

# RELATIONSHIP BETWEEN FEAR OF FALLING AND PERCEIVED DIFFICULTY WITH GROCERY SHOPPING

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**Abstract:** Fear of falling is associated with self-imposed restrictions of basic and instrumental activities of daily living (ADL/IADL), leading greater risk for functional decline and falls. The inability to independently grocery shop, a food-related IADL, negatively affects nutritional status and survival among seniors. Thus, this study examined the relationship between the fear of falling and difficulty with grocery shopping among seniors (n=98, mean age=82, 83% female), taking into account their functional capacity. Demographic profile, eating problems, physical fitness (mobility, balance, endurance, leg strength), and fear of falling (balance confidence, falls efficacy) were measured. Fifty-six percent of participants reported difficulty with grocery shopping. Those who reported difficulty had significantly lower scores for dynamic balance, balance confidence and fall efficacy compared to those who did not. This study revealed a relationship between the fear of falling and perceived difficulty with grocery shopping. Interventions should address fear of falling among the frail seniors.

**Key words:** Fear of falling, grocery shopping, balance confidence, falls efficacy, frail elderly.

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## Introduction

Older persons must maintain their abilities to accomplish functional activities beyond basic activities of daily living (ADL) necessary for self care, if they are to remain self-reliant and functionally independent within the community (1). Lawton and Brody (2) identified self-reliance activities such as transportation use, grocery shopping, use of the telephone, as instrumental activities of daily living (IADL). In general, functional dependence for any IADL precedes an ADL deficit, and observed deficits in self-care or self-reliance activities may suggest the onset or existence of frailty in community-dwelling older adults (3). Among older adults, ADL/IADL-related functional deficits are associated with the fear of falling (4).

The term fear of falling describes the phenomenon of heightened levels of anxiety or lower level of confidence to perform activities without falling or losing balance (4). Although the effect of fear of falling upon activity restrictions is established (4), there has been a paucity of research examining the relationship between the fear of falling and specific activity restrictions (e.g., food-related IADLs). Grocery shopping, a food-related IADL, is considered a more difficult IADL to perform and one of the first IADLs in which deficits occur. Raina, Wong and Massfeller (5) reported that 11 to 39% of older adults had difficulty with grocery shopping. Also, the inability to independently grocery shop has been shown to negatively affect nutritional status and survival among older adults (6). In addition, individuals dependent on grocery shopping have shown activity avoidance due to fear of falling and the occurrence of a fall in the past six months (7, 8). To date, most studies examining fear of falling have only assessed

ADL deficits with little attention given to precursor IADL or the functional capacity of the elderly, such as mobility, endurance, and balance. Thus, the present study examined the relationship between the fear of falling, functional capacity, and perceived difficulty with grocery shopping among frail, community-dwelling older adults.

## Methods

### *Participants and Setting*

Community-dwelling home care recipients (n=98) were recruited through the Community Care Access Centres (CCAC) in Ontario, Canada. In Canada, individuals are eligible to receive CCAC services if they need help with self care due to functional limitations or medical reasons. Participants were included in the study if they were 65 years of age or older with sufficient mental capacity (as determined subjectively by the CCAC case managers) to comply with the testing procedures and excluded from the study if diagnosed with unstable medical conditions or were receiving palliative care. Physical measurements were taken by a trained research assistant in the participant's residence. Ethics approval was granted by the University Research Ethics Board.

### *Measures*

#### *Background Characteristics*

Using a background questionnaire, information related to participant demographics and health characteristics was obtained. The participants were also asked of their perceived difficulty with grocery shopping.

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**Table 1**  
Demographic, health and mobility profiles between groups

	Difficulty Shopping n=55	No Difficulty shopping n=43	P value
Age			
Mean ± SD	83.1 ± 6.2	81.4 ± 7.2	0.20
Range	67 to 94	65 to 98	
Gender - Women	87.3 (48)	76.2 (32)	0.16
Living arrangement			
Lives alone	77.8 (35)	86.7 (26)	0.34
Lives with someone	22.2 (10)	13.3 (4)	
Education			
Less than high school	40.8 (20)	27.8 (10)	0.13
Completed high school	40.8 (20)	41.7 (15)	
Some post secondary	18.4 (9)	30.6 (11)	
Perceived health status			
Excellent	10.9 (6)	9.8 (4)	0.57
Good	58.2 (32)	65.9 (27)	
Fair/Poor	30.9 (17)	24.4 (10)	
Total # health problems			
Mean ± SD	6.9 ± 2.7	5.8 ± 2.3	0.03
Range	0 to 14	1 to 10	
Total # daily medications			
Mean ± SD	6.4 ± 2.7	5.8 ± 2.3	0.23
Range	1 to 12	1 to 10	
Walking Aids (yes)	89.1 (49)	66.7 (28)	0.01
Walker	38.0 (19)	34.5 (10)	
Cane	42.0 (21)	44.8 (13)	
Walker & cane	16.0 (8)	20.7 (6)	
Self-reported falls			
in the past 4 months	30.8 (16)	19.5 (8)	0.22
Perceived need for assistance*			
No, never	16.4 (9)	36.6 (15)	0.01
Yes, sometimes	21.8 (12)	24.4 (10)	
Yes, always	61.8 (34)	39.0 (16)	
Current Eating Habits			
Excellent	29.1 (16)	31.7 (13)	0.54
Good	58.2 (32)	61.0 (25)	
Poor/Very Poor	10.9 (6)	7.3 (3)	

Results are expressed as means +/- standard deviations, range, or percentage (n). Note. Percentages based on number of valid cases; HSW = Home Support Worker. SD= Standard deviation; \* Clients' perception of whether they need assistance from another person to leave their home.

**Mobility**

Functional mobility was assessed using the Timed Up and Go (TUG; 9). In this test, time in seconds taken for the

participant to rise from a seated position (standard chair with arms; seat height ~18 inches), walk at a safe and comfortable pace (with their usual gait aids) to a line (10 feet away), turn around, return to the chair, and sit down was recorded.

**Endurance**

The six-minute walk test was used to assess functional endurance (10). The participants were asked to walk as far as possible in six minutes using a self-selected pace, with usual gait aids, making stops to rest when necessary. The best available route (e.g., up and down the hallway) was determined in advance and the total distance (in feet) the person walked in six minutes was recorded using a measuring wheel.

**Balance**

Dynamic balance was assessed with the Functional Reach (FR) test (11). Subjects were asked to remove footwear and socks, and stand perpendicular to the wall with their dominant arm beside the wall. A yardstick was placed on the wall, perpendicular to the subject's body, and at the height of their acromion process. Subjects extend their arm to determine normal reach (end of third metacarpal: position 1), then extend the arm as far as possible (position 2), while keeping their balance (head up, heels on the floor, not contacting the wall). The subject's best score in inches (difference between positions 1 and 2), of three trials, was used for analysis.

**Lower Body Strength**

The Sit-to-Stand test, considered suitable for frail older adults (12), was used to assess lower body strength. The participant was asked to sit in a straight-backed Chair (standard height with arms, positioned against a wall) with their back against the chair, then to rise up to standing, without using their arms, as quickly as possible. Time in seconds taken to complete one sit-to-stand and five sit-to-stands in succession was recorded.

**Fear of Falling**

For this study fear of falling was operationally defined as fall self-efficacy. Fall self-efficacy using two of the most commonly used measures: the Activity-specific Balance Confidence (ABC) scale (14), and the Fall Efficacy Scale (FES) (15). Both are composed of a series of 10 questions pertaining to one's perceived ability to perform specific ADL and IADL tasks, and each question was graded on a scale from 0-100%, where 0 equaled no confidence on the participant's part in regards to completing that ADL or IADL, and 100 equaled full confidence.

**Statistical Analysis**

Completed assessments were coded and entered into a Statistical Package for the Social Sciences (SPSS) version 21.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics (means and frequencies) were used. In addition, independent sample

T-tests were conducted to assess the relationship of fear of falling to physical parameters and self reported difficulty with grocery shopping. The significance level was set at  $p \leq 0.05$  for all statistical procedures.

## Results

Demographic, health and mobility profiles for participants with and without difficulty grocery shopping are presented in Table 1. The mean age was 82 years ( $82.4 \pm 6.6$ ) ranging from 65 to 98 years of age. The majority of participants were female (83%) and they lived alone (81%). In this study population, 56% of participants had difficulty with grocery shopping and 44% did not. There were no significant differences in the demographic characteristics between the two groups. The two groups differed based on health and mobility status. Those with difficulty shopping had on average of seven health problems, which was significantly higher than those without difficulty ( $p=0.03$ ). Participants with difficulty shopping were significantly more likely to utilize a walking aid and felt that they always required assistance than those without difficulty shopping ( $p=0.01$ ). Self-reported eating habits were similar between groups; however, 60% reported good eating habits while only 30% reported their eating habits to be excellent.

As shown in Table 2, participants who reported difficulty shopping had significantly higher fear of falling (ABC and FES scores) than those who did not experience difficulty. Participants with difficulty shopping had significantly lower balance (FR scores) and leg strength (one second sit-to-stand scores). Five second sit-to-stand, TUG, six-minute walk and VPS scores did not differ significantly between groups.

## Discussion

The present study showed a significant relationship between fear of falling and perceived difficulty with grocery shopping. Also, 56% of frail older adults involved in the present study had difficulty grocery shopping which is higher than the rates reported in the literature (11-39%) among community dwelling seniors (5). From this, it could be hypothesized that a deficit in the ability to grocery shop and its association with fear of falling may lay the foundation for poor nutrition.

Among the frail older adults, higher level of nutritional risk and poor nutrition are very common leading to adverse health outcomes (6, 7). It is evident that barriers to nutrition related to fear of falling and impaired ability to grocery shop or cook is problematic. Grocery shopping impairments not only exist, but are affecting a large proportion of older adults. Self-perceived difficulty with grocery shopping may also be a marker of the opportunity to not only address mobility issues but also fear of falling and provide the necessary nutritional supports. Improving the efficacy of older adults to perform IADLs like grocery shopping, perhaps by reducing barriers like fear of falling, is vital for enabling seniors to age in their own homes.

**Table 2**  
Difficulty grocery shopping versus function and fear of falling

	Difficulty Shopping n= 55	No Difficulty Shopping n=43	F and P Values
Sit to Stand (Once)			
Mean $\pm$ SD	6.4 $\pm$ 3.8	5.2 $\pm$ 1.9	F=3.51
Range	3 to 25	2 to 10	p=0.06
Sit to Stand (5 times)			
Mean $\pm$ SD	32.2 $\pm$ 17.3	28.0 $\pm$ 14.6	F=1.48
Range	14 to 117	13 to 85	p=0.23
TUG			
Mean $\pm$ SD	33.5 $\pm$ 21.5	28.6 $\pm$ 24.7	F=1.09
Range	12 to 124	11 to 163	p=0.30
Reach			
Mean $\pm$ SD	19.8 $\pm$ 7.1	23.3 $\pm$ 6.5	F=5.18
Range	8 to 34	11 to 34	p=0.03
6 minute walk			
Mean $\pm$ SD	1.2 $\pm$ 0.4	1.2 $\pm$ 0.4	F=0.44
Range	1 to 2	1 to 2	p=0.84
ABC			
Mean $\pm$ SD	57.8 $\pm$ 23.9	69.5 $\pm$ 22.6	F=5.96
Range	5 to 96	5 to 100	p=0.02
FES			
Mean $\pm$ SD	73.8 $\pm$ 21.5	84.3 $\pm$ 17.7	F=6.52
Range	8 to 100	28 to 100	p=0.01

TUG: Timed Up and Go Test; ABC: Activity-specific Balance Confidence scale; FES: Fall Efficacy Scale

Further investigation into the methods needed to alleviate barriers to IADLs, such as grocery shopping, may be a positive next step. Understanding how interventions can help older adults overcome fears of falling can better prepare them to handle other daily tasks. Health professionals are skilled at assessing an individual's environment as well functional status and providing suggestions for adaptation to enhance functional independence and safety. In practice with older clients, most therapists are concerned with preserving immediate ADL issues with less attention paid to precursor IADL.

The results of this study suggest that health professionals must be aware of decline in one or more IADL, and therapeutic interventions initiated before a crisis occurs may be able to make a greater impact upon reducing functional decline and maintaining the independence among frail older adults.

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