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A comprehensive assessment of risk factors for falls in community-dwelling older adults

Zhao YL, Alderden J, Lind BK, Kim H.

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DOI 10.3928/00989134-20180913-04 **PMID** 30257023

Abstract

Falls in community-dwelling older adults are a complicated phenomenon that are attributed to sociodemographic characteristics, health conditions, functional problems, and environmental factors. The current cross-sectional and correlational study aimed to explore comprehensive risk factors for falls in community-dwelling older adults using a nationally representative data file (N = 5,930). Descriptive statistics were used and multiple logistic regression analyses were performed. Study findings showed that homebound or semi-homebound older adults were 50% more likely to experience a fall than non-homebound individuals. Impaired balance was the strongest predictor (odds ratio [OR] = 2.37, $p < 0.001$), followed by problems moving around in the home. Arthritis (OR = 1.39, $p = 0.009$) and depression or anxiety (OR = 1.28, $p = 0.013$) were additional risk factors. Community health or home health nurses need to assess these risk factors when planning fall intervention programs for older adults using evidence-based prevention strategies. [Journal of Gerontological Nursing, 44(10), 40-48.].

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Association between cognitive function and life-space mobility in older adults: results from the FRÉLE longitudinal study

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BMC Geriatr. 2018; 18(1): e227.

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DOI 10.1186/s12877-018-0908-y **PMID** 30249199

Abstract

BACKGROUND: Cross-sectional and longitudinal studies show conflicting results regarding the association between cognition and life-space mobility, and little is known regarding the mediators and moderators of the association. The aim of this study was to investigate the association between cognition and life-space mobility in older adults, as well as the intervening variables modifying the relationship.

METHODS: Community-dwelling older adults aged 65 years and older (N = 1643) were assessed at three time points over a period of 2 years. Growth mixture models with mediation and moderation analysis were utilised to investigate association between cognitive function and life-space mobility. The potential mediators and moderators were depressive symptoms, locus of control, gait speed and grip strength. Analysis was controlled for age, sex, education, annual income, number of chronic illnesses, and living site.

RESULTS: The direct association between initial scores of cognitive function and life-space was

mediated by initial scores of depressive symptoms and gait speed, and moderated by initial scores of grip strength. No direct association between change in cognitive function and change in life-space mobility was found; the scores were mediated by change in depressive symptoms.

CONCLUSIONS: We conclude that the relationship between change in cognitive function and life-space mobility in older adults is not well-defined over an observation period of 2 years.

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Effect of six-week intervention program on postural stability measures and muscle coactivation in senior-aged women

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Clin. Interv. Aging 2018; 13: 1701-1708.

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Abstract

OBJECTIVE: The objective involved the analysis of the efficiency of the Program of Movement Recreation of Elderly People (PMREP) exercise program expressed in terms of the stabilography measures and coactivation of muscles in women in the age group of 60-70 years. The assumption that was assumed stems from theoretical implications that the adequate postural stability is manifested in the decrease of the body sways measured by means of a force plate.

MATERIALS AND METHODS: The study involved a group of 60 females, all members of the active seniors' association. The subjects were in the age range from 60 to 70 years. The subjects were divided into 2 groups of equal size: control and experimental. Subjects in both groups participated in the rehabilitation exercises: experimental (n=16, PMREP - twice a week/60 minutes), control (n=27, PMREP - only once a week/60 minutes).

RESULTS: The study demonstrated that the completion of a 6-week PMREP program resulted in a decrease in the variability and velocity as well as indicators representing center of pressure displacement measured in the feet for the exercises performed with closed eyes with subjects standing on a high foam pad located on a force plate ($P=0.001$). No significant changes in coactivation of the calf muscles were recorded in the subjects.

CONCLUSION: The study concludes that a PMREP rehabilitation plan with an adequate program and frequency leads to an improvement of the vestibular system coupled with proprioception understood as an integrated process of sensor activation in the body. However, in regard to the coactivation of the muscles involved in maintaining postural stability, no significant differences have been observed.

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Geriatric traumatic brain injury-what we know and what we don't

Stein DM, Kozar RA, Livingston DH, Luchette F, Adams SD, Agrawal V, Arbabi S, Ballou J, Barraco RD, Bernard AC, Biffi WL, Bosarge PL, Brasel KJ, Cooper Z, Efron PA, Fakhry SM, Hartline CA, Hwang F, Joseph BA, Kurek SJ, Moore FA, Mosenthal AC, Pathak AS, Truitt MS, Yelon JA.

J. Trauma Acute Care Surg. 2018; 85(4): 788-798.



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Abstract

The issue of geriatric trauma is a significant and growing concern among trauma surgeons. The outcomes of geriatric patients with traumatic brain injury are worse than younger cohorts and the number of traumatic brain injury (TBI)-related hospitalizations and fatalities in elderly patients will continue to increase as the world's population ages. Although guidelines for the treatment of TBI have been established, they do not address the challenges of managing TBI in older patients. Issues of anticoagulation reversal, confounding of clinical exam by premorbid conditions, and optimal timing and frequency of imaging remain poorly studied. Additionally, current guidelines for optimal management of blood pressure, intracranial monitoring, cerebral perfusion pressure and operative management fail to address the unique concerns in the geriatric patient. Prognostication of acceptable outcomes in older patients with TBI is more challenging compared to younger cohorts and require early palliative care approaches targeted to the geriatric patient. Geriatric-specific research is sorely needed in nearly all aspects of TBI care. Given the paucity of data available, this non-systematic review seeks to outline the unique considerations of the geriatric patient with TBI and highlight what is currently unknown about the best way to care for elderly patients with TBI.

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Identifying trippers and non-trippers based on knee kinematics during obstacle-free walking

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Abstract

Trips are a major cause of falls. Sagittal-plane kinematics affect clearance between the foot and obstacles, however, it is unclear which kinematic measures during obstacle-free walking are associated with avoiding a trip when encountering an obstacle. The purpose of this study was to determine kinematic factors during obstacle-free walking that are related to obstacle avoidance ability. It was expected that successful obstacle avoidance would be associated with greater peak flexion/dorsiflexion and range of motion (ROM), and differences in timing of peak flexion/dorsiflexion during swing of obstacle-free walking for the hip, knee and ankle. Three-dimensional kinematics were recorded as 35 participants (young adults age 18-45 (N = 10), older adults age 65+ without a history of falls (N = 10), older adults age 65+ who had fallen in the last six months (N = 10), and individuals who had experienced a stroke more than six months earlier (N = 5)) walked on a treadmill, under obstacle-free walking conditions with kinematic features calculated for each stride. A separate obstacle avoidance task identified trippers (multiple obstacle contact) and non-trippers. Linear discriminant analysis with sequential feature selection classified trippers and

non-trippers based on kinematics during obstacle-free walking. Differences in classification performance and selected features (knee ROM and timing of peak knee flexion during swing) were evaluated between trippers and non-trippers. Non-trippers had greater knee ROM ($P = .001$). There was no significant difference in classification performance ($P = .193$). Individuals with reduced knee ROM during obstacle-free walking may have greater difficulty avoiding obstacles.

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Implementation of the Stopping Elderly Accidents, Deaths, and Injuries initiative in primary care: an outcome evaluation

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DOI 10.1093/geront/gny101 **PMID** 30239774

Abstract

BACKGROUND AND OBJECTIVES: Older adult falls pose a growing burden on the U.S. health care system. The Centers for Disease Control and Prevention's Stopping Elderly Accidents, Deaths, and Injuries (STEAR) initiative was developed as a multifactorial approach to fall prevention that includes screening for fall risk, assessing for modifiable risk factors, and prescribing evidence-based interventions to reduce fall risk. The purpose of this study was to determine the impact of a STEADI initiative on medically treated falls within a large health care system in Upstate New York. **RESEARCH DESIGN AND METHODS:** This cohort study classified older adults who were screened for fall risk into 3 groups: (a) At-risk and no Fall Plan of Care (FPOC), (b) At-risk with a FPOC, and (c) Not-at-risk.

Poisson regression examined the group's effect on medically treated falls when controlling for other variables. The sample consisted of 12,346 adults age 65 or older who had a primary care visit at one of 14 outpatient clinics between September 11, 2012, and October 30, 2015. A medically treated fall was defined as a fall-related treat-and-release emergency department visit or hospitalization.

RESULTS: Older adults at risk for fall with a FPOC were 0.6 times less likely to have a fall-related hospitalization than those without a FPOC ($p = .041$), and their postintervention odds were similar to those who were not at risk.

DISCUSSION AND IMPLICATIONS: This study demonstrated that implementation of STEADI fall risk screening and prevention strategies among older adults in the primary care setting can reduce fall-related hospitalizations and may lower associated health care expenditures.

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Predicting falls from behavioral and psychological symptoms of dementia in older people residing in facilities

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Abstract

AIM: The aim of the present study was to examine whether behavioral and psychological symptoms of dementia at the time of admission could be a predictor of falls in older people with dementia residing in geriatric health service facilities.

METHODS: Three geriatric health services facilities located in Fukushima Prefecture, Japan, were the targeted facilities. Of the 305 people admitted between May 2013 and November 2014, 242 (74 men, 168 women) who scored ≤ 20 points on the Hasegawa Dementia Scale-Revised were targeted for analysis. A total of 15 items from the Long-term Care Certification Questionnaire Group 4 were used to assess behavioral and psychological symptoms of dementia, and were compared by the presence or absence of falls.

RESULTS: Of the 242 participants, 153 were non-fallers and 89 were fallers. After adjusting for sex, age, Revised Hasegawa Dementia Scale-Revised, degree of care (which showed a significant relationship with falls in univariate analysis), activities of daily living and history of falls, the influence of behavioral and psychological symptoms of dementia on falls was examined, and showed a significant association with falls and a significant increase of hazard ratio for the behavioral symptoms "wandering" 2.23 (95% confidence interval 1.35-3.68) and "agitation" 1.94 (95% confidence interval 1.24-3.04).

CONCLUSIONS: Because the risk of falling is high for residents who at the time of admission have the behavioral and psychological symptoms of dementia of "wandering" and "agitation," it is necessary to predict the possibility of falling at an early stage, monitor the residents and adjust the environment.

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Quickstats: age-adjusted death rates from unintentional falls among adults aged ≥ 65 years, by sex - National Vital Statistics System, 1999-2016

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(Copyright © 2018, (in public domain), Publisher U.S. Centers for Disease Control and Prevention)

DOI 10.15585/mmwr.mm6738a9 PMID 30260945

Abstract

From 1999 to 2016, age-adjusted death rates from unintentional falls among adults aged ≥ 65 years increased 110% from 29.4 to 61.6 per 100,000. Among men aged ≥ 65 years, the age-adjusted death rate increased 89% from 38.3 per 100,000 in 1999 to 72.3 in 2016. For women aged ≥ 65 years, the rate increased 122% from 24.3 per 100,000 in 1999 to 54.0 in 2016. Throughout the period, death rates from unintentional falls were higher for men than women.

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Serum 25-hydroxyvitamin D levels and incident falls in older women

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Osteoporos. Int. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Holtzbrinck Springer Nature Publishing Group)



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Abstract

Three hundred eighty-seven home-dwelling older women were divided into quartiles based on mean serum 25-hydroxyvitamin D (S-25(OH)D) levels. The rates of falls and fallers were about 40% lower in the highest S-25(OH)D quartile compared to the lowest despite no differences in physical functioning, suggesting that S-25(OH)D levels may modulate individual fall risk.

INTRODUCTION: Vitamin D supplementation of 800 IU did not reduce falls in our previous 2-year vitamin D and exercise RCT in 70-80 year old women. Given large individual variation in individual responses, we assessed here effects of S-25(OH)D levels on fall incidence.

METHODS: Irrespective of original group allocation, data from 387 women were explored in quartiles by mean S-25(OH)D levels over 6-24 months; means (SD) were 59.3 (7.2), 74.5 (3.3), 85.7 (3.5), and 105.3 (10.9) nmol/L. Falls were recorded monthly with diaries. Physical functioning and bone density were assessed annually. Negative binomial regression was used to assess incidence rate ratios (IRRs) for falls and Cox-regression to assess hazard ratios (HR) for fallers. Generalized linear models were used to test between-quartile differences in physical functioning and bone density with the lowest quartile as reference.

RESULTS: There were 37% fewer falls in the highest quartile, while the two middle quartiles did not differ from reference. The respective IRRs (95% CI) for falls were 0.63 (0.44 to 0.90), 0.78 (0.55 to 1.10), and 0.87 (0.62 to 1.22), indicating lower falls incidence with increasing mean S-25(OH)D levels. There were 42% fewer fallers (HR 0.58; 0.40 to 0.83) in the highest quartile compared to reference. Physical functioning did not differ between quartiles.

CONCLUSIONS: Falls and faller rates were about 40% lower in the highest S-25(OH)D quartile despite similar physical functioning in all quartiles. Prevalent S-25(OH)D levels may influence individual fall risk. Individual responses to vitamin D treatment should be considered in falls prevention.

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Stages of sarcopenia and the incidence of falls in older women: a prospective study

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Arch. Gerontol. Geriatr. 2018; 79: 151-157.

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Abstract

The purpose of the present study was to assess the association between different stages of sarcopenia and the incidence of falls over 18 months in older community-dwelling women. 246 women (68.1 ± 6.2 years) underwent body composition using dual-energy x-ray absorptiometry, knee extensors isokinetic peak torque, and Timed Up-and-Go assessments. The stages of sarcopenia were classified according to the European Working Group on Sarcopenia in Older People. Volunteers were classified into four groups as follows: nonsarcopenia, presarcopenia, sarcopenia, and severe sarcopenia. Participants were tracked by phone calls for ascertainment of falls during a follow-up period of 18 months. Cox proportional regressions were conducted. A total of 195 women were followed over the 18-month period. Proportions of each sarcopenia stage were 6.7%, 13.8%, and 12.8% for presarcopenia, sarcopenia, and severe sarcopenia, respectively. The proportion of fallers

progressively increased according to the severity of sarcopenia, with 15.4%, 40.7%, and 72% for presarcopenia, sarcopenia, and severe sarcopenia, respectively ($X^2 = 30.637$; $p < 0.001$). Severe sarcopenia was consistently associated with a higher risk of falls (hazard ratio: 3.843; 95% CI: 1.816-8.131), even after adjustments for age, body mass index, physical activity level, regular use of four or more medications, reduced peripheral sensation, presence of two or more chronic diseases, and history of lower-limbs pain. It is concluded that severe sarcopenia is independently associated with higher incidence of falls in older women. These results provide support for the concept that sarcopenia staging has clinical implications and might be an useful supplement to other routine falls risk assessment tools.

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The association between overactive bladder and falls and fractures: a systematic review

Szabo SM, Gooch KL, Walker DR, Johnston KM, Wagg AS.

Adv. Ther. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Springer Healthcare Communications)

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Abstract

INTRODUCTION: Urinary symptoms are associated with an increased risk of falls, but few studies have focused on patients with overactive bladder (OAB). This study aimed to synthesize estimates of the risk of falls and fractures in patients with OAB.

METHODS: Medline, EMBASE, the Cumulative Index to Nursing and Allied Health Literature, and Scopus were systematically searched for observational studies that focused on patients with OAB. When available, data from a non-OAB comparison sample were included. Double independent review and data extraction were performed. Falls and fractures data were summarized by unadjusted and adjusted risks, and percent attributable risk (PAR) of falls and fractures associated with OAB.

RESULTS: Fifteen studies were included in the analyses. The proportion of patients with OAB experiencing at least one fall over a year ranged from 18.9% to 50.0%, and the proportion of patients with OAB experiencing recurrent or serious falls ranged from 10.2% to 56.0%. In studies that included a non-OAB comparison sample, a higher risk of falls was observed in patients with OAB compared to those without. A significantly increased (1.3- to 2.3-fold) adjusted OAB-associated risk of falls was reported, while unadjusted PARs for OAB associated falls ranged from 3.7% to 15.5%. Risk was higher among women and those 65 years of age or older. While analysis of fractures showed elevated point estimates, most studies were underpowered to detect a statistically significant difference between groups.

CONCLUSIONS: Evidence from the published literature clearly demonstrates the importance of OAB and its symptoms as risk factors for falls and fractures. **FUNDING:** Astellas.

PDF Y Endnote Y

Trauma in the elderly: demographic trends (1995-2014) in a major New Zealand trauma centre

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(Copyright © 2018, Holtzbrinck Springer Nature Publishing Group)

DOI 10.1007/s00268-018-4794-4 **PMID** 30238387

Abstract

BACKGROUND: Population studies have confirmed an increase in the proportion of elderly patients (≥ 65 years of age), and this could be expected to be reflected in trauma admissions and outcomes. This study aims to investigate the demographic trends for elderly patients admitted following trauma to Auckland City Hospital (ACH) and their outcomes.

MATERIALS AND METHODS: The ACH Trauma Database was searched from 1995 to 2014, and data including date of admission, injury cause, age, sex, mortality, Injury Severity Score (ISS), Intensive Care Unit (ICU) stay and length of stay (LOS) were extracted.

RESULTS: A total of 26,882 patients were identified, with 4428 patients ≥ 65 years of age admitted following trauma. In the mid-1990s between 200 and 250 trauma patients ≥ 65 years were admitted to ACH annually. This has increased to >400 in 2014 and now represents $>20\%$ of all admissions. Females are over represented (61.7%) in those ≥ 65 years (vs. 29.4% in < 65 years, $p < 0.001$), and falls are the greatest cause of admission for trauma in those ≥ 65 years at 72% (vs. 36.9% in those < 65 years, $p < 0.001$). Elderly trauma patients are more than twice as likely to die (5.6% vs. 2.3%, $p < 0.001$) compared with trauma patients < 65 years despite an identical median ISS of 4 ($p = 0.86$). Furthermore, of those ≥ 65 years, 2.2% died of minor/moderate trauma ($ISS \leq 15$) versus only 0.12% for those < 65 years confirming the complexities of ageing physiology in a trauma setting. Until 2003, mortality from trauma in elderly patients closely paralleled the rate of severe trauma admissions ($ISS \geq 16$), but after 2003, despite a steady increase in severe trauma in this cohort, mortality rates have fallen.

CONCLUSIONS: Elderly patients bring with them a greater burden of co-morbidities, and trauma admission of elderly patients has almost doubled over 20 years, including severe trauma ($ISS \geq 16$), but despite this mortality has decreased. Integration of services into the new ACH in 2003 as well as improving trauma and medical care may be possible explanations. Further resources will be required to meet service demand, along with consideration of strategies to integrate multi-disciplinary care and consolidate trauma management for this vulnerable patient group.

PDF Y Endnote Y

A literature review of factors influencing injurious falls

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Clin. Nurs. Res. 2018; ePub(ePub): ePub.

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DOI 10.1177/1054773818802187 **PMID** 30227728

Abstract



Falls pose substantial challenges to health care institutions. This review aims to provide a synthesis and critique of studies that investigated fall injury risk factors and to identify significant risk factors that predispose patients to injurious falls. A comprehensive literature search was conducted in PubMed, COCHRANE, Embase, Cumulative Index to Nursing and Allied Health Literature, and Scopus. Additional records were searched through Google Scholar and bibliographies of the retrieved articles. Twenty-three primary research studies were included. Demographic, intrinsic, and extrinsic factors have been identified. Demographics include age, gender, and marital status. Intrinsic factors include body mass index, medication, and preexisting conditions, and extrinsic factors include environmental factors. Several factors were found to be inconclusive. These factors should be considered and examined further. Future research may evaluate interventions focusing on targeted risk factors of injurious falls. Clinical guidelines addressing the factors in this review may be considered after further testing and research.

PDF Y Endnote Y

Balance and fall risk in peritoneal dialysis patients

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J. Back Musculoskelet. Rehabil. 2018; ePub(ePub): ePub.

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(Copyright © 2018, IOS Press)

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Abstract

BACKGROUND: Vestibular, neurological and musculoskeletal functions are affected in patients with renal failure. These problems can in turn affect the balance system in peritoneal dialysis (PD) patients. Previously, postural balance changes were shown in hemodialysis patients. This is the first study that evaluates whether there are similar changes in patients with PD.

OBJECTIVE: This study aimed to compare balance and fall risk between patients undergoing PD treatment and healthy subjects, and aimed to determine the correlation between biochemical parameters and fall risk and balance assessments in PD patients.

METHODS: This controlled study included 58 patients receiving PD treatment (PD Group) and 75 healthy subjects (Control Group). The Berg Balance Scale (BBS) and Tetrax® Interactive Balance System were used for the comparison of balance between groups. For patients in the PD Group, duration of PD, blood pressure, Kt/Vurea (actual mass of urea removed via peritoneal dialysis), and serum biochemical parameters were recorded and correlation analysis was performed between these parameters and balance measurements.

RESULTS: There were no statistically significant differences between groups in terms of demographics or BBS scores ($p > 0.05$). The fall risk of patients in the PD Group was significantly higher than those in the Control Group ($p < 0.0001$) according to Tetrax measurements. Female gender, older age, higher BMI, and higher blood glucose levels were negatively correlated with balance parameters of PD patients ($r > 0.3$). There was no statistically significant correlation between duration of PD, blood pressure, and Kt/Vurea with balance parameters or fall risk.

CONCLUSIONS: Balance was impaired in patients undergoing PD in comparison to healthy subjects. Fall risk may be evaluated using the Tetrax® instead of BBS for this population. Serum glucose level, BMI and age appear to affect balance and fall risk. Therefore, optimization of body weight and

normalization of serum glucose levels are important factors for improving balance. The duration of PD, blood pressure, and Kt/Vurea do not affect balance system.

PDF N Endnote Y

Depressive symptoms may increase the risk of the future development of freezing of gait in patients with Parkinson's disease: findings from a 5-year prospective study

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Parkinsonism Relat. Disord. 2018; ePub(ePub): ePub.

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DOI 10.1016/j.parkreldis.2018.09.013 **PMID** 30236826

Abstract

INTRODUCTION: Prospective studies identifying predictors of freezing of gait (FOG) in Parkinson's disease (PD) are limited. We aim to explore which symptoms are associated with future development of FOG in non-freezers.

METHODS: Fifty-seven PD patients without FOG at baseline were re-evaluated after a mean of five years. At baseline, disease severity [Unified Parkinson's Disease Rating Scale (MDS-UPDRS)], gait under single and dual-tasking, balance, cognition and other non-motor symptoms were assessed. The new-FOG-questionnaire (NFOG-Q) determined FOG. Multivariate binary logistic regression determined independent predictors of FOG.

RESULTS: At follow-up, 26 subjects (46%) had FOG while 31 remained non-freezers. At baseline, non-freezers (FOG-) and future freezers (FOG+) were similar ($p > 0.10$) with respect to age, gender, disease duration, dopaminergic medications, and cognitive function. However, FOG+ had significantly worse scores on the Geriatric Depression Scale (GDS) (FOG+: 5.2 ± 3.7 ; FOG-: 2.4 ± 2.0 , $p = 0.005$), PDQ-39, the NMS-questionnaire, UPDRS-part I, UPDRS-part III (off), and the Berg Balance Scale. In binary logistic regression, GDS, gait speed and UPDRS-III (on vs. off) were the only significant independent predictors of future FOG (GDS: OR = 10.93, $p = 0.003$, Δ UPDRS-III: OR = 1.34, $p = 0.006$). Moreover, 80% of the subjects who had marked depressive symptoms at baseline ($GDS \geq 5$) developed FOG at follow-up. In contrast, only 27% of those with few depressive symptoms at baseline became freezers ($p < 0.001$).

CONCLUSIONS: Depressive symptoms apparently precede the development of FOG. While elucidation of the relationship between depression and FOG needs further study, our findings offer another perspective regarding the pathophysiology of FOG and may help clinicians to estimate the risk of developing this debilitating phenomenon.

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PDF Y Endnote Y

Effects of age on dual-task walking while listening

Nieborowska V, Lau ST, Campos J, Pichora-Fuller MK, Novak A, Li KZH.

J. Mot. Behav. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Informa - Taylor and Francis Group)

DOI 10.1080/00222895.2018.1498318 **PMID** 30239280

Abstract

This study examined the effects of age on single- and dual-task listening and walking during virtual street crossing. Seventeen younger and 12 older adults participated. In each listening trial, three sentences were presented simultaneously from separate locations. Participants were instructed to report the target sentence. Predictability of the target sentence location was varied. Treadmill walking was measured using motion analysis. Measures included word recognition accuracy, head and trunk angles, and spatiotemporal gait parameters. Older adults exhibited a more upright head alignment and less variability in stride time during dual-tasking, particularly under less certain target sentence location conditions. Younger adults' walking was unaffected by dual-task demands. Together, the results indicate greater postural prioritization in older adults than young.

PDF Y Endnote Y

Optimizing clinical assessments in Parkinson's disease through the use of wearable sensors and data driven modeling

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Front. Comput. Neurosci. 2018; 12: e72.

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DOI 10.3389/fncom.2018.00072 **PMID** 30254580 **PMCID** PMC6141919

Abstract

The emergence of motion sensors as a tool that provides objective motor performance data on individuals afflicted with Parkinson's disease offers an opportunity to expand the horizon of clinical care for this neurodegenerative condition. Subjective clinical scales and patient based motor diaries have limited clinometric properties and produce a glimpse rather than continuous real time perspective into motor disability. Furthermore, the expansion of machine learn algorithms is yielding novel classification and probabilistic clinical models that stand to change existing treatment paradigms, refine the application of advance therapeutics, and may facilitate the development and testing of disease modifying agents for this disease. We review the use of inertial sensors and machine learning algorithms in Parkinson's disease.

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