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Transient Versus Persistent Fear of Falling in Community-Dwelling Older Adults: Incidence and Risk Factors

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Abstract

OBJECTIVES—To investigate the incidence of fear of falling (FOF) and the risk factors associated with transient versus persistent FOF in community-dwelling older adults.

DESIGN—Prospective cohort study.

SETTING—Bronx County, New York.

PARTICIPANTS—Three hundred eighty participants without FOF at baseline in the Einstein Aging Study aged 70 and older.

MEASUREMENTS—FOF was assessed at baseline and during follow-up interviews at 2- to 3-month intervals for a minimum 2 years. Incident FOF was classified as transient or persistent FOF. Transient FOF was defined as new-onset FOF reported at only one interview, and persistent FOF was FOF reported at two or more interviews over a 2-year period.

RESULTS—Twenty-four-month cumulative incidence of incident FOF was 45.4%, with 60.0% of FOF being persistent. Predictors of incident FOF included female sex (adjusted hazard ratio (aHR) = 1.55, 95% confidence interval (CI) = 1.08–2.23), depressive symptoms (aHR = 1.16, 95% CI = 1.07–1.26), falls (aHR = 1.50, 95% CI = 1.01–2.21), and clinical gait abnormality (aHR = 2.07, 95% CI = 1.42–3.01). The proportion of participants with incident FOF increased linearly with increasing number of risk factors. Predictors for transient and persistent FOF were depressive symptoms and clinical gait abnormality. Female sex and previous falls were predictors of persistent but not transient FOF.

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Author Contributions: Mooyeon Oh-Park: study concept and design, obtaining funding, analysis and interpretation of data, and preparation of manuscript. Xiaonan Xue and Roe Holtzer: study design, interpretation of data, and preparation of manuscript. Joe Verghese: study concept and design, acquisition of participants and data, obtaining funding, interpretation of data, and preparation of manuscript.

CONCLUSION—FOF status in older adults may change over time, with shared and distinct risk factors for persistent and transient FOF. Understanding the dynamic nature of FOF and these risk factors will help identify high-risk groups and design future intervention studies.

Keywords

fear of falling; risk factors; older adults

Fear of falling (FOF) is described in the literature as an exaggerated concern about falling^{1,2} or as low perceived self-efficacy at avoiding falls during activities of daily living³ and has a reported prevalence ranging from 20% to 83% in community-dwelling older adults.^{4–7} FOF is a major health problem in older adults that is associated with activity restriction,^{6,8,9} decline in physical function,^{10,11} loss of functional independence,¹⁰ admission to the nursing home,⁹ and falls.⁵ It is often hypothesized that FOF with short-term curtailment of activity may be a reasonable response to protect against falls,^{6,10,12} whereas in the longer term, it may lead to debilitating outcomes.¹⁰ It has been reported that 21% of older women with FOF showed reversal of their symptoms over 3 years, and those reporting FOF two times over follow-up showed worse physical performance than those who reported FOF only once.¹³ These findings suggest that FOF may change over time and thus the need for defining transient and persistent subtypes of FOF. Older age;^{5,14,15} female sex;^{5,6,15} falls;^{2,5,16} self-rated health status;^{2,16} obesity;¹³ visual impairment;¹⁴ depression;¹³ balance;^{2,13} gait, and mobility impairment;^{2,13,17,18} and polypharmacy⁵ have been reported as risk factors for FOF. Infrequent assessments, cross-sectional designs,^{6,15,16} and lack of distinguishing subtypes of FOF (persistent and transient) have limited these studies. Therefore, this longitudinal study was undertaken to investigate the incidence of FOF and the specific risk factors associated with transient and persistent FOF in community-dwelling older adults. Knowledge of potentially remediable risk factors for development of FOF is crucial to identifying high-risk groups and developing effective interventions to ameliorate FOF.

METHODS

Study Design and Setting

This was a prospective cohort study nested within the Einstein Aging Study. The primary aim of the Einstein Aging Study was to identify risk factors for dementia. The study design has been previously reported.¹⁹ In brief, potential participants (aged ≥ 70) identified from Bronx County population lists were sent letters explaining the purpose of the study and then contacted by telephone.

Study Sample

Participants who gave oral consent on the telephone were invited for in-person evaluation. Exclusion criteria included severe auditory or visual loss, bed bound, and institutionalization. Individuals with dementia diagnosed at case conferences²⁰ at baseline were also excluded from the current study. The local institutional review board approved the study protocols. Participants were enrolled from August 2004 to January 2008, and those reporting no FOF at baseline with at least one follow-up telephone-interview were included in the current study. Follow-up for this study was through December 2009.

Assessment of FOF and Falls

FOF was measured at the initial evaluation and every 2 to 3 months with telephone interviews and at annual follow-up visits using a single-item question, “Did you have fear of falling in the last 2 months or since the last interview?” Responses were recorded as yes or

no. This single-item question has been widely used in previous studies,^{5,14,16,17,21,22} with good test–retest reliability (0.66)³ and correlation of 0.7²³ with the Fall Efficacy Scale (FES)—International.²⁴ Test–retest reliability and the validity of the single-item question were also evaluated in the current study cohort. This measure had good test–retest reliability (kappa = 0.72) in 35 participants who had repeated assessments over a 2-week interval. In 30 participants from the current cohort, the Modified Fall Efficacy Scale (MFES) score,²⁵ a 14-item scale (range 0–10), was significantly lower in those who reported FOF (8.4) on the single-item question than in those who reported no fear (9.8) ($P < .001$).

Incident FOF was defined as new-onset self-reported FOF during the follow-up period. Subtypes of FOF were defined in participants who completed 2 years of follow-up. Definitions of subtypes of FOF were adapted and modified from a previously reported operational conceptualization of disability patterns in community-residing older adults.²⁶ Transient FOF was operationally defined as new-onset FOF reported only at one interview during the 2-year follow-up. Persistent FOF was defined as FOF reported at two or more interviews during the 2-year period. These data were also examined using alternative definitions of persistent FOF with cumulative duration longer than 6 months, as well as FOF reported at two consecutive interviews. The results using each of these definitions were not materially different from those with the selected definition of persistent FOF.

Falls were defined as unintentionally coming to the ground or some lower level other than as a consequence of sustaining a violent blow, loss of consciousness, sudden onset of paralysis as in stroke, or an epileptic seizure.²⁷ Falls were assessed at annual in-house visits and telephone interviews every 2 to 3 months during follow-up.^{28–30}

Clinical Assessment

Research assistants trained in data collection used structured questionnaires to elicit history of medical illness and medication use at baseline during the initial evaluation. Dichotomous rating (present, absent) of hypertension, diabetes mellitus, heart failure, angina pectoris, myocardial infarction, strokes, Parkinson's disease, chronic obstructive lung disease, depression, and arthritis was used to calculate an illness index summary score (range 0–10), as previously described in this cohort.^{31,32} Depressive symptoms were measured using the 15-item Geriatric Depression Scale (GDS),³³ and general cognitive status was assessed using the Blessed Information-Memory-Concentration Test.³⁴ Visual acuity with correction was measured using a Snellen chart, with a value of less than 20/200 defined as low visual acuity.²⁹

Gait Assessment

Clinical gait abnormalities were diagnosed using a well-established rating scale^{19,20,35} at baseline. Study physicians trained to rate clinical gait abnormalities observed participants walking up and down a hallway. Gait was rated normal or abnormal after visual inspection of walking patterns.^{19,20} Abnormal gaits were classified as nonneurological (e.g., limited because of pain from arthritis) or neurological.^{20,35} Severity of gait abnormality was defined as mild when no assistive device was required and as moderate when assistive device was required. More-detailed descriptions and video weblinks of abnormal gaits are available.²⁰ This clinical rating has established test–retest reliability with 89% agreement (kappa = 0.6) and interrater reliability (kappa = 0.8) for gait classifications in this cohort.^{19,20,35}

Gait velocity was measured at baseline using a computerized walkway (457 × 90.2 × 0.64 cm; GAITRite system, CIR Systems, Havertown, PA) with excellent reliability³⁶ and validity.^{29,37}

Statistical Analysis

All data analysis was performed using STATA version 10.0 (StataCorp LP, College Station, TX). Baseline comparisons of participants who developed incident FOF (incident FOF group) and those who never developed FOF (no-FOF group) were made using descriptive statistics, applying nonparametric tests as appropriate. Data from the 380 participants without FOF at baseline who had at least one follow-up telephone interview were analyzed using the Kaplan-Meier method³⁸ to estimate the cumulative probability of developing incident FOF. The timing of event (incident FOF) was estimated as the midpoint between the preceding interview and the interview when FOF was reported for the first time. If participants had longer than 4 months between interviews, their data were included only through the interviews before the one that had a longer-than-4-month interval. Analysis was also performed including follow-up with intervals longer than 4 months. The sensitivity analysis showed similar results.

Cox proportional hazards regression analysis was performed to identify independent risk factors for incident FOF in the 380 participants without FOF at baseline, and the associations were reported as hazard ratios (HRs). The final model included age, sex, ethnicity, illness index score, use of psychotropic medications, low visual acuity, Blessed test score, depression score, falls during the past year, and presence of clinical gait abnormality. Depressive score was evaluated dichotomously using 3 points or more to define significant depressive symptoms, as suggested by previous studies.³⁹ Cox proportional hazards regression analysis was also performed to identify the predictors for the report of FOF a second time in the incident FOF group. Proportionality assumption was checked for each variable using the goodness-of-fit test.³⁸ The risk of developing transient or persistent FOF was analyzed using the data from the subgroup of 349 with complete 2-year follow-up. Because there were three outcomes (no-FOF, transient FOF, persistent FOF), polytomous logistic regression, which models non-ordinal categorical outcomes with more than two levels, was used,⁴⁰ which allows the risk of each subtype of FOF to be simultaneously assessed and compared against the common reference group of no-FOF (transient FOF vs no-FOF, persistent FOF vs no-FOF).

To determine the effect of the number of risk factors on the likelihood of developing FOF, a summary FOF risk score was derived based on number of significant predictors of incident FOF in the main analysis. The probability of FOF over 2 years was calculated for groups with each FOF risk score.

RESULTS

Incident FOF

Of the 555 participants enrolled in the study, 172 (31.0%) who reported FOF at baseline and three without any follow-up interview were excluded. The remaining 380 participants had a total of 4,500 interviews (median 12/participant) during the follow-up period (mean 2.3 years, maximum 5.3 years). Twenty-one participants who died without developing FOF were censored at their last interview before death. One hundred ninety participants developed at least one episode of FOF (incident FOF), resulting in a 24-month cumulative incidence of 45.4% (95% confidence interval (CI) = 40.0%–51.0%).

In terms of baseline characteristics, the incident FOF group had a significantly higher proportion of women, falls during the previous year, and clinical gait abnormality and higher depression scores and lower gait velocity than the no-FOF group (Table 1). The mean rate of falls was 0.62 per person-year for the incident FOF group and 0.42 in the no-FOF group ($P = .06$). The majority of clinical gait abnormalities were mild, not requiring assistive devices in either group (86% of no-FOF and 80% of incident FOF group). Greater risk of developing

incident FOF was associated with female sex (adjusted hazard ratio (aHR) = 1.55), higher depression score (aHR = 1.16), falls during the previous year (aHR = 1.50), and presence of clinical gait abnormality (aHR = 2.07) (Table 2). Higher depression score was significant when included in the model as a dichotomized variable (aHR = 1.99, 95% CI = 1.44–2.77). Cumulative percentage of incident FOF in participants with and without each of the four independent risk factors is presented in Figure 1.

The association between clinical gait abnormality and FOF remained significant (aHR = 1.84, 95% CI = 1.21–2.79) even after adjusting for baseline gait velocity, a known correlate of FOF.^{18,41} Neurological (aHR = 2.02, 95% CI = 1.40–3.01) and nonneurological gait abnormalities (aHR = 1.83, 95% CI = 1.11–3.01) predicted incident FOF. The risk of developing incident FOF increased with increasing severity of gait abnormality from an aHR of 1.95 (95% CI = 1.30–2.91) with mild to 2.70 (95% CI = 1.39–5.22) with moderate abnormality.

Of the incident FOF group of 190, 118 reported FOF a second time during follow-up. Predictors of reporting subsequent FOF included female sex (aHR = 1.80, 95% CI = 1.12–2.88) and clinical gait abnormality (aHR = 1.76, 95% CI = 1.11–2.79).

Transient Versus Persistent FOF

The risk of developing transient or persistent FOF was analyzed using the data from the subgroup of 349 who completed 2-year follow-up (total of 3,478 interviews, mean 10/ participant). Of the 349 participants, 180 reported FOF at least once during the 2 years of follow-up, with 108 (60.0%) being persistent FOF. The 24-month cumulative incidence was 20.6% for transient FOF and 30.9% for persistent FOF. Of the 108 participants with persistent FOF, 76.9% reported FOF at two or more consecutive interviews. The number of participants per frequency of FOF reported was 23 for two instances of FOF, 16 for three, 14 for four, 19 for five, 24 for six, 12 for seven or more times. There was a higher proportion of women and fallers at baseline in the persistent FOF group than in the transient FOF group (63.9% vs 54.2% for women; 20.4% vs 12.5% for fallers). Different predictors were identified for transient and persistent FOF (Table 3). Worse depression scores were associated with a higher risk of transient and persistent FOF (odds ratio (OR) = 1.35 for transient FOF, OR = 1.45 for persistent FOF), as was clinical gait abnormality (OR = 2.11 for transient FOF, OR = 2.29 for persistent FOF), whereas female sex (OR = 2.01) and previous falls (OR = 2.29) predicted persistent but not transient FOF.

FOF Risk Score

A FOF risk score (range 0–4) was developed as the sum of the significant risk factors (female sex, clinical gait abnormality, GDS score ≥ 3 , and previous falls) identified in the above analyses. Figure 2 illustrates that the risk of developing FOF during 2 years increased linearly with increasing number of risk factors. Of the 84 participants with no risk factors at baseline, only 18 (21.4%) developed incident FOF, and the proportion of incident FOF increased to 73.3% of the 30 participants with a score of 3 or greater ($P < .001$ according to chi-square test for order in proportion). A similar pattern was shown for the proportion of persistent FOF, from 10.7% (9/84) of those with a risk score of 0 to 53.3% (16/30) of those with a score of 3 or higher (chi-square test for order in proportion = 25.4, $P < .001$).

DISCUSSION

This study reports the incidence and type-specific risk factors associated with transient and persistent FOF in a prospective cohort study of community-dwelling older adults. The incidence estimate of FOF (45.4% in 2 years) in this study was higher than the estimates of

previous studies (23% over 2 years to 30% at 3-year follow-up).^{2,13} This difference may be due in part to differences in study population and lack of frequent assessments in previous studies that may have led to underestimation of incidence of FOF by not accounting for transient states.

Dynamic transitions between normal and abnormal states have been reported in other health conditions such as disability in older adults.²⁶ The current findings show that FOF experienced by older adults is also a dynamic process, with frequent transitions between states of FOF and no FOF. Transient FOF accounted for 40% of all incident FOF in the current sample, and the rest (60%) was persistent. These results in part explain the wide range of prevalences reported for FOF⁴ and the inconsistencies in associations of various risk factors for FOF reported in the literature.^{2,5,6,14,42} Transient FOF has not, to the knowledge of the authors, been described previously. In the current cohort, the cumulative incidence of transient FOF was 20.6% over 2 years, suggesting that a number of older adults may experience FOF and recover within 3 months without recurrence. Although transient FOF is self-limited, it may not be a benign condition, particularly in association with activity restriction. It has been reported that even transient episodes of disability are of prognostic importance in older adults.⁴³ Also, the shared risk factors (depressive symptoms, gait abnormality) between transient and persistent FOF imply common pathological processes, which might be amenable to the same interventions. The long-term prognosis of different patterns of FOF will be examined in ongoing studies. Incidence of persistent FOF in older adults of both sexes has not been reported. A previous study restricted to older women reported 79% persistence of FOF at 3-year follow-up in those with prevalent FOF at baseline.¹³ In contrast, the incidence of persistent FOF was 30.9% over 2 years in those without FOF at baseline in the current cohort.

These results showed that female sex is a significant predictor of persistent but not transient FOF, suggesting that the high prevalence of FOF in women reported previously^{6,13} may in part be due to persistence of symptoms. Higher prevalence of FOF is reported in fallers,^{5,15,16} although history of a single fall was not consistently identified as a predictor of FOF in previous longitudinal studies.^{2,5,13,14} The current study found that fall history was a predictor of persistent but not transient FOF. These findings suggest that the negative effect of falls on emotional function is long lasting. The occurrence of falls was not a predictor of FOF once fall history at baseline was taken into consideration (data not shown). Higher GDS score was associated with greater risk of developing incident FOF and both subtypes. Neuroimaging studies have shown that the neural substrates affected in depression were the frontal limbic brain areas,⁴⁴ amygdala,⁴⁵ and hippocampus,⁴⁶ corresponding to important brain substrates for fear and anxiety.⁴⁷ The neural substrates for FOF are not known, and neuroimaging and neurophysiological studies are needed to investigate underlying neural substrates.

To the knowledge of the authors, clinical gait abnormalities have not been previously examined as a risk factor for FOF, although proxies for gait impairment such as self-reported mobility impairment, performance-oriented gait score, use of an assistive device, and gait velocity have been reported to predict FOF.^{2,17,18} In the current cohort, 52% of those with clinical gait abnormality self-reported difficulty in walking, and 17% required an assistive device, suggesting that self-reported difficulty and use of assistive devices may underestimate gait pathology. Even mild gait abnormality increased the risk of FOF, which underscores the importance of clinical gait evaluations. Several cross-sectional studies have reported slower gait in older adults with FOF than in those without FOF,^{18,41,42,48} indicating that slow gait may be an adaptation to optimize balance,^{18,48} but the results of the current study showed that gait velocity at baseline was lower in the incident FOF group than the no-FOF group, suggesting that slower gait speed may be causal rather a consequence of FOF. In

this study, gait velocity was not an independent predictor of incident FOF or its transient or persistent subtype, although clinical gait abnormality remained a predictor even after adjusting for gait velocity. Unlike the slowing of gait that occurs with normal aging,⁴⁹ clinical gait abnormalities reflect the effects of different disease processes on various components of the gait pathway. It has been reported that neurological, but not nonneurological, gait abnormalities predict incident falls in this cohort.⁵⁰ Neurological and nonneurological gait abnormalities were predictors of incident FOF. These results suggest that the mobility impairment per se associated with gait abnormalities may be more important in the pathogenesis of FOF than the specific disease processes. A major detrimental consequence of FOF is fear-induced activity restriction and the tendency to adapt to a sedentary life style.^{10,51} Furthermore, FOF with accompanying activity restriction predicted greater decline in physical function than FOF without activity restriction.¹⁰ It is possible that, in older adults with FOF, only those with gait abnormality may resort to activity restriction. It will be interesting to investigate the causal relationships between gait abnormality, FOF, and activity restriction in future studies because this knowledge will affect the approach to FOF and related sedentariness in older populations.

In addition to the serious consequences of FOF for those experiencing it, FOF imposes a burden on public expenditure with greater use of health care.^{9,52} It is therefore of clinical interest to predict the probability of developing FOF in older adults and to introduce interventions for this high-risk group. The results of the current study show that the risk for developing FOF increase with increasing FOF risk score (number of risk factors). This risk score is easy to derive and may aid clinicians in the risk stratification of older adults for primary and secondary prevention of FOF. A recent systematic review found poor knowledge of underlying mechanisms as one of the major limitations of most intervention studies for FOF.⁵² The risk factors identified in this study provide insights for the underlying construct of FOF and suggest avenues for future designs of interventions depending on the specific risk factors.

The strengths of this study include its longitudinal design with frequent assessment of FOF status, long follow-up, and systematic clinical gait assessment in a well-characterized cohort. Several limitations need to be noted. This nested cohort study was necessarily restricted to participants who received gait and FOF assessments since 2004, and the participants who were enrolled in the cohort study before 2004 were not differentially excluded as far as gait and FOF assessments performed since 2004. Moreover, although this was a volunteer sample, the demographic characteristics were broadly representative of the Bronx population, which may increase the generalizability of the findings. Because transient and persistent FOF were not previously defined, subtypes of FOF were adapted and modified from operational conceptualization of disability patterns in this study. There may be alternative definitions of subtypes of FOF, but defining persistent FOF as cumulative duration longer than 6 months or on two consecutive interviews did not change the results substantially. FOF was assessed using a validated²⁴ and reliable³ questionnaire, but the severity of FOF or its associations with activity restrictions was not characterized. It is hoped that these issues will be addressed in ongoing studies.

This study reveals the high incidence and dynamic nature of FOF in community-dwelling older adults. Shared and distinct risk factors for persistent and transient subtypes of FOF were identified. Understanding of the dynamic nature and risk factors of FOF subtypes will help design future targeted intervention studies.

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Figure 1.

Cumulative percentage of participants developing incident fear of falling (FOF) in those with and without each of four risk factors. (A) Female versus male. (B) Geriatric Depression Scale (GDS) score < 3 versus ≥ 3 . (C) Faller versus nonfaller, (D) Gait abnormality (+) = clinical gait abnormality at baseline; gait abnormality-no clinical gait abnormality at baseline. Shaded area represents 95% confidence interval of cumulative percentage.

Number of incident FOF	18	82	58	22
Number of persistent FOF	9	44	39	16
Number of total subjects	84	138	97	30

Figure 2.

Occurrence of fear of falling (FOF) according to FOF risk score (sum of the number of risk factors: female sex, Geriatric Depression Scale score ≥ 3 , clinical gait abnormality, and falls during past 1 year) at baseline in participants with 2-year follow-up. Significant trend noted in the chi-square test for order in proportions for incident FOF (chi-square = 24.2; $P < .001$) and for persistent FOF (chi-square = 25.4; $P < .001$).

Table 1**Demographic and Clinical Characteristics of Study Population**

Characteristic	No FOF* (n = 190)	Incident FOF [†] (n = 190)	P-Value
Duration of follow-up, years, mean ± SD	2.3 ± 1.4	2.3 ± 1.5	.64
Age, mean ± SD	79.4 ± 5.3	80.5 ± 5.2	.06
Female, n (%)	92 (48.4)	110 (57.9)	.04
White, n (%)	133 (70.0)	128 (67.4)	.56
Illness index sum score, mean ± SD	1.3 ± 1.1	1.4 ± 1.1	.43
Use of psychotropic medication, n (%)	11 (5.8)	13 (6.8)	.64
Geriatric Depression Scale score, mean ± SD	1.4 ± 1.4	2.1 ± 2.0	<.001
Blessed Information-Memory-Concentration Test score, mean ± SD	1.9 ± 2.1	1.9 ± 2.0	.48
Low visual acuity, n (%)	24 (12.6)	27 (14.2)	.56
Falls during previous 1 year, n (%)	24 (12.6)	48 (25.3)	.003
Rate of incident falls per person-year, mean ± SD	0.42 ± 0.73	0.62 ± 1.32	.06
Clinical gait abnormality, n (%)	44 (23.2)	72 (37.9)	.002
Gait velocity, cm/s, mean ± SD	101.1 ± 22.4	95.7 ± 22.0	.02

Student *t*-test used for comparison of duration of follow-up, age, and gait velocity. Chi-square test used for comparison of sex, ethnicity, use of psychotropic medications, low visual acuity, experiencing falls during previous 1 year, and presence of clinical gait abnormality. Wilcoxon rank sum test used as nonparametric test for illness index sum score, Geriatric Depression Scale score, and Blessed Information-Memory-Concentration Test score.

* Never developed fear of falling (FOF).

[†] Developed FOF during follow-up.

SD = standard deviation.

Table 2

Risk Factors for Incident Fear of Falling in Community-Dwelling Older Adults

Risk Factor	Hazard Ratio (95% Confidence Interval)
Age	1.02 (0.98–1.05)
Female	1.55 (1.08–2.23) [†]
Ethnicity (nonwhite)	1.02 (0.70–1.48)
Illness index sum score	1.09 (0.94–1.26)
Use of psychotropic medication	0.87 (0.51–1.49)
Geriatric Depression Scale score	1.16 (1.07–1.26) [†]
Blessed Information-Memory-Concentration Test score	0.99 (0.90–1.08)
Low visual acuity (<20/200)	1.22 (0.76–1.94)
Falls during previous 1 year	1.50 (1.01–2.21)*
Clinical gait abnormality	2.07 (1.42–3.01) [†]

$P < .05$, [†] .01.

Table 3

Risk Factors for Transient and Persistent Fear of Falling (FOF) in Community-Dwelling Older Adults

Risk Factor	Odds Ratio (95% Confidence Interval)*	
	Transient FOF	Persistent FOF
Age	1.05 (0.98–1.12)	1.05 (0.99–1.12)
Female	1.40 (0.75–2.63)	2.01 (1.12–3.60) [†]
Ethnicity (nonwhite)	1.09 (0.53–2.22)	1.35 (0.70–2.59)
Illness index sum score	0.96 (0.71–1.28)	0.93 (0.71–1.23)
Use of psychotropic medication	0.56 (0.14–2.30)	1.34 (0.46–1.23)
Geriatric Depression Scale score	1.35 (1.12–1.64) [‡]	1.45 (1.21–1.74) [‡]
Blessed Information-Memory-Concentration Test score	0.99 (0.84–1.17)	0.91 (0.77–1.08)
Low visual acuity (<20/200)	1.01 (0.38–2.72)	1.48 (0.63–3.45)
Falls during past 1 year	1.20 (0.50–2.90)	2.21 (1.05–4.63) [†]
Clinical gait abnormality	2.11 (1.07–4.17) [†]	2.29 (1.21–4.32) [†]

* Compared with those who never developed FOF.

P < [†] .05, [‡] .01.