or improved frailty score, those who worsened where older (57.8 ±6.2 vs. 60.90 ±7.9; p=0.020), reported more depressive symptoms (2.03 ±2.17 vs. 3.59 ±3.2; p=0.015), had more cognitive impairment (27.78 ± 3.4 vs. 26.43 ± 5.1; p=0.093), more osteoarthritis (5.3% vs. 14.3%; p=0.066), were unemployed (36.2% vs. 51.0%; p=0.087), and had lower disability for instrumental activities of daily living (7.67 ±0.73 vs. 7.27 ±1.2; p=0.050). There were no differences regarding a lower CD4+ T cells count or viral load. However, the multivariate Cox proportional hazard model showed that only osteoarthritis (HR = 4.45, 95% CI = 1.61 to 12.27; p=0.004) and previous opportunistic infections (HR = 1.92, 95% CI = 1.01 to 3.72; p = 0.050) were independently associated with incidental frailty. **Conclusions:** Previous opportunistic infection and osteoarthritis were risk factors of incident frailty in adults aged 50 years or more with HIV. These findings would be critical as this profile represents many HIV-positive persons currently being successfully treated with HIV infection. Knowledge of the complexity of risk factors of incident frailty can assist the formulation of measures for prevention and early intervention, thereby contributing to better quality of life for the elderly people with HIV.

P281- BLOOD TRANSFUSION AND DISCHARGE DISPOSITION IN PATIENTS WITH HEREDITARY MUSCULAR DYSTROPHY UNDERGOING ELECTIVE TOTAL HIP AND KNEE ARTHROPLASTY. M.J. Best¹, S. Nguyen², R.S. Sterling¹, H.S. Khanjua¹ (1. Department of Orthopaedic Surgery, Johns Hopkins Hospital, Baltimore, USA; 2. David Geffen School of Medicine at UCLA, Los Angeles, USA)

Background: Blood transfusion rates and discharge disposition after elective total hip and knee arthroplasty in patients with hereditary muscular dystrophy are not well defined in the literature. Due to small sample sizes, large scale studies have not been conducted and outcomes in this patient population have not been adequately studied. The purpose of this study is to determine the effect of hereditary muscular dystrophy on perioperative blood transfusion and discharge disposition following elective total hip and knee arthroplasty. **Methods:** Patients who underwent elective total hip and

knee arthroplasty from 1990-2010 (N=10,887,942) were identified from the National Hospital Discharge Survey. Patients with hereditary muscular dystrophy (N=1,178) were selected and compared to those patients without hereditary muscular dystrophy (N=10,886,764). Demographic data were collected and the groups were analyzed for differences in postoperative blood transfusion and discharge disposition. Multivariable logistic regression was used to isolate the effect of hereditary muscular dystrophy on postoperative blood transfusion. **Results:** Patients with hereditary muscular dystrophy were younger (59.9 years compared to 66.6 years, P<0.001) and were more likely to be male (64.0% compared to 39.1%, P<0.001). The hereditary muscular dystrophy group were more likely to be discharged to a rehabilitation facility (35.1% compared to 29.1%, P<0.001) than patients without hereditary muscular dystrophy. Patients with hereditary muscular dystrophy had higher rates of postoperative anemia (35.8% compared to 18.6%, P<0.001) and had higher rates of blood transfusion (70.4% compared to 15.9%, P<0.001) compared to patients without hereditary muscular dystrophy. Multivariable logistic regression showed that hereditary muscular dystrophy was an independent predictor of postoperative blood transfusion (P<0.001). **Conclusions:** Patients with hereditary muscular dystrophy are at higher risk for discharge to rehabilitation facilities and have significantly higher rates of postoperative anemia and blood transfusion following elective total hip and knee arthroplasty compared to patients without hereditary muscular dystrophy. These findings are important in preoperative planning as well as postoperative resource allocation for patients with hereditary muscular dystrophy undergoing total hip and knee arthroplasty.

P282- A 20 YEAR ANALYSIS OF BLOOD TRANSFUSION UTILIZATION AND DISCHARGE DISPOSITION FOLLOWING TOTAL HIP AND KNEE ARTHROPLASTY IN PATIENTS WITH OSTEOPOROSIS. M.J. Best¹, K. Aziz¹, S. Nguyen², R.S. Sterling¹, H.S. Khanjua¹ (1. Department of Orthopaedic Surgery, Johns Hopkins Hospital, Baltimore, USA; 2. David Geffen School of Medicine at UCLA, Los Angeles, USA)

Background: High prevalence of osteoporosis has been reported in patients undergoing orthopedic surgical procedures and total hip and knee arthroplasty. The purpose of this study is to evaluate the effect of osteoporosis on blood transfusion and discharge disposition following elective total hip and knee arthroplasty. **Methods:** We identified 352,195 patients with osteoporosis who underwent elective total hip and knee arthroplasty from 1990-2010 using the National Hospital Discharge Survey and compared them to 10,535,747 patients without osteoporosis. The two groups were then analyzed for differences in postoperative blood transfusion and discharge disposition. Multivariable logistic regression was performed to evaluate the effect of osteoporosis on postoperative blood transfusion. **Results:** Analysis showed that patient with osteoporosis were older (71.9 years compared to 66.5 years, P<0.001) and a higher proportion were female (93.3% compared to 59.8%, P<0.001). Although overall complications rates and comorbidities were similar between the two groups, patients with osteoporosis underwent significantly higher rates of blood transfusion (22.5% compared to 15.7%, P<0.001) than patients without osteoporosis. Multivariable logistic regression showed that osteoporosis was an independent risk factor for postoperative blood transfusion (P<0.001). Patients with osteoporosis underwent higher rates of discharge to a rehabilitation facility (39.4% compared to 28.6%, P<0.001) than patients without osteoporosis. **Conclusions:** This is the largest study to date analyzing postoperative blood transfusion rates and discharge disposition in patients with osteoporosis following elective total hip and knee arthroplasty. These data are important in preoperative planning and counseling for

osteoporotic patients undergoing total hip and knee arthroplasty.

P283- THE EFFECT OF CONTRAST-ENHANCEMENT ON COMPUTED TOMOGRAPHY-BASED SKELETAL MUSCLE MASS AND SKELETAL MUSCLE DENSITY MEASUREMENTS. J.L.A. van Vugt¹, K.M. Veen¹, H.J.W. Schippers¹, R.R.J. Coebergh van den Braak¹, S. Levolger¹, R.W.F. de Bruin¹, J.N.M. IJzermans¹, F.E.J.A. Willemsen² (1. Department of Surgery, Erasmus University Medical Center, Rotterdam, the Netherlands. 2. Department of Radiology, Erasmus University Medical Center, Rotterdam, the Netherlands)

Introduction: Skeletal muscle mass (SMM) and density (SMD) are often measured on computed tomography (CT) scans without taking different contrast-enhancement phases into account. Possible consequences as a result of from contrast-enhancement remain unknown. **Methods:** Fifty multiphase (unenhanced, arterial, (portal) venous) abdominal CT-examinations were randomly selected. Cross-sectional skeletal muscle area corrected for patients height (skeletal muscle index [SMI]; in cm²/m²) and density (SMD; in Hounsfield units [HU]) were measured by two observers, at the level of the third lumbar vertebra on preselected slices. The average of the two measurements was used for analysis. Low SMM was defined as SMI<41cm²/m² (females), and <43 (males, BMI <25 kg/m²) or <53 (males, BMI ≥25 kg/m²). Agreement between enhancement phases for SMM and SMD was calculated using intra-class correlation coefficients (ICCs). Cohen's κ 's were calculated for the agreement of sarcopenia assessment. **Results:** The study cohort included 27 (54%) males. The Mean BMI was 24.2 (standard deviation [SD] 4.0) kg/m². Mean SMI was 42.5 (SD 9.9) cm²/m² on enhanced phase, compared with 42.8 (SD 9.9) and 43.6 (SD 9.9) for the arterial and portal-venous phase, respectively (p<0.01). Mean SMD was lower for the unenhanced phase (30.9; SD 8.0) compared with the arterial (38.0; SD 9.9) and portal-venous (38.7; SD 9.2) phase (both p<0.001). No significant difference was found between the mean SMD in the portal-venous and arterial phase (p=0.161). The ICCs were excellent (≥0.992) for all SMIs and for SMD between the contrast-enhanced phases (0.949). The ICCs for the blanc phase compared with the arterial (0.676) and portal-venous (0.665) phase were considered fair to good. The Cohen's κ 's for sarcopenia assessment was excellent (0.88-0.96). **Conclusion:** Significant, but clinically unimportant differences were found in SMI between (non)contrast-enhanced phases. Contrast-enhancement strongly influenced SMD measurements. Therefore, we recommend that studies using this measurement should include (non)contrast-enhanced CTs only.

P284- THE CREATION OF UNIFORM CUT-OFF VALUES FOR SKELETAL MUSCLE MASS MEASUREMENTS ON ABDOMINAL COMPUTED TOMOGRAPHY SCANS IN HEALTHY SUBJECTS. J.L.A. van Vugt, Y. van Putten, R.W. F. De Bruin, H.J.A.N. Kimenai, J.N.M. IJzermans (Department of Surgery, Erasmus University Medical Center, Rotterdam, the Netherlands)

Introduction: Currently, there is much debate regarding adequate cut-off values for computed tomography (CT)-assessed skeletal muscle mass to categorize patients as (non)sarcopenic. No international consensus has been reached yet and there is insufficient knowledge on skeletal muscle mass in healthy persons stratified for sex, age and BMI. **Methods:** Routinely performed contrast-enhanced abdominal CTs of living kidney donors between 2010-2015 were collected. The cross-sectional skeletal muscle area was measured and corrected for patients' height (Skeletal Muscle Index [SMI]; cm²/m²). Mean Skeletal Muscle Density (SMD; in Hounsfield Units [HU])

was recorded as a measure of skeletal muscle quality. Patients were categorized by age (20-29, 40-59, and ≥60) and BMI (<20, 20.0-24.9, 25.0-29.9, ≥30 kg/m²). Groups were compared using Mann-Whitney-U and Kruskal-Wallis tests. **Results:** In total, 627 patients with available CT scans were identified. The current cohort consisted of 241 patients, of whom 104 (43.2%) were male. Median age and BMI were 51 (interquartile range [IQR] 39-60) and 25.4 (IQR 23.5-28.7) kg/m², respectively. ASA classification was 1-2 in 237 (99.2%) patients. Median SMI (57.0 versus 43.4 cm²/m², p<0.001) and SMD (45 versus 43 HU, p=0.005) were significantly higher in males compared with females. Significant decreases per age group were observed for SMI (youngest 51.1 versus oldest 45.9 cm²/m², overall p=0.015) and SMD (youngest 49 versus oldest 38 HU, overall p<0.001) in males. In females, significant decreases in SMD (p<0.001), but non-significant decreases in SMI (p=0.100) were found. SMI significantly increased per BMI group for both sexes (p<0.001), while SMD significantly decreased (males p=0.034, females p<0.001). **Conclusion:** This is the first study describing sex, age and BMI-specific CT-assessed SMI and SMD measures in healthy Western subjects. Currently, the cohort is being enlarged and cut-off values are being defined, but these first results underline the need for stratified cut-off values to compare various patient populations.

P285- LOW SKELETAL MUSCLE MASS IS ASSOCIATED WITH INCREASED HOSPITAL COSTS IN PATIENTS WITH CIRRHOSIS LISTED FOR LIVER TRANSPLANTATION. J.L.A. van Vugt¹, S. Buettner¹, L.J.M. Alferink², N. Bossche³, R.W.F. de Bruin¹, S.D. Murad², W.G. Polak¹, H.J. Metselaar², J. N.M. IJzermans¹ (SEEH, Athens, Greece)

Background and aims: Low skeletal muscle mass (sarcopenia) is associated with increased morbidity and mortality in liver transplant candidates. Our aim was to investigate the association between sarcopenia and hospital costs in patients listed for liver transplantation. **Methods:** Consecutive patients with cirrhosis listed for liver transplantation between 2007-2014 in a Eurotransplant centre were identified. Patients listed with high urgency or for acute liver failure or re-transplantation were excluded. Skeletal muscle mass was measured on computed tomography (skeletal muscle index [SMI], cm²/m²) performed within 90 days from waiting list placement. Sex-specific quartiles were created. The lowest quartile represented patients with sarcopenia. **Results:** In total, 363 patients were listed during the study period, of which 224 were included. Median time on the waiting list was 170 (IQR 47-306) days and median MELD-score was 16 (IQR 11-20). The median total hospital costs in patients with sarcopenia were €11,294 (IQR 3,570-46,469) compared with €6,837 (IQR 1,294-20,472) in patients without sarcopenia (p=0.007). In multivariable regression analysis, an incremental increase in SMI was significantly associated with a decrease in total costs (€455 per incremental SMI, 95%CI 900-10,753, p=0.045), independent of the total time on the waiting list. Although costs of hospitalization for transplantation did not significantly differ between patients with and without sarcopenia, a significant difference was found when these costs were added to the waiting list costs (€98,703 [IQR 75,909-121,071] versus €81,173 [IQR 58,961-110,258], p=0.030). **Conclusion:** Sarcopenia is independently associated with increased health-related costs for patients on the waiting list for liver transplantation. Optimizing skeletal muscle mass may therefore lead to a decrease in hospital expenditure, in addition to greater health benefit for the transplant candidate. Key words: sarcopenia, skeletal muscle mass, hospital costs, liver transplantation, waiting list, cirrhosis

P286- SKELETAL MUSCLE DENSITY, BUT NOT SKELETAL MUSCLE MASS, IS ASSOCIATED WITH IMPAIRED SURVIVAL IN PATIENTS WITH SUSPECTED PERIHILAR CHOLANGIOCARCINOMA AND MAY IDENTIFY PATIENTS AT RISK FOR EARLY DEATH. J.L.A. van Vugt¹, M.P. Gaspersz¹, J. Vugts¹, S. Buettner¹, S. Levolger¹, R.W.F. de Bruin¹, W.G. Polak¹, J. de Jonge¹, F.E.J.A. Willemsen², B. Groot Koerkamp¹, J.N.M. IJzermans¹ (1. Department of Surgery, Erasmus University Medical Center, Rotterdam; 2. Department of Radiology, Erasmus University Medical Center, Rotterdam)

Background: Low skeletal muscle mass (i.e. sarcopenia) is associated with increased postoperative morbidity and impaired survival following liver resection for perihilar cholangiocarcinoma (PHC). However, the majority of patients does not undergo surgery. The aim of this study was to investigate the association between sarcopenia as biomarker to predict the outcome of patients with suspected PHC, regardless of treatment. **Methods:** All consecutive patients with suspected PHC treated in a tertiary center between 2002 and 2014 were included. Baseline characteristics and parameters regarding disease (e.g. CA19-9 and vascular involvement) and treatment were collected and retrospectively analyzed. Skeletal muscle mass and skeletal muscle density, reflecting intramuscular adipose tissue infiltration and muscle quality (in Hounsfield units [HU]), were measured on the level of the third lumbar vertebra (L3) on abdominal computed tomography scans which were performed during the diagnostic work up. Skeletal muscle mass was corrected for patients' height, resulting in the L3 muscle index (cm²/m²). Cut-off values for skeletal muscle mass defined by Coelen et al. were used to classify patients as (non)sarcopenic. Overall survival (OS) was compared using the Kaplan Meier method, Cox regression analysis and log-rank test. **Results:** In total, 241 patients with available imaging were included (60.2% males) with a median age of 66 years and BMI of 25 kg/m². The median L3 muscle index was 48.0 cm²/m² for males and 38.4 cm²/m² for females (p<0.001), resulting in a sarcopenia prevalence of 46.3%. No significant differences in survival were observed between patients with low compared with those with normal skeletal muscle mass. Using the median skeletal muscle density (35 HU) as cut-off value, the median survival was 13 versus 6 months in patients with normal compared with patients with low skeletal muscle density (HR 1.42 [95% CI 1.09-1.84], log-rank p=0.007). Three-months and 1-year OS rates of patients with low skeletal muscle density compared with normal skeletal muscle density were 72.6% versus 89.5% (p=0.001) and 33.3% versus 54.0% (p=0.004). No significant differences were observed for 3-year and 5-year OS. After correction for age, bilirubin and CA19-9 level, cholangitis at presentation, and the suspicion of positive lymph nodes or metastases on imaging, skeletal muscle density was not independently associated (adjusted HR 1.19 [95% CI 0.78-1.82], p=0.418). **Conclusion:** Sarcopenia is highly prevalent in patients with PHC, but not independently associated with impaired outcome. Nevertheless, low skeletal muscle density may identify patients with PHC at risk for early death.

P287- ALTERED EXPRESSION OF THE LONG NON-CODING RNA H19 IN SKELETAL MUSCLE IS ASSOCIATED WITH LOW MUSCLE MASS IN COMMUNITY-DWELLING OLDER ADULTS: FINDINGS FROM THE HERTFORDSHIRE SARCOPIENIA STUDY (HSS). E. Antoun, E. Migliavacca, E. Garratt, S. Barton, P. Titcombe, L. Westbury, A. Charpagne, A. Baczynska, R. Dodds, H. Roberts, A. Sayer, S. Shaw, A. Sheppard, C. McFarlane, P. Descombes, C. Cooper, K.M. Godfrey, J.N. Feige, K. Lillycrop, H.P. Patel (University of Southampton, Institute of Developmental Sciences, Southampton, USA)

Background: Sarcopenia, is the loss of muscle mass and function with age and is common in both men and women with prevalence estimated at between 3-30% worldwide. Sarcopenia is associated with a number of adverse physical and metabolic outcomes including frailty, disability, diabetes and osteoporosis. The molecular pathways altered during muscle ageing and their contribution to sarcopenia are poorly understood but could lead to new preventive or therapeutic approaches. **Method:** To identify molecular changes associated with the loss of muscle mass and strength in sarcopenia, we carried out total RNAseq on muscle biopsies of the vastus lateralis from 40 healthy older Caucasian men aged 68-76 years with and without sarcopenia defined according to the EWGSOP defining criteria and who had participated in the Hertfordshire Sarcopenia Study (HSS). RNA-seq reads were aligned to the GRCh38 genome and assigned to Entrez gene IDs using HTSeq. We analysed expression changes across the genome with respect to appendicular lean mass (ALM) normalised for height (ALM/ht²) using continuous modelling. Validation of the RNAseq was carried out using qRT-PCR using custom designed double-dye gene expression assays for H19 and SYBR green assays for mir-675-5p and 3p. The association between H19 and lean mass was replicated in vastus lateralis muscle biopsies from 115 independent male and female participants subsequently recruited into an extension of the Hertfordshire Sarcopenia Study (HSSe). **Results:** RNA-seq analysis showed altered expression of H19, an imprinted maternally expressed non coding RNA. The association between H19 and ALM/ht² was validated using qRT-PCR. Consistent with the RNAseq data, qRT-PCR showed an inverse association between H19 expression and ALM/ht² (r²=0.071, p=0.048) in the HSS cohort. There was no association with grip strength or walking speed. Analysis in the HSSe cohort (n=115) replicated the association with H19 expression, with an inverse association with sex and age adjusted ALM/ht² (r²=0.153, p=0.000373). Exon 1 of H19 encodes 2 miRNAs: mir-675-5p and -3p. The expression of mir-675-5p was negatively associated with sex and age adjusted ALM/ht² (r²=0.127, p=0.011) in the HSS and HSSe, while mir-675-3p showed a weak negative association (r²=0.256, p=0.073). mir-675-5p expression positively correlated with the expression of H19 (r=0.179, p=0.030) while mir-675-3p expression shows a positive trend with the expression of H19 (r=0.143, p=0.100). **Conclusion:** We have shown that increased expression of the long non-coding RNA H19, as well as mir-675-5p, is associated with low muscle mass. H19 is known to regulate multiple pathways involved in muscle atrophy and differentiation, directly and indirectly through its encoded miRNAs, mir675-5p and -3p, including Let-7 bioavailability, HMGA2 and myogenin degradation and IGF1R expression. This data suggests that increased expression of H19 and its miRNA effectors may contribute to loss of muscle mass in older people.

P288- POLYPHARMACY BASED ON THE DATA OF INPATIENT ASSESSMENT FOR ELDERLY CANCER PATIENTS IN GENERAL HOSPITAL. Y.-H. Park¹, D.Y. Jung² (1. Professor, College of Nursing, The Research Institute of Nursing Science, Seoul National University, Seoul, South Korea; 2. RN, Seoul National University Hospital, Seoul, South Korea)

Aim: As old aged cancer patients have been increasing, this study aims to understand the status of polypharmacy among elderly cancer patients who have been in General hospital in order to support the appropriate mediation and management for them. **Method:** This research has made retrospective survey research study for 3 months starting from January 1, 2015. The data was collected from 170 senior cancer patients over 65 years old at the cancer ward in S university General Hospital. The data was selected thru EMR

(Electronic Medical Record) of S university General Hospital and the medication research was based on oral medicine from daily self-medication except injection and external medicine during patient's hospitalization. PIM(Potentially Inappropriate Medication) for elderly patient was verified by Beers criteria and risky Drug-Drug interaction medication was referred to the appropriate medication guideline for elders issued by Ministry of Food and Drug Safety. The number of medication was analyzed by descriptive statistics and the study went thru cross validation, t-test and One way-ANOVA test for the variation of correlation of polypharmacy, PIM(Potentially Inappropriate Medication) and risky Drug-Drug interaction medication related to the general characteristics and disease of the patients. **Results:** The average age of patient was 72.3(±5.43) years old among 110 men(64.7%) and 60 women(35.3%). 87.1% of patients had more than 1 chronic disease and they had average 1.9(±1.4) types of chronic disease. According to the research, the most of patients had colorectal cancer with 22.9%, lung cancer with 11.8% and gastric cancer with 11.2% in order. At that time, 30.6% of patients were taking chemotherapy, 30.0% were undergoing the cancer test and 22.9% had the surgery. The patients were taking average 5.3(±3.3) self-medications daily and 55.9% were taking polypharmacy with over 5 and 10.0% were overtaking polypharmacy with more than 10. It was verified by Beers criteria that 30.0% showed PIM(Potentially Inappropriate Medication) in 62 cases and 21.2% showed risky Drug-Drug interaction medication in 50 cases among patients. **Conclusion:** The study shows that the number of medication is proportionate to the number of increasing chronic disease, and the frequency of PIM and risky Drug-Drug interaction medication increases as patients take more medication. As a result, it is necessary to reduce the polypharmacy for elderly cancer patients and build pharmacovigilance system to monitor PIM and risky Drug-Drug interaction medication. **Keywords:** Polypharmacy, Elderly cancer patients, PIM, Drug-Drug interaction

P289- INTRAVENOUS INFUSION OF ALLOGENEIC HUMAN MESENCHYMAL STEM CELLS IMPROVE AGING FRAILTY. A.M. Landin^{1,2}, B.A. Tompkins^{2,3}, S. Golpanian^{2,3}, D.L. Difede¹, A.A. Oliva¹, G. Green¹, P.J. Goldschmidt^{4,5}, J.M. Hare^{1,2,4,5} (1. Longeveron, LLC, Miami, FL, USA; 2. Interdisciplinary Stem Cell Institute, University of Miami Miller School of Medicine, Miami, FL, USA; 3. Department of Surgery, University of Miami Miller School of Medicine, Miami, FL, USA; 4. Department of Medicine, University of Miami Miller School of Medicine, Miami, FL, USA; 5. Division of Cardiology, University of Miami Miller School of Medicine, Miami, FL, USA)

Introduction: Aging Frailty is characterized by an increased vulnerability to adverse health outcomes and a chronic low level of inflammation. Frailty is a multisystem physiological dysregulation marked by weight loss, exhaustion, weakness, slowness and decreased physical activity. Although stem cells may aid in repair and may help improve the symptoms of frailty, endogenous stem cells have a very limited capacity in the repair mechanism and is hypothesized to be a biologic basis of frailty. This phase I study tested the safety and potential efficacy of intravenous, bone marrow derived allogeneic mesenchymal stem cells (allo-hMSCs) based therapy in patients with aging frailty. We hypothesize that allo-hMSCs from healthy young donors (18-45 years of age) serve as an off-the-shelf regenerative cell based therapy that not only reduces inflammation but also improves physical markers of frailty. **Methods:** The Allogeneic Human Mesenchymal Stem Cell in Patients with Aging Frailty via Intravenous (CRATUS) Delivery Study (www.clinicaltrials.gov: #NCT02065245) is a phase I non-randomized dose-escalation study. In this study, patients received a single intravenous infusion of allo-hMSCs: 20-million (n=5), 100-million (n=5), or

200-million cells (n=5). Patients enrolled were over 60 years of age and were frail as assessed by the Canadian Study of Health and Aging (CSHA). The primary endpoint was incidents of any treatment-emergent serious adverse events (TE-SAE) measured at 1-month post-infusion. The secondary endpoints were functional efficacy domains and inflammation, measured at 3 and 6-months, respectively. **Results:** The major new findings of CRATUS are that intravenous allo-hMSC infusions are safe and well tolerated in elderly individuals with early signs and symptoms of frailty. There were no treatment-emergent severe adverse events (TE-SAEs) at 1-month post-infusion or significant donor specific immune reactions during the first 6 months. There were no clinical signs of immune rejection in any of the treatment groups, and only one patient that developed a mild to moderate donor specific cPRA reaction in the 20-million group but there were no T cell reactions elicited in any of the treatment groups. The 100-million treatment arm showed the most improvement in overall compared to the 20-million and 100-million groups in 6 minute walk distance (6MWD), forced expiratory volume in 1 second (FEV1), and overall quality of life as assessed via the Euro-QOL 5 Dimensions (EQ-5D) questionnaire and patient-reported health status (36-Item Short Form (SF-36) survey). Importantly, there were improvements in a constellation of parameters that are important predictors of morbidity and mortality in patients with aging frailty. **Conclusions:** Allo-hMSCs are safe and immunologically tolerated in aging frailty patients. Improvements in functional and immunologic status suggest that ongoing clinical development of cell-based therapy is warranted for frailty.

P290- HABITUAL RECREATIONAL DANCING PROTECTS AGAINST SARCOPENIA BY REDUCING NEUROMUSCULAR DEGENERATION AND LOSS OF FUNCTION. M.V. Narici¹, F. Badiali², M.V. Franchi¹, J.M. Williams^{1,3}, P. Herrod^{1,3}, J. Lund^{1,3} (1. MRC-ARUK Centre of Excellence for Musculoskeletal Ageing Research, Metabolic Physiology, School of Graduate Entry Medicine and Health, University of Nottingham; 2. University of Bologna 'Alma Mater Studiorum'; 3. Division of Surgery, Royal Derby Hospital, Derby)

Background: Motor neuron degeneration, denervation, loss of structural and functional integrity of the neuromuscular junction (NMJ) and loss of motor units (MUs), markedly contribute to the development of sarcopenia (Deschenes, 2011). NMJ degeneration in sarcopenic humans may now be assessed from serum measurements of c-terminal peptide agrin fragment (CAF), a breakdown product of the proteoglycan agrin, released after NMJ damage (Hettwer et al. 2013). Recently, we reported a decrease in CAF levels in older individuals following a 6-month dancing intervention (Narici et al. 2016) suggesting that regular aerobic physical activity affords protection against NMJ degeneration. The present study intended to ascertain whether these neuroprotective effects of dancing are present in habitual older dancers (OD) compared to aged-matched sedentary older (OS) individuals and whether lower signs of NMJ degeneration are associated with better structural and functional characteristics of the neuromuscular system of older dancers. **Methods:** Twenty OD (aged 67-87 years, 12 M and 8 F) practicing sequence dancing, morris dancing, rapper sword dancing at least twice/week, about 90 min/session, for a minimum of two years, and 15 OS individuals (aged 65-86 years, 7 M and 8 F) were recruited for this study. Neuromuscular characteristics of OD and OS were compared in terms of: 1) blood serum CAF levels, determined using a commercially available ELISA kit (Neurotune AG, Schlieren, CH), 2) muscle structure (vastus lateralis, VL, muscle cross-sectional area (CSA) assessed by extended field-of view (EFOV) ultrasound), 2) VL muscle architecture (fascicle length and pennation angle)

assessed by ultrasound, 3) leg extensors muscle strength (MVC) and power (Nottingham Power Rig), 4) neuromuscular fatigue (isometric contraction at 60% MVC until the torque dropped to < 50% for at least 3 s (task failure) with EMG recordings to assess CNS fatigue (change in EMG median frequency, MDF). The study received approval by the local Ethics Review Board and informed consent was obtained from each participant. Significance of differences was tested using an unpaired Student's t-test, level of significance was set at $p < 0.05$. Data are reported as means \pm SEM. **Results:** CAF serum level in OD were found to be 42% lower than in OS (215.9 \pm 27.4 pM vs. 369.7 \pm 50.6 pM, $p < 0.02$). Also, greater values of VL muscle thickness (+13%, 1.94 \pm 0.06 cm vs 1.72 \pm 0.11 cm and pennation angle (+8%, 14.3 \pm 0.52 deg vs 13.3 \pm 0.60 deg) were found in OD than in OS. Whereas no differences in MVC and CSA were found between OD and OS, neuromuscular fatigue (time to task failure) was significantly lower (-28%) in OD than in OS (88.4 s vs 68.8 s). EMG power spectrum analysis revealed that the lower fatiguability of OD was not attributable to differences in CNS fatigue as a similar decrease in MDF at task failure was found in both groups. **Conclusions:** Consistent with the study hypothesis, the present findings provide evidence that habitual recreational dancing exerts a protective action against neuromuscular degeneration in older individuals preserving NMJ integrity, muscle mass and neuromuscular function. We posit that dancing may afford these benefits by 1) reducing oxidative stress, 2) lowering inflammation, 3) preserving neurotrophins levels, 4) loading of skeletal muscle and 5) stimulation of the somatosensory system. References: 1. Deschenes MR. Motor unit and neuromuscular junction remodeling with aging. *Curr Aging Sci.* 2011 Dec;4(3):209-20. 2. Hettwer S, Dahinden P, Kucsera S, Farina C, Ahmed S, Fariello R, Drey M, Sieber CC, Vrijbloed JW. Elevated levels of a C-terminal agrin fragment identifies a new subset of sarcopenia patients. *Exp Gerontol.* 2013 Jan;48(1):69-75. 3. Narici MV, Rehfeld K, Müller N, Rankin D, Hökelmann A. Does dancing in old age afford neuromuscular protection? The Biomedical Basis of Elite Performance 2016 (London, UK) (2016) *Proc Physiol Soc* 35, PC31

P291- ASSOCIATION OF SELF-REPORTED MUSCULOSKELETAL SYMPTOMS WITH SERUM LEVELS OF VITAMIN D AND MULTIVARIATE CYTOKINE PROFILE IN HEALTHY WOMEN. F. Azizieh¹, K. Alyahya², K. Dingle¹ (1. Department of Mathematics and Natural Sciences, Gulf University for Science and Technology, International Centre for Applied Mathematics and Computational Bioengineering; 2. Science Department, College of Basic Education, Public Authority for Applied Education and Training; Kuwait)

Background: Although a large number of studies investigated possible relation between serum levels of vitamin D or cytokines with disease progress and prognosis, similar studies with respect to self-reported symptoms are still controversial. The overall objective of this study was to look into the association between serum levels of vitamin D, pro- and anti-inflammatory cytokines with self-reported symptoms related to musculoskeletal pain in an adult

healthy women population. **Methods:** Venous blood samples were collected from 117 adult, healthy women and serum levels of vitamin D, pro-inflammatory cytokines (IL-1 β , IL-6, IL-8, IL-17, IFN- γ TNF- α) and anti-inflammatory cytokines (IL-4, IL-10, IL-13) were measured. Groups were tested for differences in single parameters, pro-/anti-inflammatory cytokine ratios as well as for differences in multivariate cytokine patterns. **Results:** There were no significant associations between serum levels of vitamin D and the self-reported musculoskeletal symptoms studied. However, serum levels of the pro-inflammatory cytokine IL-8 were significantly higher in subjects with musculoskeletal pain as compared to subjects who reported no symptoms ($p = 0.008$). The pro-/anti-inflammatory cytokine ratio showed a pro-inflammatory cytokine dominance in subjects with self-reported symptoms particularly in groups with deficient levels of vitamin D. However, the multivariate cytokine pattern analysis was not significantly different between the two groups. **Conclusion:** These data point to a possible role of pro-inflammatory cytokines as a contributing factor in self-reported symptoms related to musculoskeletal pain. Acknowledgment: This research was funded fully by Public Authority for applied Education and Training (PAAET) project no. (BE-14-09).

P292- DISTINGUISHING FRAILTY AND SARCOPENIA: A BIOLOGICAL APPROACH. N.T. Pin¹, X. Camous², O. Cexus², C.T.T. Ying², K. Suku², A. Larbi^{2,3,4} (1. YLL School of Medicine, University of Singapore, Singapore; 2. Biology of Aging Laboratory, Singapore Immunology Network, Agency for Science Technology and Research (A*STAR), Singapore; 3. Faculty of Medicine, University of Sherbrooke, Qc, Canada; 4. Department of Biology, Faculty of Sciences, ElManar University, Tunis, Tunisia)

Frailty as defined by the Fried definition contains a significant fraction of sarcopenia-related measures. Our aim was to distinguish frailty (measured by Fried's) and sarcopenia (measured by DXA) using a biomarker approach. Elderly individuals from the Singapore Longitudinal Aging Study-2 (SLAS-2) were recruited as home-dwelling males and females, with a majority of individuals with a Chinese background. Blood was drawn at the time of frailty/sarcopenia evaluation and used to describe a putative biological signature of frailty (F+) versus sarcopenia (S+). We selected individuals from the SLAS-2 cohort with 29.81% robust, 41.35% prefrail and 28.85% frail based on Fried's frailty measurement. Per gender, 33.33% of males were robust, 39.51% prefrail and 27.16% frail with similar distribution in females. Based on the AWGS algorithm for sarcopenia diagnostic frailty and sarcopenia are more related in males and occurrence seemed to be independent. We then compared the biological signature of F+S+ vs. F+S- vs. F-S+ vs. F-S-. Molecules such as osteocalcin was significantly upregulated while insulin and leptin were downregulated in the F+S+ and F-S+ groups only. The frequency of NK cells was significantly different in the frail but not the sarcopenic groups. The molecular signature of the 4 groups also shows specific pathways enhanced in the sarcopenic group. This implication of the biological signature for frailty and distinctly sarcopenia will be discussed.