**Safety Literature 5th May 2019**

## Assessing age-related balance deterioration: Visual or mechanical tasks?

Cofré Lizama LE, Arvin M, Verschueren SM, van Dieen JH. Clin. Biomech. 2019; 65: 116-122.

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**DOI:** 10.1016/j.clinbiomech.2019.04.012

**PMID:** 31031227

**Abstract**

BACKGROUND: Mediolateral balance assessment (MELBA) comprises tracking of predictable and unpredictable targets moving at increasing frequencies, using centre-of-mass feedback. The mediolateral-balance-assessment was shown to be sensitive to subtle age-related balance deterioration. However, it has been suggested that performance during ground-level tasks can be more sensitive to balance deterioration.

METHODS: we developed a modified mediolateral-balance-assessment using tracking of surface translations with comparable waveforms (mechanical mediolateral-balance-assessment) to compare age sensitivity of the visual and mechanical mediolateral-balance-assessment, 15 older adults (68 SD 5 yr) and 12 young adults (30 SD 4 yr) performed both tasks. Phase-shift and gain between the CoM and either the visual target or the surface displacement for the visual and the mechanical mediolateral-balance-assessment, respectively, were calculated. To identify differences in tracking strategies between the visual and mechanical mediolateral-balance-assessment, phase-shift between trunk and leg angles was calculated.

FINDINGS: Overall, older adults performed worse than young across the predictable and unpredictable tracking and visual and mechanical tasks. Of all mediolateral-balance-assessment performance descriptors, a significant interaction between age and task (visual or mechanical) was only found for the mean phase-shift. Post-hoc comparisons revealed significant age differences in the visual but not in the mechanical mediolateral-balance-assessment. Significant differences in tracking strategies were found between visual and mechanical mediolateral-balance-assessment with a greater decoupling of trunk and legs during the mechanical than the visual mediolateral-balance-assessment.

INTERPRETATION: the visual mediolateral-balance-assessment was more sensitive to age-related balance deterioration than the mechanical mediolateral-balance-assessment, possibly because visual tracking elicits motor strategies that are more affected by ageing.

Language: en

**Keywords**

Ageing; Balance assessment; Centre of mass; Performance; Postural control

**Covariance matrix based fall detection from multiple wearable sensors**

Boutellaa E, Kerdjidj O, Ghanem K. J. Biomed. Inform. 2019; ePub(ePub): ePub.

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**DOI**

10.1016/j.jbi.2019.103189

**PMID**

31029654

**Abstract**

Falls are among the critical accidents experienced by elderly people and patients carrying some diseases. Subsequently, the detection and prevention of falls have become a hot research and industrial topic. This is due to the fact that falls are behind numerous irreversible injuries, or even death, and are weighting on the budgets of the health services. Automatic fall detection is one of the proposed solutions which aim at monitoring people who are likely to fall. Such solutions mitigate the fall impact by taking a quick action, e.g. in case of a fall occurrence, an alert is sent to the hospital. In this paper, we propose a new fall detection system relying on different signals acquired with multiple wearable sensors. Our system makes use of the covariance of the raw signals and the nearest neighbor classifier. Besides feature extraction, we also employ the covariance matrix as a straightforward mean for fusing signals from multiple sensors , to enhance the classification performance. Evaluation on two publicly available fall datasets, namely CogentLabs and DLR, demonstrates that the proposed approach is efficient when exploiting a single sensor as well as when fusing data from multiple sensors. Geodesic metrics are found to provide a higher fall detection accuracy than the Euclidean metric. The best obtained classification accuracies are 92.51 % and 98.31 % for CogentLabs and DLR datasets, respectively.

Language: en

**Keywords**

Riemannian manifolds; covariance matrix; fall detection; wearable sensors

**Do alarm devices reduce falls in the elderly population?**

White H, Cuavers KY. J. Natl. Black Nurses Assoc. 2018; 29(2): 17-22.

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**DOI**

unavailable

**PMID**

31022335

**Abstract**

It is plausible to assume that healthcare practitioners do not know to what extent bed/body alarms could reduce falls when compared to other fall prevention measures. Thus, the purpose of this study was to determine the following: Do bed/body alarms reduce the incidence of falls and/or subsequent injuries in a facility that uses such devices, as compared to a facility in which no bed/body alarms were used among the elderly over a 5-month period? A retrospective chart review was conducted in 2 homogenous long-term care facilities. The sample size was N = 160 across the 2 facilities and included 80 residents at each facility. Analysis of the data indicated that there was a total of 94 falls in the facility that used the bed/body alarms, and a total of 70 falls in the facility that did not use the bed/body alarms. Further analysis of the data indicated that there was a slightly higher mean for falls with injuries within the facility that did use the bed/body alarms (M = 18.800) as compared to a mean of 14.0 for the facility that did not use the bed/body alarms (p =.001). The analysis of data suggested that the use of bed/body alarms did not reduce falls within the elderly population. However, since response time to the alarms was not noted, it is plausible to assume that reduction in falls could have been achieved if response time was also studied as an intervening variable.

Language: en

**Keywords**

bed/body alarms; elderly population; falls; falls interventions; long-term care; monitoring devices; outcomes of falls; recommendations for falls

**Fear of falling: a manifestation of executive dysfunction?**

Peeters G, Feeney J, Carey D, Kennelly S, Kenny RA. Int. J. Geriatr. Psychiatry 2019; ePub(ePub): ePub.

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**DOI**

10.1002/gps.5133

**PMID**

31034696

**Abstract**

OBJECTIVE: Fear of falling (FoF) may be an early marker of decline in global cognitive functioning, but associations with specific domains of cognitive functioning are unclear. The aim was to examine associations between FoF and 4-year decline in memory, processing speed and executive functioning in adults aged 50 years and older.

METHODS: Data were from 5,174 participants (mean age=62.6±8.9, range=50-91, 54.5% female) in The Irish Longitudinal Study on Ageing, a population-based study. MEASUREMENTS: FoF was self-reported in 2009-11. Immediate and delayed recall, colour trails 1 and 2, choice reaction time, sustained attention to response task and verbal fluency were measured in 2009-11 and 2014-15. Prospective associations between FoF and domains of cognitive functioning were examined using linear mixed modelling. Adjustment was made for demographic and health factors. Interactions with age were examined.

RESULTS: In 2009-11, 20.6% of participants reported FoF. No statistically significant interaction of FoF with age was found for any of the associations ($p \geq 0.06$). Participants with FoF had greater decline on delayed recall (B=-0.19, CI=-0.32;-0.06), verbal fluency (B=-0.52, CI=-0.88;-0.18) and the ln-transformed scores for the Colour Trails 1 test (B=-0.04, CI=-0.07, -0.01) and the Colour Trails 2 test (B=-0.04, CI=-0.06, -0.02) than participants without FoF. No statistically significant associations were found for any of the other outcomes.

CONCLUSIONS: Fear of falling may be an indicator of decline in domains of cognitive functioning, particularly related to executive function and processing speed. However studies with longer follow-up and/or higher average age are required to confirm this.

Language: en

**Keywords**

Anxiety; cognitive function; executive function; old age

**Home care providers' experience of translating evidence-based fall prevention programs into practice**

Yang K, Colorito KM, Bowles KH, Woomer GR, Murtaugh CM. Home Health Care Serv. Q. 2019; ePub(ePub): ePub.

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**DOI**

10.1080/01621424.2019.1604460

**PMID**

31021714

**Abstract**

The purpose of the study was to obtain exploratory, descriptive information that would provide insights into the barriers to and facilitators of the implementation of fall prevention programs in home care settings. The study employed a qualitative approach through a series of focus groups with home care providers who work with patients with diabetes (N = 29). The study identified teamwork, resistance to change, and patient's readiness as major factors in fall prevention practice at home care. Understanding health-care providers' experiences with fall prevention in home care settings has the potential to facilitate better translation of evidence to practice for community-dwelling older adults.

Language: en

**Keywords**

EBP; Falls; diabetes; focus group; home care providers

**Orthostatic blood pressure rise is associated with frailty in older patients**

Toba A, Ishikawa J, Suzuki A, Tamura Y, Araki A, Harada K. Geriatr. Gerontol. Int. 2019; ePub(ePub): ePub.

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**DOI**

10.1111/ggi.13656

**PMID**

31020795

**Abstract**

AIM: Orthostatic blood pressure (BP) can fall with reduced stroke volume and arterial elasticity. However, as the reason for orthostatic BP rise is unclear, we investigated the relationship of orthostatic BP rise with frailty in older patients.

METHODS: In 169 consecutive outpatients who visited the frailty clinic, we evaluated orthostatic BP and heart rate changes (i.e. in the sitting position, just after standing up, 1 min after standing and after sitting down). Frailty was evaluated using the Kihon Checklist (KCL) established by the Ministry of Health, Labor and Welfare.

RESULTS: The mean age was 77.4 ± 6.9 years, and 29% of patients had frailty with a KCL score ≥8. The systolic BP declined in both groups, but patients with frailty experienced a smaller decrease just after standing (-0.2 ± 10.3 vs -6.2 ± 11.5, P = 0.001). During standing for 1 min, elevation of systolic BP was greater in patients with frailty than in those without (8.4 ± 11.6 mmHg vs 3.2 ± 11.2 mmHg, P = 0.009). The difference in elevation of systolic BP remained significant, even after adjusting for confounding factors including systolic BP before standing (P = 0.013). In particular, the KCL score for motor function was significantly correlated with an elevation of orthostatic systolic BP after standing for 1 min, even after controlling for systolic BP before standing and confounding factors (P = 0.020).

CONCLUSIONS: The elevation of systolic BP after standing for 1 min was greater in patients with frailty as diagnosed by the KCL score, especially in relation to reduced motor function. Geriatr Gerontol Int 2019;

Language: en

**Keywords**

Kihon Checklist; autonomic function; blood pressure variability; frailty; orthostatic blood pressure

**Physiological responses and enjoyment of Kinect-based exergames in older adults at risk for falls: a feasibility study**

Ogawa E, Huang H, Yu LF, You T. Technol. Health Care 2019; ePub(ePub): ePub.

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**DOI**

10.3233/THC-191634

**PMID**

31033470

**Abstract**

BACKGROUND: Exergaming has the potential to improve physical function, cognition and dual-task function, and could be an effective new strategy for reducing risk of falling in older adults.

OBJECTIVE: To evaluate and test custom Microsoft Kinect-based motion-tracking exergames in older adults at risk for falls.

METHODS: Community-dwelling older adults who reported mobility difficulties or had fallen in the past year played three newly developed exergames (Target Trackers, Double Decision, and Visual Sweeps, 5 minutes each) in random order. Heart rate (HR) was measured during, and blood pressures (BPs), rating of perceived exertion (RPE), and rating of the enjoyment were recorded immediately after each exergame.

RESULTS: Seven participants (median age 75 y; 4 females) completed the study. There were no adverse events reported during the exergaming session. Exercise HRs and RPEs were statistically significantly higher than resting for all exergames ($p < 0.05$). The differences were not significant for BPs. Enjoyment ratings ranged from 79.6-90.6% and there were no statistically significant differences between the exergames.

CONCLUSIONS: The newly developed exergames were light in exercise intensity and enjoyable for older adults at risk for falls. Future intervention studies are warranted to examine the benefits of exergames for this special population.

Language: en

**Keywords**

Exergaming; dual-task; older adults

**Risk factors and complications contributing to mortality in elderly patients with fall-induced femoral fracture: a cross-sectional analysis based on trauma registry data of 2,407 patients**

Chou SE, Rau CS, Tsai YC, Hsu SY, Hsieh HY, Hsieh CH. Int. J. Surg. (London, England) 2019; ePub(ePub): ePub.

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**DOI**

10.1016/j.ijsu.2019.04.010

**PMID**

31026517

**Abstract**

BACKGROUND: This study aimed to identify the risk factors and complications associated with mortality in elderly patients with femoral fracture after a fall from the ground level.

METHODS: This retrospective study reviewed data pertaining to elderly patients aged ≥ 65 years who were admitted into a Level I trauma center, between January 1, 2009 and December 31, 2017. Multivariate logistic regression analysis was performed to identify independent effects of univariate predictive variables on the occurrence of mortality.

RESULTS: Of 2,407 enrolled elderly patients, there were 42 mortal and 2,365 survival patients. A greater percentage of fatal patients than survival patients had a head injury with abbreviated injury scale (AIS) score ≥ 2 in the head/neck region (4.8% vs. 0.7%, respectively; p = 0.042). Multivariate logistic regression analysis revealed that the age (odds ration [OR] 1.1, 95% confident interval [CI] 1.0-1.1, p < 0.001), pre-existence of end-stage renal disease (ESRD) (OR 3.2, 95% CI 1.2-8.7, p = 0.023), and subarachnoid hemorrhage (SAH) (OR 12.1, 95% CI 1.3-113.9, p = 0.029) were significant independent risk factors for mortality in elderly patients with a femoral fracture resulting from a ground level fall. The patients in mortality group had a significantly higher rates of pneumonia (OR 28.6, 95% CI 14.6-55.9, p < 0.001), respiratory failure (OR 68.7, 95% CI 32.2-146.4, p < 0.001), sepsis (OR 26.3, 95% CI 10.9-63.4, p < 0.001), and pulmonary embolism (OR 14.4, 95% CI 1.6-131.6, p = 0.002) than those in the survival groups.

CONCLUSIONS: This study identified age, pre-existence of ESRD, and SAH as significant independent risk factors for mortality in elderly patients with femoral fracture in a fall. However, ESRD and SAH only contribute to the mortality in a small group of patients. In contrast, respiratory complications contributed greatly to mortality. Thus aggressive chest-protective measures are encouraged to decrease the respiratory complications associated with femoral fracture in elderly patients.

**Keywords**

age; elderly; fall; femur; fracture; mortality; respiratory complication; trauma

**Risk factors for falls in patients with total hip arthroplasty and total knee arthroplasty: a systematic review and meta-analysis**

Lo CWT, Tsang WWS, Yan CH, Lord SR, Hill KD, Wong AYL. Osteoarthritis Cartilage 2019; ePub(ePub): ePub.

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**DOI**

10.1016/j.joca.2019.04.006

**PMID**

31028883

**Abstract**

OBJECTIVE: Falls are common after total hip arthroplasty (THA) and total knee arthroplasty (TKA). While previous studies have investigated various risk factors for falls in patients following THA and TKA, no systematic reviews have summarized these risk factors. Therefore, the current systematic review aimed to summarize evidence regarding risk factors for falls in patients after THA and/or TKA.

METHODS: MEDLINE, EMBASE, CINAHL, SPORTDiscus, and Physiotherapy Evidence Database (from inception to June 30, 2018) were searched. The methodological quality and quality of evidence of the included studies were assessed by two independent reviewers. Relevant data regarding participants' characteristics, study design, follow-up time points, and identified risk factors were extracted. Meta-analyses and narrative syntheses were performed.

RESULTS: Twelve studies with a total of 1,292,689 participants were included. Twenty-nine identified risk factors for post-THA/TKA falls were classified into either inpatient or post-discharge risk factors. Key risk factors for both post-THA and/or post-TKA inpatient falls that showed moderate level of evidence included: postoperative complications or comorbidities and revision THA/TKA. Likewise, risk factors for post-discharge falls after THA and/or TKA that demonstrated moderate level of evidence included: medications, psychiatric diseases, living alone, prior history of TKA, falls history and female gender. The quality of the included studies varied and sample sizes were not justified.

CONCLUSIONS: This review summarized both non-modifiable and modifiable risk factors for post-THA/TKA falls. Our findings highlight the importance of developing strategies to lower the falls risk among patients following THA/TKA.

Language: en

**Keywords**

Total joint replacement; falls; odds ratio; osteoarthritis; post-operative fallers

**Senior Sway: using a mobile application to measure fall risk**

Pergolotti M, Deal AM, Bryant AL, Bennett AV, Farley E, Covington K, Lucas K, Williams GR. J. Geriatr. Phys. Ther. 2019; ePub(ePub): ePub.

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**DOI**

10.1519/JPT.0000000000000223

**PMID**

31033583

**Abstract**

BACKGROUND AND PURPOSE: The Senior Sway mobile application uses the iPhone/iPad gyroscope to assess postural sway and motion reaction time. Impairment in postural sway and motion reaction time have the potential to increase risk for future falls. Senior Sway thereby has the potential to provide a quick, easy to use, objective measure for predicting falls in older adults. The purpose of this study was to evaluate the feasibility of the Senior Sway mobile application and its associations with fall risk in community-dwelling older adults.

METHODS: Adults older than 62 years were recruited from senior centers and community events. Descriptive and bivariate statistics were used to examine feasibility on the basis of enrollment, time required, satisfaction with application, and association with fall risk.

RESULTS AND DISCUSSION: Fifty-seven adults were recruited. Use of the Senior Sway mobile application was feasible. Ninety-one percent said that they liked the application and reported length of time of assessment was "just right." The average Senior Sway score was 64.0 (range: 47.8-84.0), which was significantly associated with the 30-second sit-to-stand test. In addition, the motor reaction time score was associated with the Timed Up and Go.

CONCLUSIONS: Senior Sway is a promising application to improve identification of adults at risk for falls and need for rehabilitation but warrants further research.

Language: en

**Tai Chi for improving balance and reducing falls: a protocol of systematic review and meta-analysis**

**Citation**

Zhong D, Xiao Q, He M, Li Y, Ye J, Zheng H, Xia L, Zhang C, Liang F, Li J, Jin R. Medicine (Baltimore) 2019; 98(17): e15225.

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**DOI**

10.1097/MD.0000000000015225

**PMID**

31027069

**Abstract**

INTRODUCTION: To investigate the effectiveness and safety of Tai Chi for improving balance and reducing falls on people.

METHODS AND ANALYSIS: The following databases will be searched: China Biology Medicine (CBM), China National Knowledge infrastructure (CNKI), Wan Fang Data, the Chinese Science and Technology Periodical Database (VIP), Medline, EMBASE, Web of Science, The Cochrane Library from inception to March 2019. All randomized controlled trials (RCTs) utilized Tai Chi to improve balance ability and reduce falls will be included. Primary outcomes are the fall-related indicators, including the number of falls, fall rate, and other fall-related outcomes. Additional outcomes include the Berg Balance Scale (BBS), standing-walk test, single-legged time, or other balance-related outcomes. Study selection, data extraction, and quality assessment will be performed independently by 2 reviewers. Assessment of risk of bias and data synthesis will be performed using Review Manager V5.3 software. ETHICS AND DISSEMINATION: The findings of this systematic review will be disseminated through peer-reviewed publication or conference presentations.Trial registration number PROSPERO CRD42019127810.

**The ability of gait kinematic parameters to predict falls in older adults with cognitive impairments living in long term institutions**

Marques NR, Camilo GF, de Martini Lopes Dos Santos AP, Cardoso BC, Navega MT, de Abreu DCC. Clin. Biomech. 2019; 65: 123-127.

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**DOI**

10.1016/j.clinbiomech.2019.04.011

**PMID**

31031228

**Abstract**

BACKGROUND: Cognitive impairments reduce adaptive responses and may increase the risk of falls.

OBJECTIVES: To compare gait kinematics in older adults with cognitive impairments living in long term institutions and to identify the ability of gait kinematics to predict falls in older adults with cognitive impairments living in long term institutions.

METHODS: Data of 23 older adults with cognitive impairments living in long term institutions were considered for this study. Fifty gait cycles were recorded during walking at a self-selected pace using footswitches sensors. The variables considered for the analysis were: speed; stride length; stance, swing and stride time; and the variability of these parameters. Fall status was recorded for a 6 month-period.

FINDINGS: MANOVA found group effect ($p = 0.025$) for gait kinematics comparisons. Variability of stance ($p = 0.01$) and swing ($p = 0.012$) and stride time ($p < 0.001$) were higher in older fallers. Speed of older fallers was 31.8% slower than those of the non-fallers ($p < 0.001$). The kinematic variables that were able to predict falls were: stride time variability ($p < 0.001$), threshold of 0.4 s, sensitivity of 50% and specificity of 100%; and gait speed ($p < 0.001$), threshold of 0.65 $m \cdot s^{-1}$, sensibility and specificity of 50%.

INTERPRETATION: Older adults living in an assisted living facility with a history of falls demonstrate increased kinematic variability while walking. However, the ability of gait kinematic parameters to predict falls was found to be weak. The results suggested that gait kinematic parameters are weak predictors of falls in older adults with cognitive impairments living in long term institutions.

Language: en

**Keywords**

Aging; Biomechanics; Falls prevention; Physical therapy

**The impact of physical activity and function on falls in assisted living residents**

Resnick B, Galik E, Boltz M, Vigne E, Holmes S, Fix S, Zhu S. J. Aging Phys. Act. 2019; ePub(ePub): ePub.

**Affiliation**

University of Maryland School of Nursing, Baltimore, MD.

**Copyright**



**DOI**

10.1123/japa.2018-0291

**PMID**

31034301

**Abstract**

The purpose of this study was to describe physical activity and function of older adults in assisted living communities and test the association between moderate and vigorous activity and falls. This study used baseline data from 393 participants from the first two cohorts in the Function Focused Care in Assisted Living Using the Evidence Integration Triangle (FFC-AL-EIT) study. The majority of participants were female (N=276, 70%) and white (N=383, 97%) with a mean age of 87 (SD=7). Controlling for age, cognition, gender, setting, and function, time spent in moderate or vigorous levels of physical activity was associated with having a fall in the prior four months. Those who engaged in more moderate physical activity were.6% less likely to have a fall (OR=.994, Wald statistic = 5.54, p=.02) and those who engaged in more vigorous activity were 2% less likely to have a fall (OR=.980, Wald statistic = 3.88, p=.05).

Language: en

**Keywords**

Physical activity; actigraphy; assisted living; falls; older adults

**The perceptions and rehabilitation experience of older people after falling in the hospital**

Turner N, Jones D, Dawson P, Tait B. Rehabil. Nurs. 2019; 44(3): 141-150.

**Affiliation**

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**DOI**

10.1097/rnj.0000000000000107

**PMID**

31034456

**Abstract**

PURPOSE: Falls are a major cause of disability and mortality due to injury. To reduce fall rates and improve health outcomes, it is important to design services based on patient experience and engagement. This study aimed to explore the experiences of older patients who fell during their hospital stay.

DESIGN: Five patients from two rehabilitation wards in the United Kingdom participated in this qualitative study.

METHODS: Semistructured interviews, incident reports, and medical records provided information about each fall. Thematic, discourse, and descriptive analysis were used to analyze data.

FINDINGS: The data demonstrated how a fall impacted patients' experience of rehabilitation and resulted in changes to mobility, self-confidence, management of falls risk, avoidance of daily activities, and increased assistance from others.

CONCLUSIONS: Falling in hospital can influence patients' ability to reach their potential of an optimal level of functioning. CLINICAL RELEVANCE: There is a need to place an equal and mutual understanding on the physical, psychological, and social impact of falling to reduce falls and improve functional outcomes.

Language: en

**Validity and inter-observer reliability of the TURN 180 test to identify older adults who reported falls**

Gamerman Y, Hoshen M, Herman Cohen A, Alter Z, Hadad L, Melzer I. Isr. Med. Assoc. J. 2019; 21(4): 269-274.

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**DOI**

unavailable

**PMID**

31032570

**Abstract**

BACKGROUND: Falls while turning are associated with increased risk of hip fracture in older adults. Reliable and clinically valid methods for turn ability assessments are needed.

OBJECTIVES: To explore the inter-observer reliability and known group validity of the TURN 180 test.

METHODS: We divided 78 independent older adults (mean age 76.6 ± 6.5 years) into three groups: non-fallers, infrequent fallers (1-2 falls per year), and recurrent fallers (> 2 falls per year). Participants underwent performance-based tests: Timed Up and Go (TUG), Performance Oriented Mobility Assessment (POMA), and Berg Balance Scale (BBS). TUG was videotaped for later analysis of the TURN 180 test by two blinded observers.

RESULTS: A significant difference was found in the TURN 180 test parameters among the groups ($P < 0.04$). TURN 180 was highly correlated with TUG ($r = 0.81$-$0.89$, $P < 0.001$) and BBS ($r = -0.704$-$0.754$, $P < 0.0001$) and moderately with POMA ($r = -0.641$-$0.698$, $P < 0.0001$). The number of steps was found to be the strongest parameter to determine fallers among older adults (specificity 96.3%, sensitivity 40%). Inter-rater reliability (intraclass correlation coefficient 0.91-0.96, $P < 0.0001$) was found to be excellent for the number of steps, time taken to accomplish a turn, and total test score categories.

CONCLUSIONS: The TURN 180 test is highly reliable and can identify the older adults who fall. Our results show that the TURN 180 test can serve as a good performance-based examination for research or clinical setting.

Language: en

**Characterization of the adult patients' falling incidents in a university hospital**

Barbosa ADS, Chaves EHB, Ribeiro RG, Qadros DV, Suzuki LM, Magalhães AMM. Rev. Gaucha Enferm. 2019; 40(Suppl): e20180303.

**Vernacular Title**

Caracterização dos incidentes de quedas de pacientes adultos internados em um hospital universitário.

**Affiliation**

Hospital de Clínicas de Porto Alegre (HCPA), Gerência de Risco (GR). Porto Alegre, Rio Grande do Sul, Brasil.



**DOI**

10.1590/1983-1447.2019.20180303

**PMID**

31038599

**Abstract**

OBJECTIVE: To evaluate the occurrences and to characterize the falling incidents of adult patients hospitalized in clinical and surgical units of a university hospital in the southern region of the country, in the period from 2011 to 2014.

METHOD: Descriptive, cross-sectional and retrospective study, carried out from December 2016 to December 2017. The sample consisted of 1112 reports, covering all hospitalized patients who were notified with falls occurring in the studied period. Data were analyzed using descriptive and analytical statistics.

RESULTS: Female and elderly patients were predominant in the sample, in which 69.4% of the incidents did not present any damage. The occurrence of falls was significantly higher at night. Limitation to walking and being unaccompanied were the most prevalent factors in the patient's conditions before the fall.

CONCLUSION: The fall is a multifactorial event that requires periodic evaluation of the risk factors by the team to plan their prevention.

**Potential utility of $^{123}$I-MIBG scintigraphy as a predictor of falls in Parkinson's disease**

Murakami N, Sako W, Haji S, Furukawa T, Otomi Y, Otsuka H, Izumi Y, Harada M, Kaji R. Front. Neurol. 2019; 10: e376.

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**DOI**

10.3389/fneur.2019.00376

**PMID**

31031701

**PMCID**

PMC6473994

**Abstract**

**Background:** Falls are associated with poor prognosis in patients with Parkinson's disease (PD). Although several factors related to falls were reported in patients with PD, objective predictors of falls are not identified. We aimed to determine whether $^{123}$I-meta-iodobenzylguanidine (MIBG) cardiac scintigraphy could be a useful biomarker to predict falls. **Methods:** Forty-five patients with PD were enrolled in this study. These subjects were followed up more than 5 years after MIBG scintigraphy and were divided into two groups: one with decreased uptake of MIBG and the other without decreased uptake of MIBG. The cut-off value for the delayed heart-to-mediastinum ratio was 1.8. Kaplan-Meier analysis and a log-rank test were performed to test the predictive power of MIBG cardiac scintigraphy for falls. Univariate analysis was selected because we did not have appropriate data for adjustment, such as motor and cognitive assessment. **Results:** The group with decreased uptake of MIBG had a significantly higher incidence of falls than that without decreased uptake of MIBG ($P$ = 0.022, log-rank test). **Conclusions:**Although the limitations of this study were lack of several key factors including motor and cognitive assessment, MIBG cardiac scintigraphy may be used to predict falls in patients with PD.

Language: en

**Keywords**

MIBG; Parkinson's disease; falls; motor symptom; prognosis

**Validity and reliability of the Brazilian version of the Johns Hopkins Fall Risk Assessment Tool to assess the risk of falls**

Martinez MC, Iwamoto VE, Latorre MDRDO, Simões AMN, Oliveira APS, Cardoso CEA, Marques IAB, Vendramim P, Lopes PC, Sant'Ana THS. Rev. Bras. Epidemiol. 2019; 22: e190037.

**Vernacular Title**

Validade e confiabilidade da versão brasileira da Johns Hopkins Fall Risk Assessment Tool para avaliação do risco de quedas.

**Affiliation**

Serviços Diagnósticos, 9 de Julho Endoscopia Ltda. - São Paulo (SP), Brasil.



**DOI**

10.1590/1980-549720190037

**PMID**

31038570

**Abstract**

OBJECTIVE: To evaluate the validity and reliability of the Johns Hopkins Fall Risk Assessment Tool (JH-FRAT), which assesses the risk of falls in hospitalized inpatients.

METHOD: Study with 297 patients at a hospital in São Paulo, using retrospective data form 2014. Validity was assessed by accuracy (sensitivity, specificity, positive predictive value - PPV and negative predictive value - NPV) and discriminant analysis (comparison of patients with and without falls in relation to the scale items and comparison of previous risk situations in relation to the injury). The $\chi 2$ test and Fisher's exact test were used. Reliability was assessed by reproducibility between methods and interobserver test-retest comparison in a subsample of 60 patients. We used the Kappa, quadratic weighted Kappa and PABAK statistics.

RESULTS: Sensitivity was 97.0%, specificity was 6%, PPV was 36.2% and NPV was 90.6%. Five of the eight items of the scale and the overall classification showed risk discrimination capability ($p < 0.050$). The risk of previous situations did not discriminate the injury resulting from the falls ($p = 0.557$). Reproducibility between methods was substantial (PABAK = 0.71). The interobserver reproducibility ranged between items (PABAK 0.25 to 1.00) and was substantial to the overall risk classification (PABAK = 0.71).

CONCLUSION: JH-FRAT showed validity and reliability expected of a screening tool for risk of falls, and it can contribute to the implementation of fall management strategies in hospitals.

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