HHS Public Access

Author manuscript

J Am Med Dir Assoc. Author manuscript; available in PMC 2017 April 01.

Published in final edited form as:

J Am Med Dir Assoc. 2017 April 01; 18(4): 335–340. doi:10.1016/j.jamda.2016.10.008.

Falls, Cognitive Impairment, and Gait Performance: Results From the GOOD Initiative

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Abstract

Objectives—Falls are highly prevalent in individuals with cognitive decline. The complex relationship between falls and cognitive decline (including both subtype and severity of dementia) and the influence of gait disorders have not been studied. This study aimed to examine the association between the subtype (Alzheimer disease [AD] versus non-AD) and the severity (from preclinical to moderate dementia) of cognitive impairment and falls, and to establish an association between falls and gait parameters during the course of dementia.

Design—Multicenter cross-sectional study.

Setting—"Gait, cOgnitiOn & Decline" (GOOD) initiative.

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The authors declare no conflicts of interest.

Participants—A total of 2496 older adults (76.6 ± 7.6 years; 55.0% women) were included in this study (1161 cognitively healthy individuals [CHI], 529 patients with mild cognitive impairment [MCI], 456 patients with mild dementia, and 350 with moderate dementia) from 7 countries.

Measurements—Falls history was collected retrospectively at baseline in each study. Gait speed and stride time variability were recorded at usual walking pace with the GAITRite system.

Results—The prevalence of individuals who fall was 50% in AD and 64% in non-AD; whereas it was 25% in CHIs. Only mild and moderate non-AD dementia were associated with an increased risk for falls in comparison with CHI. Higher stride time variability was associated with falls in older adults without dementia (CHI and each MCI subgroup) and mild non-AD dementia, whereas lower gait speed was associated with falls in all participant groups, except in mild AD dementia. When gait speed was adjusted for, higher stride time variability was associated with falls only in CHIs (odds ratio 1.14; $P = .012$), but not in MCI or in patients with dementia.

Conclusions—These findings suggest that non-AD, but not AD dementia, is associated with increased falls in comparison with CHIs. The association between gait parameters and falls also differs across cognitive status, suggesting different mechanisms leading to falls in older individuals with dementia in comparison with CHIs who fall.

Keywords

Falls; gait disorders; dementia; mild cognitive impairment

Falls affect more than 30% of older adults[1] and represent a leading cause of hospitalization, morbidity, disability, and mortality.[2] Cognitive impairment has been identified as a risk factor for falls in aging.[3,4] Impaired executive function, but not memory impairment, has been associated with increased prevalence of falls in healthy older adults.[3] Dementia is considered an independent risk factor for falling in older adults.[5,6] Older adults with dementia fall 2 to 3 times more than cognitively healthy older adults.[7] The progression of white matter changes[8] and subcortical infarcts[9] have been associated with increased risk of falling. The influence of the subtype (ie, Alzheimer disease [AD] versus non-AD) and the severity (ie, from preclinical to severe) of dementia on fall risk, however, have not yet been identified.

The use of quantitative gait parameters improves the identification of people who fall among older adults with dementia, as reduced gait speed and stride length predict the short-term occurrence of falls in older adults with mild to moderate dementia.[10] Among quantitative gait parameters, in addition to gait speed, stride time variability (ie, coefficient of variability of stride time), a marker of higher level of gait control,[11–13] also has been suggested as an appropriate biomarker of fall risk.[14–16] An association between quantitative gait (ie, gait speed or stride time variability) parameters and falls across the subtypes and the severity of dementia from normal aging to moderate stage of dementia, however, has not been established.

To address these issues, we examined the database of a cross-sectional multicentric study called the “Gait, cOgnitiOn & Decline” (GOOD) initiative that includes more than 2700

older adults with and without dementia.[17,18] This analysis aimed to explore the association between the subtype of dementia as well as the severity of cognitive impairment and falls, and to establish the association between falls and quantitative gait parameters during the course of dementia. We hypothesized that (1) more severe cognitive impairment and non-AD subtype of dementia would be associated with increased prevalence of falls, and (2) the influence of poor gait would be associated with falls in the non-AD subtype, and the more advanced stage of dementia. Establishing the influence of subtype and severity of cognitive impairment on falls can help to better understand the neural basis of falls and to improve our fall prevention strategy in aging.

Methods

Study Design and Population

This cross-sectional study included data from the GOOD initiative, a consortium from 7 countries (ie, Australia, Belgium, France, India, Luxembourg, Switzerland, and the United States). The characteristics and the aims of the GOOD initiative have been previously detailed.[17] Briefly, the GOOD initiative recruits community-dwelling individuals or patients with and without dementia from the Tasmanian Study of Cognition and Gait (TASCOG; community-dwelling individuals) (Menzies Institute for Medical Research, Hobart, southern Tasmania, Australia), from Mechelen memory clinic (outpatients with cognitive complaints), from the “Gait and Alzheimer Interactions Tracking” (GAIT) study Angers memory clinic (community-dwelling individuals and outpatients with cognitive complaints), from the Kerala-Einstein Study (KES) (Kozhikode city, Kerala, India, outpatients), from the Center for Memory and Mobility (Luxembourg city, Luxembourg, outpatients and inpatients with cognitive complaints), from the Central Control of Mobility in Aging (CCMA, community-dwelling individuals) (New York, lower Westchester county, USA), and from the Basel mobility center (University Center for Medicine of Aging Basel, Felix Platter Hospital, Basel, outpatients with cognitive complaints). Inclusion criteria for the present analysis were participants older than 60 years, participants able to walk without personal assistance, information on previous falls (yes or no), information on clinical characteristics and cognitive status (ie, cognitively healthy individuals [CHIs], patients with amnestic mild cognitive impairment [aMCI] and nonamnestic MCI [naMCI], or mild and moderate AD or non-AD dementia), and gait assessment with the GAITRite system. From the 2717 participants initially recruited, we excluded 221 because spatiotemporal parameters, clinical characteristics, or cognitive status were missing. After exclusions, a total of 2496 participants (76.6 ± 7.6 years; 55% women) were included in the present analysis. The ethics committee of Angers University Hospital approved the GOOD initiative. Furthermore, each center involved in the GOOD initiative obtained individual approval from their local ethics committee. Clinical trials registration number is NCT02350270.

Gait Measurements

Spatiotemporal gait parameters were measured at steady-state walking using the GAITRite system in each center. The participants walked at their usual self-selected walking speed in a quiet, well-lit environment wearing their own footwear. The GAITRite system is an instrumented walkway with a length ranging from 4.6 m (TASCOG study) to 7.9 m (GAIT

study) recording area. Participants walked for 1 trial in all cohorts except in the TASCOG study (6 trials). The mean values from the 6 trials in TASCOG were used for the analysis. Based on previous studies reporting gait parameters associated with falls in older adults,[1,16] we included gait speed, cadence, stride time, stride length, support base, swing time, stance time, and single support time for this analysis. Coefficients of variation (CoV) of spatiotemporal gait parameters were calculated following the following formula: CoV = (SD/mean) × 100.

Falls Assessments

A fall was defined as unintentionally coming down to the floor or lower level not due to a major intrinsic or extrinsic event.[19] Self-reported retrospective falls were recorded based on the presence of any fall in the previous 12 months with a standardized questionnaire in the CCMA, GAIT, KES, and the TASCOG studies, as well in the Basel mobility center and the Mechelen memory clinic; in the Center for Memory and Mobility in Luxembourg, retrospective falls were recorded on the occurrence of falls in the previous 6 months.

Dementia and Cognitive Assessments

Participants were classified into each diagnostic group based on a comprehensive neuropsychological assessment: CHI, aMCI, naMCI, mild AD, mild non-AD, moderate AD, and moderate non-AD. CHIs presented normal cognitive tests in all cognitive domains with scores at –1.5 SDs or above the age-appropriate means (higher scores better). Amnestic MCI and naMCI were assigned if the participants reported spontaneous cognitive complaints and presented an objective impairment respectively in the memory or the nonmemory domains (ie, defined as a score at –1.5 SDs or below the age-appropriate mean), with preservation of independence in functional abilities.[20] We dichotomized the MCI group into aMCI and naMCI: participants were classified as aMCI when memory loss was the only deficit; and as naMCI when a cognitive domain other than memory was disturbed and/or if memory loss was combined with impairment in other cognitive domains. Dementia (AD and non-AD subtypes) and MCI (aMCI and naMCI) were diagnosed according to the *Diagnostic and Statistical Manual of Mental Disorders, fourth edition* (DSM-IV) at consensus diagnostic case conferences in all centers, except in the TASCOG study: self-report, review of medical history, cognitive testing, and/or clinical interview were used to diagnose dementia. The severity of dementia (mild and moderate stages) was defined by a Mini-Mental Status Examination (MMSE) score ≥20 and a Clinical Dementia Rating (CDR) score of 1 for the mild stage; and by an MMSE between 19 and 10, CDR score of 2 for the moderate stage.

Covariates

Age, gender, education coded as a binary variable (ie, high school level yes versus no), number of drugs, psychoactive drugs (ie, benzodiazepines or antidepressants or neuroleptics), depressive symptoms, and study center were used as covariates, as these variables were previously associated with falls,[19,21,22] and were available in all individual cohorts. Depressive symptoms were assessed with the 4-item, the 15-item, or the 30-item Geriatric Depression Scale (score ≥1 or ≥5 or ≥10 indicated the presence of depressive symptoms, respectively).[23]

Statistics

Baseline characteristics, diagnostic status, and spatiotemporal gait parameters were compared between individuals who fall and those who do not fall by using means and SDs or frequencies and percentages, as appropriate. Data were inspected graphically and model assumptions (eg, normality) were formally tested. Between-group comparisons were performed by using unpaired *t* test or χ^2 test, as appropriate. Univariable and multivariable (adjusted for age, gender, education, number of drugs, psychoactive drugs, presence of depression) logistic regressions exploring the association between falls (dependent variable) and diagnostic status (independent variable) were performed. Then, univariable and multivariable (adjusted for age, sex, education, number of drugs, psychoactive drugs, presence of depression) logistic regressions exploring the association between falls (dependent variable) and CoV of stride and/or gait speed (independent variables) were individually conducted. Values of $P < .05$ were considered statistically significant. All statistics were performed using SPSS (version 22.0; SPSS, Inc, Chicago, IL).

Results

Clinical characteristics of individuals who fall and those who do not fall, including spatiotemporal gait parameters, are presented in Table 1. Individuals who fall were older, more likely to be women, were less educated, and were taking more drugs than those who do not fall. The prevalence of depression is double in the group of those who fall. The prevalence of people who fall was higher in all dementia subgroups. The prevalence of those who fall in CHIs was 25%, in MCI 31%, and in dementia 55% (50% in AD and 64% in non-AD). Values of walking speed are 81.7 ± 31.7 cm/s for those who fall and 101.3 ± 26.9 cm/s for those who do not fall and of all spatiotemporal gait parameters (mean value and coefficient of variability) are more disturbed in the group of those who fall compared with those who do not fall, except for the mean values of swing time and single support time.

Each group of individuals with cognitive decline, regardless of the severity of decline, presented an increased odds ratio (OR) for falls in comparison with CHIs, with the highest OR for the group with moderate non-AD dementia (OR 8.23; 95% confidence interval [CI] 5.31–12.76; $P < .001$). After adjustment, only patients with mild and moderate non-AD presented an increased risk of falling (Table 2). When combining aMCI and naMCI in one group (MCI group) and both subtypes and level of severity of dementia in another group (dementia group), the patients with dementia fell more than CHIs (OR 1.49; 95% CI 1.10–2.01; $P = .010$), whereas MCI participants fell at the same range as the CHIs (OR 1.04; 95% CI 0.80–1.37; $P = .753$), after adjusting for covariates. When combining mild and moderate AD dementia in one group (AD group) and mild and moderate non-AD dementia in another group (non-AD group), non-AD patients fell more than CHIs (OR 2.31; 95% CI 1.56–3.42; $P < .001$), whereas patients with AD fell at the same range as the CHIs (OR 1.15; 95% CI 0.80–1.65; $P = .446$), after adjusting for covariates.

Regarding the association between gait parameters and falls, higher stride time variability (STV) was associated with falling in CHI, aMCI, naMCI, and mild non-AD participants, but not in the other groups (Table 3). For gait speed, falling was associated with slower gait speed for every group, except for mild AD (after adjustment) (Table 4). When including gait

speed and STV in the same model, both higher STV and slower gait speed were associated with falling in CHIs, whereas in the pathological groups, only slower gait speed was associated with fall in naMCI, moderate AD, and non-AD dementia (Table 5).

Discussion

We investigated the association of subtype and severity of dementia with falls and the role of poor gait on falls across the spectrum and the subtype of dementia. We found that patients with non-AD dementia, but not AD dementia, had more than twice the prevalence of falls than CHIs. Regarding gait parameters, those who fall in the CHI, aMCI, naMCI, and mild non-AD dementia groups presented with higher STV in comparison with those who do not fall, whereas the other groups presented similar STV. Those who fall in all groups, except in mild AD dementia, had slower gait speed in comparison with those who do not fall. When STV was adjusted for gait speed, only the CHIs who fall presented with higher STV in comparison with those who do not fall, whereas those who fall in the MCI and the dementia groups presented a similar STV than those, who do not fall.

Non-AD patients had a previous fall twice more than healthy older adults, whereas patients with AD had a previous fall at the similar range than healthy older adults. This increased falls rate in non-AD dementia is in accordance with previous studies: an increased prevalence of fall-related injury was reported in patients with dementia with Lewy bodies (DLB) (10.7%) than in AD (1.1%).[24] Multiple falls occurred in 37% of patients with DLB in comparison with 6% of patients with AD.[25] Regarding the similar falls rate between patients with AD and CHIs, a previous report suggests that the increased prevalence of falls in patients with AD may be explained by the use of neuroleptics and the presence of white matter changes.[26] However, amyloid deposition (assessed by the Pittsburgh compound B positron emission tomography and cerebrospinal fluid tau, phosphotau, and Aβ42 biomarker) predicts falls in cognitively healthy older adults.[27] These findings in combination with the results of the current study suggest that the pathophysiological mechanisms of falls in AD differ between the early course and the more advanced stages of the disease: “silent” amyloid deposition playing a role in the preclinical stage, whereas other factors, such as adverse events of medication or white matters changes, in the later stages.[6,26,28]

The contribution of gait parameters to fall risk, especially STV, that reflects the highest level of gait control, differs between CHIs and patients with MCI or dementia: increased STV is associated with CHIs who fall, and those who fall in the earliest form of cognitive decline (MCI and mild dementia). When adjusted for gait speed, STV is higher only in CHIs who fall, but not in patients with MCI or dementia who fall. Increased STV is associated with gait instability[13–15] and is considered an appropriate biomarker of risk of falls, even better than gait speed.[15,29,30] STV has been associated with frontal lobe functions in healthy older adults,[31,32] in patients with MCI,[33,34] and in dementias.[17,34–38] Neuroimaging studies suggest that STV is also associated with hippocampal volumes.[11,39] Interestingly, this association differs between CHIs and patients with early signs of cognitive decline,[11] suggesting that different brain structures are involved in higher levels of gait control in older adults with intact cognition and those with impaired cognitive functions. These different brain regions associated with the highest level of gait control in healthy older adults and in

patients with impaired cognition could explain this different contribution of STV in falls between CHIs and patients with MCI or dementia. Alternate explanation could refer to the fact that in comparison with CHIs, specific risk factors for falls in dementia have been identified, such as the presence of DLB or the duration of dementia.[40] Furthermore, by comparing risk factors for falls between nursing home residents with and without dementia, the discrepancy of the degree of explanation of the variation of falls between residents with and without dementia (25.5% in residents with dementia versus 54.8% in those without dementia) suggests different risk factors for falls between elders with and without dementia.[41]

Including such a high number of participants with and without dementia from various countries represents the main strength of this study. Furthermore, this is the first study that includes a comparison of the association of quantitative gait parameters and falls in more than 2000 participants separated by subtypes and stages of dementia. Some limitations should be acknowledged, however: (1) we used retrospective fall recording that is not considered the best approach for fall assessment, and (2) although the proportion of those who fall is much higher in participants with dementia, recall bias could still affect reporting, especially in participants with cognitive impairment. Nevertheless, potential recall bias is likely to result in underestimate of associations with cognitively impaired participants' underreporting falls. Although we dichotomized participants between AD and non-AD subtypes according to DSM-IV, we do not have an autopsy-confirmed diagnosis. Finally, even if we included the major covariates known to be associated with falls in our regressions, we were not able to include all the risk factors, due to the heterogeneity of the various cohorts.

Conclusion

In conclusion, this study confirms that older adults with dementia fall more than healthy older adults, but this was found for non–Alzheimer-type dementia, rather than AD-type dementia. Regarding the association between falls and quantitative gait parameters, higher (ie, worst performance) STV was associated with falls only in healthy older adults, suggesting that other risk factors contribute to falls in older adults with dementia. Future prospective study including older adults without dementia and people with different stages and subtypes of dementia should confirm these findings.

Acknowledgments

G.A. is funded by a grant from the Baasch-Medicus Foundation. The Kerala-Einstein Study was funded by the National Institutes of Health, USA (R01 AG039330). The CCMA study was funded by the National Institutes of Health, USA (R01AG036921, RO1AGO44007–01A1). TASCOG was funded by the National Health and Medical Research Council (NHMRC grants 403000 and 491109) and the Royal Hobart Hospital Research Foundation. The GAIT study was funded by the French Ministry of Health (Projet Hospitalier de Recherche Clinique national 2009-A00533–54). V.S. is funded by an NHRMC CDF/HF Future Leader fellowship.

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Table 1

Clinical Characteristics (n = 2496)

	Fallers n = 882	Non-Fallers n = 1614	P^*
Age, y	79.22 ± 7.49	75.10 ± 7.26	**<.001**
Women, n (%)	570 (64)	803 (50)	**<.001**
Education, n (%)†	320 (36)	975 (60)	**<.001**
Number of drugs	3.32 ± 2.85	2.30 ± 2.40	**<.001**
Psychoactive drugs‡	0.37 ± 0.48	0.20 ± 0.40	**<.001**
Presence of depression,§ n (%)	330 (44)	327 (22)	**<.001**
CHI, n (%)	291 (33)	870 (54)	**<.001**
MCI, n (%)	150 (17)	379 (23)	**<.001**
aMCI, n (%)	38 (5)	77 (6)	.237
naMCI, n (%)	88 (11)	205 (16)	**.001**
Mild dementia, n (%)	237 (27)	219 (14)	**<.001**
Mild AD dementia, n (%)	134 (15)	138 (9)	**<.001**
Mild non-AD dementia, n (%)	96 (11)	63 (4)	**<.001**
Moderate dementia, n (%)	204 (23)	146 (9)	**<.001**
Moderate AD dementia, n (%)	112 (13)	104 (6)	**<.001**
Moderate non-AD dementia, n (%)	78 (9)	33 (2)	**<.001**
Mean velocity, cm/s	81.7 ± 31.7	101.3 ± 26.9	**<.001**
Cadence, 1/min	95.7 ± 16.6	102.4 ± 13.4	**<.001**
Stride time, seconds	1.31 ± 0.38	1.20 ± 0.32	**<.001**
CoV of stride time, %	5.25 ± 5.32	3.32 ± 5.42	**<.001**
Stride length, cm	94.6 ± 27.9	116.5 ± 23.9	**<.001**
CoV of stride length, %	6.29 ± 6.19	3.60 ± 3.17	**<.001**
Support base, cm	10.73 ± 4.13	9.62 ± 3.43	**<.001**
CoV of support base, %	43.5 ± 172.6	30.1 ± 44.3	**.037**
Swing time, seconds	0.41 ± 0.14	0.42 ±0.15	.375
CoV of swing time, %	10.5 ± 15.0	5.9 ± 15.3	**<.001**
Stance time, seconds	0.89 ± 0.30	0.78 ± 0.20	**<.001**
CoV of stance time, %	5.90 ± 4.77	4.15 ± 5.04	**<.001**
Single support time, seconds	0.42 ±0.15	0.42 ±0.15	.432
CoV of single support time, %	10.4 ± 13.7	5.5 ± 7.7	**<.001**

CoV is calculated following the formula: (SD/mean value) × 100. Values of $P < .05$ are bolded.

*Comparison based on unpaired *t* test or χ^2 test, as appropriate.

†Education is treated as a binary variable: 1 if high school level or above and 0 if below high school level. n = number of participants reaching at least the high school level.

‡Psychoactive drugs included benzodiazepines or antidepressants or neuroleptics.

§Presence of depression was assessed with the 4-item, the 15-item, or the 30-item Geriatric Depression Scale (score ≥1 or ≥5 or ≥10 indicated the presence of depressive symptoms, respectively).

Table 2

Univariable and Multivariable Logistic Regression Showing an Association Between Falls (Dependent Variable) and Presence of Cognitive Status (Independent Variable)

	Univariable			Multivariable*		
	OR	**95% CI**	***P***	**OR**	**95% CI**	***P***
CHI	Ref			Ref		
aMCI	1.73	1.14–2.62	**.009**	1.44	0.92–2.24	.110
naMCI	1.51	1.13–2.01	**.005**	1.21	0.88–1.66	.237
Mild AD	3.22	2.37–4.38	**<.001**	1.15	0.79–1.69	.467
Mild non-AD	5.20	3.60–7.53	**<.001**	2.03	1.32–3.13	**.001**
Moderate AD	3.58	2.62–4.90	**<.001**	1.14	0.76–1.71	.542
Moderate non-AD	8.23	5.31–12.8	**<.001**	2.86	1.73–4.76	**<.001**

Values of $P < .05$ are bolded.

*Adjusted for age, gender, education, number of drugs, psychoactive drugs (ie, benzodiazepines or antidepressants or neuroleptics), presence of depression (assessed with the 4-item, the 15-item, or the 30-item Geriatric Depression Scale [score≥1 or ≥5 or ≥10 indicated the presence of depressive symptoms, respectively]), and study center.

J Am Med Dir Assoc. Author manuscript; available in PMC 2017 April 01.

Table 3

Univariable and Multivariable Logistic Regression Showing an Association Between Falls (Dependent Variable) and CoV of Stride Time (Independent Variable) Per Cognitive Status

	Univariable*			Multivariable*		
	OR	**95% CI**	***P***	**OR**	**95% CI**	***P***
CHI	1.31	1.19–1.45	**<.001**	1.21	1.09–1.34	**<.001**
aMCI	1.26	1.04–1.52	**.021**	1.38	1.06–1.78	**.015**
naMCI	1.24	1.10–1.40	**<.001**	1.12	1.00–1.25	**.047**
Mild AD	1.00	0.95–1.05	.953	0.97	0.92–1.03	.375
Mild non-AD	1.12	1.00–1.25	**.047**	1.15	1.01–1.31	**.037**
Moderate AD	1.01	0.98–1.03	.638	1.00	0.98–1.02	.962
Moderate non-AD	1.07	0.98–1.17	.135	1.07	0.98–1.17	.146

Values of $P < .05$ are bolded. CoV is calculated following the formula: (SD/mean value) × 100.

*Adjusted for age, gender, education, number of drugs, psychoactive drugs (ie, benzodiazepines or antidepressants or neuroleptics), presence of depression (assessed with the 4-item, the 15-item, or the 30-item Geriatric Depression Scale [score ≥1 or ≥5 or ≥10 indicated the presence of depressive symptoms, respectively]), and study center.

J Am Med Dir Assoc. Author manuscript; available in PMC 2017 April 01.

Table 4

Univariable and Multivariable Logistic Regression Showing an Association Between Falls (Dependent Variable) and Gait Speed (Independent Variable) Per Cognitive Status

	Univariable*			Multivariable*		
	OR	**95% CI**	***P***	**OR**	**95% CI**	***P***
CHI	0.98	0.97–0.99	**<.001**	0.98	0.97–0.99	**<.001**
aMCI	0.98	0.97–1.00	**.020**	0.97	0.95–0.99	**.015**
naMCI	0.97	0.96–0.98	**<.001**	0.98	0.97–0.99	**.003**
Mild AD	0.98	0.97–1.00	**.015**	0.99	0.98–1.01	.399
Mild non-AD	0.98	0.97–1.00	**.015**	0.98	0.96–1.00	**.041**
Moderate AD	0.98	0.96–0.99	**<.001**	0.98	0.97–1.00	**.009**
Moderate non-AD	0.96	0.94–0.98	**<.001**	0.97	0.95–0.99	**.002**

Values of $P < .05$ are bolded.

*Adjusted for age, gender, education, number of drugs, psychoactive drugs (ie, benzodiazepines or antidepressants or neuroleptics), presence of depression (assessed with the 4-item, the 15-item, or the 30-item Geriatric Depression Scale [score ≥1 or ≥5 or ≥10 indicated the presence of depressive symptoms, respectively]), and study center.

J Am Med Dir Assoc. Author manuscript; available in PMC 2017 April 01.

Table 5

Multivariable Logistic Regression Showing an Association Between Falls (Dependent Variable) and CoV of Stride Time and Gait Speed (Independent Variable) Per Cognitive Status

	Multivariable*		
	OR	**95% CI**	***P***
CHI			
CoV of stride time	1.14	1.03–1.27	**.012**
Gait speed	0.99	0.98–0.99	**.001**
aMCI			
CoV of stride time	1.28	0.98–1.68	.073
Gait speed	0.98	0.95–1.00	.067
naMCI			
CoV of stride time	1.06	0.95–1.18	.284
Gait speed	0.98	0.97–1.00	**.019**
Mild AD			
CoV of stride time	0.95	0.89–1.02	.159
Gait speed	0.99	0.97–1.00	.149
Mild non-AD			
CoV of stride time	1.11	0.96–1.28	.151
Gait speed	0.99	0.97–1.01	.375
Moderate AD			
CoV of stride time	0.99	0.97–1.02	.479
Gait speed	0.98	0.96–0.99	**.007**
Moderate non-AD			
CoV of stride time	1.00	0.92–1.10	.962
Gait speed	0.97	0.94–0.99	**.007**

CoV is calculated following the formula: (SD/mean value) × 100. Values of $P < .05$ are bolded.

*Adjusted for age, gender, education, number of drugs, psychoactive drugs (ie, benzodiazepines or antidepressants or neuroleptics), presence of depression (assessed with the 4-item, the 15-item, or the 30-item Geriatric Depression Scale [score ≥1 or ≥5 or ≥10 indicated the presence of depressive symptoms, respectively]), and study center.