Fear of Falling and Balance Ability in Older Men: The Priest Study

Dennis W. Klima, Roberta A. Newton, Emily A. Keshner, and Adam Davey

Studies examining fear of falling among older adult men remain limited. The objectives of this study were to compare balance confidence in 2 age cohorts of older clergy and identify predictive determinants of balance confidence in a liturgical research initiative. Participants included 131 community-dwelling Roman Catholic priests age 60–97 yr living in religious communities in 10 mid-Atlantic states. Subjects completed the Activities-specific Balance Confidence Scale (ABC), Berg Balance Scale (BBS), timed up-and-go (TUG) test, and 15-item Geriatric Depression Scale (GDS). Younger priests (60–74 yr) demonstrated a significantly higher ABC score than the older cohort (75 and above yr) of priests (89.1 ± 12.6 vs. 78.4 ± 13.9, *p* = .001). Confidence was significantly correlated with BBS (rho = .69, *p* < .01), TUG (r = –.58, *p* < .01), and GDS (r = –.39, *p* < .01) scores. A stepwise-regression model demonstrated that balance ability, mood, assistive-device use, and physical activity predicted 52% of the variance in balance confidence.

**Keywords:** balance confidence, clergy, falls, oldest old

Fear of falling (FOF) and impaired balance confidence may negatively affect behaviors of older adults, but little is known about their prevalence in older men. We present, for the first time, normative data on FOF and balance confidence in a sample of older Catholic priests. Clergy are a desirable target population because they are relatively homogeneous with regard to educational status, vocation, and living environments.

Hallmarks for successful aging by community-dwelling older adults include appropriate gait speed (Montero-Odasso et al., 2005) and balance confidence (Powell & Myers, 1995). The negative pole of balance confidence is FOF, a major health concern that can limit daily activities, decrease quality of life, and lead to early nursing-home admission (Cumming, Salkeld, Thomas, & Szonyi, 2000). FOF may be defined as the phobic response to a potential or sustained fall, slip, or trip, with low perceived self-efficacy at avoiding falls during activities of daily living (Tinetti, Rickman, & Powell, 1990). The condition may develop in individuals who have fallen, as well as older adults who have not experienced a fall. Prevalence rates range to as high as 85% in fallers and 50% in nonfallers (Scheffer, Schuurmans, van Dijk,
van der Hooft, & de Rooij, 2008). Falls efficacy is based on Bandura’s self-efficacy model that an individual’s belief in an activity determines participation in that event (Bandura, Reese, & Adams, 1982). Fearful older adults are more apprehensive about navigating the community, where potential environmental challenges are encountered. This may, in turn, result in social isolation or community withdrawal.

FOF has been linked with sociodemographic characteristics (older age, female gender), health-related factors (perceived poor health, slower gait speed, impaired balance, fall history, use of an assistive device), and psychosocial factors (decline in cognitive function, anxiety, symptoms of depression, decreased social participation) in the elderly (Jorstad, Hauer, Becker, & Lamb, 2005; Legters, 2002; Tinetti et al., 1990). A significant limitation to studying FOF is older adults’ reluctance, for whatever reason, to self-report the condition (Legters, 2002). A lower percentage of men have traditionally reported FOF (Scheffer et al., 2008). This may be because of a hesitancy to admit actual fear or embarrassment due to the stigma related to reporting episodic FOF (Jorstad et al., 2005; Legters, 2002). Furthermore, it is plausible that older men may overinflate their sense of confidence to compensate for deficits in balance and physical performance (Kruger & Dunning, 1999).

The presence of escalating comorbidities and associated polypharmacy necessitates careful appraisal of the unique factors that influence functional mobility, fall risk, and balance confidence in men, particularly those over the age of 75 years. Our approach was to examine balance confidence in older men, specifically, Roman Catholic priests. Historically, religious groups have afforded researchers well-controlled samples to study particular disease states and physical performance (Aggarwal, Wilson, Beck, Bienias, & Bennett, 2006; Shah et al., 2006; Snowdon, 2001); however, focused studies related to FOF and other psychosocial variables among older clergy remain limited.

The purposes of this study were twofold. The first aim was to compare balance confidence in two major age cohorts of older men age 60–74 years and 75 years and above, and the second was to identify correlates and predictive determinants of balance confidence in older men.

A similar age partition at 75 years was used to discern differences in sleep quality, musculoskeletal pain, and chronic-disease states between younger and older elderly individuals (Kinsella, Chavrimootoo, Molloy, & Eustace, 2010; Lihavainen et al., 2010; McCrae et al., 2008).

Methods

Study Design and Participants

A cross-sectional design was used to examine balance confidence and physical performance in older men over the age of 60 years. Roman Catholic priests were recruited in a large liturgical research initiative aimed at studying physical performance among older adult clergy. A stratified sample of convenience was used to capture subjects in two age cohorts: 60–74 years (n = 56) and 75 years and above (n = 75). Before participation, all clergy signed the requisite informed-consent form. The study was approved by the university institutional review board.

Procedures

Subjects were recruited through contacts with central diocesan offices and religious-order centers in 10 states and were tested at their facilities. Inclusion criteria
were being community-dwelling clergy, being able to rise five times from a chair without physical assistance, and having sufficient endurance to walk 10 ft (~3 m) independently. Subjects were excluded if they had chronic neuromusculoskeletal, cardiopulmonary, or renal pathologies. Additional eligibility screening consisted of a 6-item cognitive battery, a vision examination to discern requisite 20/40 corrected vision, and a vestibular screen (Dannenbaum, Paquet, Hakim-Zadeh, & Feldman, 2005) to identify abnormal dizziness with cervical-spine movements. The Six Item Screener for Cognitive Impairment (Callahan, Unverzagt, Hui, Perkins, & Hendrie, 2002) assesses cognitive appropriateness to proceed with subsequent research testing. Inclusion criteria mandated that subjects score greater than 3 of a maximum of 6 points. The battery has demonstrated 88.7% sensitivity and 88% specificity in identifying individuals with cognitive impairment. To detect exclusionary lower extremity sensory neuropathies (Kles & Bril, 2006), subjects’ feet were examined (5.07-g threshold Semmes-Weinstein monofilament). All subjects were tested by one physical therapist with established reliability intraclass coefficients (> .90) on the physical-performance batteries.

Assessments and Measures

Sociodemographic Information and Physical Activity. In a written demographic questionnaire, subjects self-reported their total number of medications taken, pertinent comorbidities, use of assistive devices, and falls over the past 3 months. For the purpose of the study, a fall was defined as unintentionally coming into contact with the ground with varying degrees of injury and subsequent health care follow-up (Schwenk et al., 2012). Subjects’ weight, height, and blood pressure were taken, and all clergy completed the Physical Activity Scale for the Elderly. This test demonstrates sufficient validity for appropriately assessing physical activity over the previous week in older individuals in leisure, household, and work-related activity domains (Washburn, McAuley, Katula, Mihalko, & Boileau, 1999). An index is calculated based on both the frequency (number of hours per day) and intensity of activities performed.

FOF, Balance Confidence, and Depression Measures. FOF and balance confidence and were assessed using both the single dichotomous FOF question (Maki, Holiday, & Topper, 1991) and the Activities-specific Balance Confidence (ABC) instrument, respectively. The single dichotomous FOF question is a useful tool to partition fearful from nonfearful individuals and to identify prevalence estimates. The ABC is a reliable and valid instrument to measure perceived balance confidence during the performance of 16 routine functional home- or community-based tasks (Powell & Myers, 1995). The instrument quantifies balance confidence on a 0–100 scale for each item. The divided sum of the 16 items gives a final total score of 100 possible points. The scale demonstrates appropriate internal consistency and reliability, as well as concurrent validity with the Falls Efficacy Scale (Powell & Myers, 1995). The instrument challenges individuals to assess their perceived balance confidence with a wide range of both indoor and outdoor tasks (Myers et al., 1996). Scores above 80% denote higher functioning, active elders (Myers, Fletcher, Myers, & Sherk, 1998).

Symptoms of depression were assessed using the 15-item version of the Geriatric Depression Scale. This scale is composed of 15 questions in a “yes/no” response format to assess respondents’ mood state (Yesavage et al., 1982–1983). This version of the Geriatric Depression Scale demonstrates appropriate internal
consistency and test–retest reliability (Almeida & Almeida, 1999; Brown & Schinka, 2005). Scores above 5 are suggestive of a depressive state.

**Physical-Performance Measures.** Physical performance is the execution of functional motor skills required for independent home and community navigation. Balance was measured by the Berg Balance Scale, which assesses an individual’s balance ability during 14 routinely performed tasks (Berg, Wood-Dauphinee, Williams, & Maki, 1992). Tasks are graded on a 0- to 4-point scale for a maximum of 56. The Berg Balance Scale is reliable and demonstrates predictive validity for assistive-device use (Bogle Thorbahn & Newton, 1996).

Subjects’ functional mobility was assessed using the timed up-and-go test (Podsiadlo & Richardson, 1991). Subjects were instructed to rise to stand, traverse a 3-m gait course at their self-selected pace, turn, and return to a seated position in the chair. This instrument has demonstrated appropriate reliability and concurrent validity with both the Berg Balance Scale (Podsiadlo & Richardson, 1991) and stair climbing (Hughes, Osman, & Woods, 1998). Scores slower than 14 s are predictive of falls in community-dwelling older adults (Bohannon, 2006; Shumway-Cook, Brauer, & Woolacott, 2000).

**Statistical Analyses**

A weighted mean procedure for ANOVA comparison tests was performed at the .80 power level to establish the required sample sizes for the two age divisions (60–74 years, 75 years and older). Descriptive statistics were used to describe the mean or percentages for sociodemographic and health-related characteristics. Independent *t* tests and chi-square tests were used to compare select demographic data, balance confidence, and physical-performance tests in men age 60–74 years and 75 years and above. Pearson product–moment correlations (continuous variables) and nonparametric Spearman rho coefficients were calculated to analyze the association between balance confidence and both physical-performance and demographic variables. A forward stepwise multiple-regression model was constructed based on all variables that were significant in bivariate analyses to ascertain predictive determinants. Significance was set at the .05 level. A sharper .005 value was used for multiple *t*-test comparisons with a Bonferroni correction. Demographic covariates included body-mass index, comorbid conditions, and medications. SPSS version 19 software was used for all analyses (SPSS Inc., Chicago, IL).

**Results**

A total of 131 Roman Catholic priests from primarily the mid-Atlantic region of the United States were tested. The majority of subjects were White (99%) and well-educated, with either a master’s or doctoral degree obtained (79%), and reported perceived health status as good to excellent (81%). Sociodemographic and physical-performance profiles are shown in Table 1. Falls-related data indicate that 39 subjects (30%) had a FOF on the single dichotomous question; moreover, 17 subjects further indicated that they limited activities because of this fear. Twenty-one subjects (16%) had fallen during the past 3 months. Significantly more priests in the older cohort were taking four or more medications (76% vs. 52%; *p* = .005).
Table 1  Subject Sociodemographic and Physical-Performance Profile, M (SD)

<table>
<thead>
<tr>
<th>Demographic characteristic</th>
<th>Total sample (N = 131)</th>
<th>60–74 years (n = 56)</th>
<th>≥75 years (n = 75)</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>76.1 (9.0, 60–97)</td>
<td>67.3 (4.4, 60–74)</td>
<td>82.6 (5.1, 75–97)</td>
<td>17.90</td>
<td>129</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Cognition (max 6 points)</td>
<td>5.5 (0.8)</td>
<td>5.6 (0.98)</td>
<td>5.4 (.68)</td>
<td>1.24</td>
<td>129</td>
<td>.22</td>
</tr>
<tr>
<td>Body-mass index (kg/m²)</td>
<td>29.5 (5.5)</td>
<td>31.6 (6.2)</td>
<td>27.9 (4.3)</td>
<td>3.82</td>
<td>128</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Number of medications taken</td>
<td>5.4 (3.8)</td>
<td>4.7 (4.2)</td>
<td>5.9 (3.5)</td>
<td>1.71</td>
<td>125</td>
<td>.09</td>
</tr>
<tr>
<td>ABC Scale (% max)</td>
<td>83.0 (14.4)</td>
<td>89.1 (12.6)</td>
<td>78.4 (13.9)</td>
<td>4.53</td>
<td>128</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Geriatric Depression Scale (15 max)</td>
<td>1.4 (1.5)</td>
<td>1.0 (1.6)</td>
<td>1.6 (1.5)</td>
<td>2.06</td>
<td>128</td>
<td>.04</td>
</tr>
<tr>
<td>Physical Activity Scale for the Elderly (#)</td>
<td>107.7 (97.8)</td>
<td>169.4 (109.0)</td>
<td>64.3 (58.8)</td>
<td>6.98</td>
<td>124</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Berg Balance Scale (56 max)</td>
<td>49.4 (7.3)</td>
<td>53.4 (4.8)</td>
<td>46.5 (7.5)</td>
<td>5.98</td>
<td>128</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>Timed up-and-go test (s)</td>
<td>12.1 (3.8)</td>
<td>10.4 (2.3)</td>
<td>13.4 (4.2)</td>
<td>5.25</td>
<td>117</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td>4 or more medications taken</td>
<td>86 (66)</td>
<td>29 (52)</td>
<td>57 (76)</td>
<td></td>
<td></td>
<td>.005†</td>
</tr>
<tr>
<td>Assistive device used</td>
<td>22 (17)</td>
<td>3 (5)</td>
<td>19 (25)</td>
<td></td>
<td></td>
<td>&lt;.001†</td>
</tr>
<tr>
<td>Has fear of falling</td>
<td>39 (30)</td>
<td>8 (14)</td>
<td>31 (41)</td>
<td></td>
<td></td>
<td>&lt;.001†</td>
</tr>
<tr>
<td>Fear of falling limits activities</td>
<td>17 (13)</td>
<td>4 (7)</td>
<td>13 (17)</td>
<td></td>
<td></td>
<td>.07</td>
</tr>
<tr>
<td>Has fallen in past 3 months</td>
<td>21 (16)</td>
<td>5 (9)</td>
<td>16 (21)</td>
<td></td>
<td></td>
<td>.04†</td>
</tr>
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</table>

*p ≤ .005 (independent t tests with Bonferroni correction). †p ≤ .05 (chi-square analyses).
Significant differences in FOF frequency and fall history between the two age cohorts were noted. More men over the age of 75 years self-reported FOF (41% vs. 14%, \( p < .001 \)) and more falls over the past 3 months (21% vs. 9%, \( p = .04 \)) than in the younger group. In addition, balance confidence (ABC) was lower in this older group (78.4 vs. 89.1, \( p < .001 \)). Correlation analysis reflected a robust association between balance ability and balance confidence (.69, \( p < .01 \)) among the clergy. Additional significant correlates \(( p < .01)\) included age (–.47), physical activity (.57), mood (–.39), and functional mobility (–.57). A forward stepwise multiple-regression analysis for the entire sample \(( n = 131)\) determined that determined that balance (Berg Balance Scale), mood (Geriatric Depression Scale), assistive-device use, and physical activity (Physical Activity Scale for the Elderly) explained 52% of the variance \(( p < .001)\) in balance confidence (Table 2). Collinearity diagnostics noted no multicollinearity infringement on the regression model.

Discussion

The FOF condition has gained recognition in recent years secondary to initiatives aimed at minimizing fall episodes, risk factors, and associated fall-related sequelae. To our knowledge, this is the first study to exclusively examine balance confidence and FOF in older adult men. While multiple studies (Legters, 2002; Scheffer et al., 2008) have found that female gender is a significant predictor of FOF, analyses describing balance confidence in older men alone remain limited. Findings demonstrated significantly lower balance-confidence scores when comparing age cohorts below and above the age of 75 years. Since age-related comparisons for the ABC have not been recorded in men using the benchmark age of 75 years, we believe that this finding is noteworthy, with a nearly 10-point difference between the two age groups.

Our mean (± SD) score of 83.0 (± 4.4) on the ABC tool was slightly less (87.5 ± 10.6) than the mean average reported by Lajoie and Gallagher (2004) in a mixed-gender sample and considerably less (94.5 ± 8.3) than scores of older men reported by Herman, Inbar-Borovsky, Brozgol, Giladi, & Hausdorff (2009). Two potential reasons for score differences prevail. Seventeen percent of the priests in our study used an assistive device (e.g., walker, cane, or otherwise), whereas subjects in Herman et al.’s study were required to ambulate without the use of any device. In addition, the sociodemographic characteristics may account for some of the differences. Herman et al. did not report activity level and included only subjects in a 70- to 90-year cohort, whereas our study permitted nonagenarians.

| Table 2 | Predictive Determinants of Balance Confidence, \( N = 131 \) |
|-------------------|---------|-------|-----|
| Independent variable | \( b \) | \( t \) | \( p \) |
| Balance (Berg Balance Scale) | 0.42 | 4.9 | .001 |
| Mood (Geriatric Depression Scale) | –0.21 | –3.2 | .002 |
| Assistive-device use | –1.96 | –2.5 | .012 |
| Physical activity (Physical Activity Scale for the Elderly) | 0.16 | 2.0 | .04 |

Note. Results are based on stepwise forward multiple regression. \( R^2 = .52 \).
Thirty percent of all subjects \( n = 131 \) responded that they were fearful of falling on the single dichotomous FOF question. In addition, there was a greater number of clergy who responded as fearful in the older cohort (41%) than in the younger cohort (14%). Scheffer et al. (2008) reported that prevalence has ranged from 20.8% to 85%; however, those were mixed-gender studies. Our frequency provides a focused gender-specific estimate, given that only men were included in the sample, which is higher than previous rates reported (Myers et al., 1996) for older men.

There was a significant negative association between age and balance confidence. Conflicting reports in the literature have been cited regarding these two variables. While age has previously been identified as an FOF correlate, Kressig et al. (2001) found no association between age and balance confidence. Our data confirm the former authors’ conclusions and illustrate that confidence level is associated with increasing age. One potential explanation for these conflicting findings could be ethnicity and target sample. In their study of 251 inner-city older adults, Kressig et al. studied more subjects who were African American and more frail than in our study of predominantly White priests.

The cluster of variables identified to predict balance confidence deserves discussion. While Scheffer et al. (2008) identified only one modifiable risk factor for developing FOF, our study, on the other hand, identified three modifiable factors: mood, balance ability, and physical activity. These findings, particularly depression, have implications for FOF interventions. The link between depression and FOF has previously been noted in the literature (Gagnon, Flint, Naglie, & Devins, 2005; Moore & Ellis, 2008). Depression is common among older adults with severe FOF who restrict their activities (van Haastregt, Zijlstra, van Rossum, van Eijk, & Kempen, 2008). The relationship between depression and FOF is particularly relevant for older adult men, given the fact that analyses of veterans attending Veterans Administration gait and balance clinics have cited depression rates as high as 23% among male participants (Bishop, Meuleman, Robinson, & Light, 2007). Sharaf and Ibrahim (2008) found nearly identical predictors of FOF (balance, depression, and assistive-device use) in their study of 208 individuals living in assisted-living facilities compared with our community-dwelling participants.

Studies have previously reported associations between balance confidence and balance ability using both the ABC and Berg Balance Scale tools (Hatch, Gill-Body, & Portney, 2003; Lajoie, Girard, & Guay, 2002). Our findings that balance ability parallels balance confidence are in accordance with these results, and the strength of this association was robust \( \rho = .69 \). In their study of community-dwelling older adults, Hatch et al. noted that 57% of the variance in balance confidence could be attributed to balance ability. Similarly, we noted that balance ability, in addition to mood, physical activity, and assistive-device used, were predictive determinants of confidence level.

Decreased physical activity has been associated with physical decline in older adults (Fried et al., 2001), yet our findings extrapolate this relationship with balance confidence, as well. Current studies have indicated that higher levels of physical activity are associated with fewer recurrent falls and higher bone density in older adult men (Peeters, van Schoor, Pluijm, Deeg, & Lips, 2010; Pye, Devakumar, & Boonen, 2010). Conversely, decreased physical activity and lower extremity strength were found to predict rates of mobility decline among Catholic clergy (Buchman et al., 2007). The empowering effect of community navigation, volunteerism, and
remaining active well into retirement may have influenced subjects’ level of security in maintaining their balance. Conversely, the use of an assistive device because of gait instability during routine tasks may have adversely affected balance confidence.

Only 13% percent of all subjects actually limited their activities because of FOF. This frequency is surprisingly low, given the fall history and age range of our participants, although it is consistent with previous rates reported (Myers et al., 1996). Our findings are in accordance with Fletcher and Hirdes’s studies (2002, 2004) of over 2,000 seniors receiving home-care services where men were less likely to restrict their activity because of associated FOF. Clergy in our study may have felt compelled to continue with daily work and liturgical duties despite FOF, impaired functional mobility, or having sustained a fall. Moreover, the support of the religious community or social network may have curtailed activity avoidance (Howland et al., 1998).

There has been considerable controversy in the literature regarding tool selection for assessment of FOF and balance confidence. Moore and Ellis (2008) reported frequent inappropriate use of assessment instruments due to confusion regarding the underlying constructs of the tools themselves. We chose to administer both the single dichotomous FOF question and the ABC tool to capture two perspectives. The single FOF question effectively identified individuals who were fearful, with follow-up of subsequent activity restriction. Use of the ABC tool provided the opportunity for subjects to quantify their level of confidence, or self-efficacy, during commonly performed household and community activities. A similar approach was taken by Reelick, van Iersel, Kessels, and Olde Rikkert (2009) when analyzing the influence of FOF on gait and balance. We are in agreement with Hadjistavropoulos, Delbaere, and Fitzgerald (2011) that FOF and balance confidence are uniquely different constructs and should be treated as such.

The ABC demonstrated appropriate concurrent validity with physical-performance tests and both Physical Activity Scale for the Elderly and Geriatric Depression Scale scores. Comparable psychometric support was demonstrated by Talley, Wyman, and Gross (2008) when assessing concurrent validity of the instrument in a cohort of community-dwelling women (N = 272) over the age of 70 years. This psychometric support supports the continued feasibility of the ABC for older community-dwelling male clergy.

The current study has several strengths. Studying only Roman Catholic priests afforded a unique population of older adult men relatively homogeneous in educational status, vocation, and living domains. We were able to assess two major constructs, FOF and balance confidence, in conjunction with physical performance. In addition, testing error was minimized by having only one tester for the entire sample. The identified predictive determinants of balance confidence yield potential interventions for current evidence-based interventions such as multicomponent behavioral group activities and exercise ( Büla, Monod, Hoskovec, & Rochat, 2011). Falls efficacy has been identified as a successful predictor of outcomes in geriatric rehabilitation (Denkinger et al., 2010).

Our findings demonstrate a significant age-related decrease in balance confidence and concomitant increase in FOF among older Roman Catholic priests. Balance confidence is associated with balance ability and functional mobility in this population, and major determinants of confidence level include balance, mood, physical activity, and assistive-device use. Our study examined, however,
the only community-dwelling sector of older adult clergy, primarily White and well-educated, who were independent in gait and functional mobility and activities of daily living. These factors, along with the unique nature of our sample, limit generalizability. The cross-sectional design of the study prevents inferences of temporal causation. In examining FOF, we did not delineate community- versus home-based fear on the single FOF question. Deshpande, Metter, Lauretani, Bandinelli, and Ferrucci (2009) noted that individuals perceiving FOF on a focused FOF question exclusively for home-based activities were significantly more impaired in psychosocial and physical characteristics.

References


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