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"The whole perimeter is difficult": Parkinson's disease and the conscious experience of walking in everyday environments

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Abstract

PURPOSE: This study sought to characterize the way patients with Parkinson's disease consciously perceive and respond to their surroundings while walking in everyday situations.

METHOD: A qualitative research program designed around an ecological data collection protocol was employed. A convenience sample of 14 patients with a diagnosis of Parkinson's disease and a history of gait difficulties were recruited. Details regarding patients' subjective experience of walking in everyday environments were obtained using first person interviewing techniques with the support of video footage from their daily-life activity. Interview transcripts were analyzed using an interpretive phenomenological approach in order to derive key themes.

RESULTS: The sense of proximity and the way in which an individual perceived themselves with respect to their surroundings appeared central to the way patients organized their locomotor behavior. Further to this, the patient relationship to different features and obstacles appeared conditioned by prior experiences in those circumstances. Patients described managing gait difficulties by consciously regulating their walking trajectory and gaze with respect to their environment.

CONCLUSION: Perceptual challenges, visual flow and the dynamic valence of features in the patient's surroundings may have important effects upon the gait stability of patients with Parkinson's disease and warrant further attention in planning rehabilitation interventions. Implications for rehabilitation Walking abilities of patients with Parkinson's disease should be conceptualized in terms of perceptuomotor coupling to a given environment. The functional significance of a patient's environment is dynamic and might be seen to vary in accordance with their physical capacities. Valency, or the subjective relationship between a patient and their surrounds, appears to be an important component of the "fit" between a person and their environment. Novel rehabilitation strategies for the management of parkinsonian gait disturbances might seek to integrate psychological, sensorimotor and environmental elements in order to have individually tailored, ecologically valid home assessment and community rehabilitation programs.

PDF Endnote

A predictive model of isolated and recurrent falls in functionally independent community-dwelling older adults

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Abstract

BACKGROUND: Aging is associated with an increased risk of accidental falls. Falls in older people have been widely studied in nursing homes and in the elderly with poor functionality, but there have been few investigations into functionally independent community-dwelling older adults.

OBJECTIVE: To determine the predictive factors for falls in functionally independent community-dwelling older adults.

METHODS: A cohort trial-nested case-control study was carried out. The participants were community-dwelling people aged 70 and over who were treated in primary care centers from December 2012 to May 2014 in la Ribera (Valencia, Spain).

RESULTS: There were a total of 374 participants, with a mean age of 76.1 (SD 3.4) years (63.8% females). The subjects presented high functionality scores: Barthel 96.5 (SD 9.4), Lawton 7.2 (SD1.2), Tinetti 25.6 (SD 3.3). The mean number of prescribed drugs was 4.7 (SD 2.9). The cumulative incidence of falls was 39.2%, and 24.1% of these older adults suffered falls. The number of falls in the previous 12 months (OR=1.3; 95%CI: 1.11-1.53; p<0.001) and alpha-blockers (OR=6.72; 95%CI: 1.62-27.79; p=0.009) were predictors of falls. The presence of previous fractures (OR=9.55; 95%CI: 4.1-22.25; p<0.001), a body mass index of $\geq 30\text{kg/m}^2$ (OR=1.09; 95%CI: 1.01-1.19; p=0.035), and who are using benzodiazepines and beta-blockers (OR=2.77; 95%CI: 1.53-5.02; p<0.001), were predictors of recurrent fallers.

CONCLUSIONS: Older people who use alpha-blockers, benzodiazepines and beta-blockers, had previous fractures, with increased body mass index are more likely to fall.

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Ambulatory blood-pressure monitoring, antihypertensive therapy and the risk of fall injuries in elderly hypertensive patients

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Abstract

BACKGROUND: Fall injuries are common among the elderly. The aim of this study was to investigate whether blood-pressure patterns, as measured by 24-h ambulatory blood pressure monitoring (ABPM), or intensification of antihypertensive therapy following the 24-h ABPM, may be associated with fall injuries in hypertensive elderly patients.

METHODS: In a retrospective study, community-based elderly patients (age ≥ 70 years) who were referred to 24-h ABPM were evaluated for fall injuries within one-year post-ABPM. We compared the clinical characteristics, 24-h ABPM patterns and the intensification of hypertensive therapy



following 24-h ABPM, between patients with and without a fall injury.

RESULTS: Overall 1032 hypertensive elderly patients were evaluated. Fifty-five (5.3%) had a fall injury episode in the year following ABPM. Patients with a fall injury were significantly older, and with higher rates of previous falls. Lower 24-h diastolic blood-pressure (67.3 ± 7.6 vs. 70.7 ± 8.8 mmHg; $P < 0.005$) and increased pulse-pressure (74.7 ± 14.3 vs. 68.3 ± 13.7 mmHg; $P < 0.005$), were found in the patients with a fall injury, compared to those without a fall injury. After adjustment for age, gender, diabetes mellitus and previous falls, lower diastolic blood-pressure and increased pulse-pressure were independent predictors of fall injury. Intensification of antihypertensive treatment following the 24-h ABPM was not associated with an increased rate of fall injury.

CONCLUSIONS: Low diastolic blood-pressure and increased pulse-pressure in 24-h ABPM were associated with an increased risk of fall injury in elderly hypertensive patients. Intensification of antihypertensive treatment following 24-h ABPM was not associated with an increased risk of fall injury.

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An exoskeleton in the rehabilitation of institutionalized elderly patients at high risk of falls: a pilot study

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Abstract [Abstract unavailable]

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Downton Fall Risk Index during hospitalisation is associated with fall-related injuries after discharge: a longitudinal observational study

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Abstract

QUESTIONS: Among older people who are hospitalised, what is the predictive validity of the Downton Fall Risk Index (DFRI) in relation to fall-related injury after discharge? What is the predictive validity of the DFRI among males and females in this setting?

DESIGN: Prospective, longitudinal, observational study.

PARTICIPANTS: All hospital admissions during 2012 at three geriatric clinics in the Stockholm County Council were monitored. Patients aged >65 years who did not die during the admission and who lived in the Stockholm County Council region were included.

OUTCOME MEASURES: The DFRI consists of five modules: previous falls, medication, sensory deficits, mental state, and gait. Three or more points indicate an increased fall risk. Data on DFRI, health status and medications were collected prior to discharge. Data regarding fall-related injuries were collected up to 6 months after discharge. Poisson multivariate regression analyses were conducted to evaluate the association between DFRI and fall-related injuries.

RESULTS: In total, 6650 patients were analysed. The cut-off ≥ 3 points in the DFRI was significantly associated with fall-related injury when confounding variables were controlled for (IRR 1.94, 95% CI 1.60 to 2.38). Among individual modules, only previous falls (IRR 2.58, 95% CI 2.22 to 3.01) and unsafe gait (IRR 1.79, 95% CI 1.53 to 2.09) were associated with fall-related injuries. Stratified analyses showed a higher risk ratio for men compared to women regarding the DFRI, but the test for an interaction effect was not significant.

CONCLUSION: The risk of post-discharge fall-related injury is increased among older hospitalised people with an increased fall risk, according to the DFRI, especially those who had previous falls or unsafe gait. Although the DFRI tool is predictive, previous falls and gait are the measures that are most worthy of focus. [Mojtaba M, Alinaghizadeh H, Rydwick E (2018) Downton Fall Risk Index during hospitalisation is associated with fall-related injuries after discharge: a longitudinal observational study. *Journal of Physiotherapy* XX: XX-XX].

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Effect of age and sex on gait characteristics in the Korean elderly people

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Abstract

BACKGROUND: Incidence of falling in the older-elderly is higher than that of the younger-elderly. In addition, falls occur more in elderly women than in elderly men. However, it is unclear whether age and sex-specific differences exist in gait characteristics of the elderly. Therefore, the aim of this study was to investigate age- and sex-related differences in gait characteristics of the Korean elderly people.

METHODS: A total of 75 younger-elderly subjects (age of 65-74 yr; 21 men and 54 women) and 59 older-elderly subjects (age of 75-90 yr; 15 men and 44 women) participated in this study in 2014. All participants walked a distance of 8 m across a GaitRite walkway with self-selected speed. The effects of age and sex on spatiotemporal gait variables in the Korean elderly people were analyzed before and after adjusting height as covariate.

RESULTS: The older-elderly group slowly walked with shorter stride length ($P<0.05$) and step length ($P<0.05$) compared to the younger-elderly, regardless of their height. There was no significant sex difference after adjusting height as covariate, although elderly women walked with shorter stride length ($P<0.01$) and step length ($P<0.01$) than elderly men. The elderly women group walked with more variable stride time ($P<0.05$) and with longer double support ($P<0.01$).

CONCLUSION: Age-related changes and sex difference among the elderly existed in specific gait variables. Characterizing gait patterns of the Korean elderly people considering both age and sex would be beneficial to assess gait of the elderly with risk of falls for fall interventions.

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Effectiveness of the "Timed Up and Go" (TUG) and the Chair test as screening tools for geriatric fall risk assessment in the ED

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Abstract

OBJECTIVE: We sought to evaluate the effectiveness of the "Timed Up and Go" (TUG) and the Chair test as screening tools in the Emergency Department (ED), stratified by sex.

METHODS: This prospective cohort study was conducted at a Level 1 Trauma center. After consent, subjects performed the TUG and the Chair test. Subjects were contacted for phone follow-up and asked to self-report interim falling.

RESULTS: Data from 192 subjects were analyzed. At baseline, 71.4% ($n = 137$) screened positive for increased falls risk based on the TUG evaluation, and 77.1% ($n = 148$) scored below average on the Chair test. There were no differences by patient sex. By the six-month evaluation 51 (26.6%) study participants reported at least one fall. Females reported a non-significant higher prevalence of falls compared to males (29.7% versus 22.2%, $p = 0.24$). TUG test had a sensitivity of 70.6% (95% CI: 56.2%-82.5%), a specificity of 28.4% (95% CI: 21.1%-36.6%), a positive predictive (PP) value 26.3% (95% CI: 19.1%-34.5%) and a negative predictive (NP) value of 72.7% (95% CI: 59.0%-83.9%). Similar results were observed with the Chair test. It had a sensitivity of 78.4% (95% CI: 64.7%-88.7%), a specificity of 23.4% (95% CI: 16.7%-31.3%), a PP value 27.0% (95% CI: 20.1%-34.9%) and a NP value of 75.0% (95% CI: 59.7%-86.8%). No significant differences were observed between sexes.

CONCLUSIONS: There were no sex specific significant differences in TUG or Chair test screening performance. Neither test performed well as a screening tool for future falls in the elderly in the ED setting.

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Establishing the reference value for "timed up-and-go" test in healthy adults of Gujarat, India

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Abstract

CONTEXT: Timed up-and-go (TUG) test is a valid, reliable, and an objective test for quantifying functional mobility and assessing the fall risk in all age groups. The analysis of patient scores on TUG test is limited by lack of data, having a wide range of performance scores among people without disabilities.

AIM: The objective of the study was to provide the reference value for TUG test in healthy individuals of Gujarat, India.

SUBJECTS AND METHODS: It was a cross-sectional observational study. Five hundred and twenty healthy individuals, aged 40-70 years, were recruited from various regions of Gujarat based on convenient sampling. All the participants were made to perform TUG test in a controlled environment in community. Three readings of the actual test were obtained and averaged.

RESULTS: Data were analyzed with mean, standard deviation, confidence intervals (CIs 95%) and Pearson's correlation coefficient (r) with $\alpha = 0.05$ by age groups (40-50, 51-60, and 61-70 years) and gender. The mean (CI 95%) TUG time for healthy adults of Gujarat was 8.46 (8.35-8.57) s and demonstrated age-related decline for both male and female participants. TUG time also demonstrated strong correlation with the height of individuals.

CONCLUSION: This preliminary data can be used as a reference only for specific population with specific age groups due to variability in test results among the different population due to age, gender, anthropometric measures such as height, weight, and body mass index, geographical variation, nutritional support, and cognitive status.

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Fall-risk-increasing drugs and falls requiring health care among older people with intellectual disability in comparison with the general population: a register study

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Abstract

BACKGROUND: Falls are the most common cause of injury for older people in the general population as well as among those with intellectual disability. There are many risk factors for falls, including a range of drugs which are considered to be fall-risk-increasing (FRIDs). The aim of the present study was to describe prescription patterns of FRIDs in itself as well as in relation to falls requiring health care among older people with intellectual disability and their age-peers in the general population.



Moreover, to investigate possible differences between the two groups.

METHODS: A cohort of people with intellectual disability and a referent cohort, one-to-one-matched by sex and year of birth, were established. Each cohort comprised 7936 people aged 55+ years at the end of 2012. Register data were collected for 2006-2012 on prescription of antidepressants, anxiolytics, hypnotics and sedatives, opioids, and antipsychotics, as well as for fall-related health care contacts. Analyses were performed on yearly data, using repeated measures models.

RESULTS: People with intellectual disability were more likely to be prescribed at least one FRID (Relative Risk [RR] 2.31). The increase was highest for antipsychotics (RR 25.0), followed by anxiolytics (RR 4.18), antidepressants (RR 2.72), and hypnotics and sedatives (RR 1.42). For opioids, however, a lower prevalence (RR 0.74) was found. In both cohorts, those with prescription of at least one FRID were more likely to have a fall-related injury that required health care. The increased risk was higher in the referent cohort (RR 3.98) than among people with intellectual disability (RR 2.27), although people with intellectual disability and prescription still had a higher risk of falls than those with prescription in the referent cohort (RR 1.27). A similar pattern was found for all drug groups, except for opioids, where prescription carried the same risk of having a fall-related injury that required health care in both cohorts.

CONCLUSIONS: With or without prescription of FRIDs, older people with ID have a higher risk of falls requiring health care than their age-peers in the general population. It is important to be aware of this when prescribing drugs that further increase the risk of falls.

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Fear of falling and balance confidence in older adults with type 2 diabetes mellitus: a scoping review

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Abstract

Type 2 diabetes mellitus is highly prevalent in older adults (≥ 65 years of age) and increases fall risk. Fear of falling and low balance confidence are reported in both fallers and nonfallers and can potentially be more debilitating than a fall itself. Therefore, the objective of this scoping review was to examine and map the current research evidence of balance confidence and fear of falling in older adults with type 2 diabetes. A search of CINAHL, EMBASE and PubMed was conducted. The search included MeSH terms and the key terms diabet* AND fear OR falls AND self-efficacy OR balance confidence. Inclusion criteria were 1) population: older adults (≥ 65 years of age) with type 2 diabetes; and 2) outcome measure: balance confidence or fear of falling. We included 21 studies: fear of falling (n=14); balance confidence (n=7). We categorized them into 4 themes: prevalence, severity, determinants and interventions. Determinants were further categorized into physical, psychosocial and health-related domains. Fear of falling and low balance confidence were highly prevalent and more severe in older adults with type 2 diabetes. Determinants of fear of falling and

balance confidence occurred beyond the physical domain and the presence of diabetic peripheral neuropathy. Targeted group-based interventions (e.g. gait and balance training, tai chi, yoga) appear to be beneficial in reducing fear of falling and improving balance confidence. Future work is needed to generate best practices related to fear of falling and low balance confidence in older adults with type 2 diabetes.

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PDF Y Endnote Y

Impact of mild cognitive impairment on mortality and cause of death in the elderly

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Abstract

BACKGROUND: Mild cognitive impairment (MCI) is a cognitive state that lies on the continuum between normal aging and dementia, and the prevalence of MCI is higher than dementia. However, the risk for mortality of people with MCI has been far less studied than that of people with dementia, and the population attributable risk percent (PAR%) of death attributable to MCI has not been estimated yet.

OBJECTIVE: To investigate the impact of MCI on mortality and the cause of death in the elderly, and to estimate the PAR% of deaths attributable to MCI.

METHODS: Data came from 7,315 elderly subjects aged ≥ 60 years without dementia from two cohort studies with diagnostic assessments of MCI at baseline. Deaths among participants were confirmed through the nationwide mortality database of Statistics Korea.

RESULTS: MCI increased the risk of mortality in a multivariate Cox proportional model adjusting for age, sex, education, smoking, alcohol drinking, chronic illness, depression, vascular components, and cohort (hazard ratio = 1.59, 95% confidence interval 1.30, 1.94). PAR% of death attributable to MCI was 10.7 for age 65-74 years, 16.0% for age 75-84 years, and 24.2% for age ≥ 85 years. In the elderly with MCI, mortality risks from cerebrovascular disease, respiratory disease, and external causes were higher than in the cognitively normal elderly.

CONCLUSIONS: Our results suggest that the mortality risk of MCI in Asian countries may be comparable to that in Western countries, and MCI can contribute to the death of the elderly as much as dementia.

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Is a yoga-based program with potential to decrease falls perceived to be acceptable to community-dwelling people older than 60?

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Public Health Res. Pract. 2018; 28(2): e28011801.



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Abstract

OBJECTIVES and importance of study: Yoga improves balance and mobility, and therefore has potential as a fall prevention strategy, yet its validity for preventing falls has not been established. The Otago Exercise Programme (OEP) and tai chi are proven to prevent falls. This study aimed to evaluate the perceptions and preferences of older people towards a yoga-based program with potential to decrease falls, to compare these perceptions to the views expressed about the OEP and tai chi, and to identify participant characteristics associated with a preference for the yoga program. **STUDY TYPE:** Survey.

METHODS: Participants were 235 community-dwellers aged 60 years or older who were not participating or had not previously participated (within the past 10 years) in yoga-based exercise. Participants completed a self-report survey measuring demographics, physical activity level and attitude. They then viewed explanations of the yoga-based program, the OEP and tai chi. Participants completed the Attitudes to Falls-Related Interventions Scale (AFRIS) to measure program acceptability and identified their preferred program. Acceptability scores and preference were compared between the programs, and factors associated with yoga preference were identified with analysis of variance.

RESULTS: The mean age of participants (69% female) was 69.4 years (standard deviation 7.4). All programs were rated as equally acceptable ($p = 0.17$), with AFRIS scores ranging from 28.1 to 29.4. Eighty-two people (35%) preferred yoga, 32% chose the OEP and 33% chose tai chi. Overall, people who preferred yoga were significantly younger, healthier, less fearful of falling, and perceived exercise more positively than people who preferred the OEP (p values ranged from 0.03 to <0.001). The characteristics of people who preferred yoga and those who preferred tai chi did not vary significantly.

CONCLUSIONS: Yoga was perceived to be appropriate and was as popular as two validated fall prevention programs. Yoga warrants further investigation as a fall prevention strategy, particularly for 'younger' and healthier people aged 60 years or older.

PDF Y Endnote Y

Multicomponent training program with high-speed movement execution of ankle muscles reduce risk of falls in older adults

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Abstract

The purpose of this study was to investigate the effects of multicomponent training program, designed to improve the torque around the ankle joint performing high-speed movement execution,



on healthy older adults. Participants were balanced by torque around the ankle joint and randomly allocated to either exercise (n=12, 69.7±4.8 years, 74.6±16.8 kg, 1.63±0.10 m) or control group (n=14, 70.86±6.48 years; 73.5±13.4 kg, 1.56±0.05 m). The exercise group performed a multicomponent training of resistance, agility and coordination exercises, focusing on the plantar flexor muscles during 12 weeks (3 days per week). Outcome measures were torque (plantar flexion and extension), reactive capacity (Step test) and functional mobility (gait and time up and go test - TUG). The training program induced to increased peak torque of extensors muscles around the ankle joint to exercise group ($\Delta=50\%$; $d=1.59$) compared to the control group. Such improvement was convert to reactive capacity improvements considering the decrease in the execution time of the Swing phase and in the Total time of the Step test ($\Delta=19\%$; $d=0.93$, $\Delta=14\%$; $d=1.02$, respectively). Also, gains in functional mobility were verified by the increase of the walking speed ($\Delta=15\%$; $d=1.37$) and by the smaller time of execution of TUG test ($\Delta=17\%$; $d=1.73$) in the exercise group. Therefore, the multicomponent training is effective to reduce or to reverse muscular age-related declines, which are associated with functional performance and reduction of falls in older adults.

PDF Y Endnote Y

Which fall ascertainment method captures most falls in pre-frail and frail seniors?

Teister CJ, Chocano-Bedoya PO, Orav EJ, Dawson-Hughes B, Meyer U, Meyer OW, Freystaetter G, Gagesch M, Rizzoli R, Egli A, Theiler R, Kanis JA, Bischoff-Ferrari HA.

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Abstract

There is no consensus on most reliable falls ascertainment method. Therefore, we investigated which method captures most falls among pre-frail and frail seniors from two randomized controlled trials conducted in Zurich, Switzerland, a 18-month trial (2009-2010) including 200 community-dwelling pre-frail seniors with a prior fall and a 12-month trial (2005-2008) including 173 frail seniors with acute hip fracture. Both included the same fall ascertainment methods: monthly active-asking, daily self-report diary, and a call-in hotline. We compared number of falls reported and estimated overall and positive percent agreement between methods. Pre-frail seniors reported 499 falls (rate = 2.5/year) and frail seniors reported 205 falls (rate = 1.4/year). Most falls were reported by active-asking: 81% of falls in pre-frail, and 78% in frail seniors. Among pre-frail seniors, diaries captured additional 19% falls, while hotline added none. Among frail seniors, hotline added 16% falls, while diaries added 6%. The positive percent agreement between active-asking and diary was 100% among pre-frail and 88% among frail seniors. While monthly active-asking captures most falls in both groups, this method alone missed 19% of falls in pre-frail and 22% in frail seniors. Thus, a combination of active-asking and diaries for pre-frail, and active-asking and the hotline for frail seniors is warranted.

PDF Y Endnote Y

Effects of mind-body movements on balance function in stroke survivors: a meta-analysis of randomized controlled trials

Zou L, Yeung A, Li C, Chiou SY, Zeng N, Tzeng HM, Wang L, Ren Z, Dean T, Thomas GA.

Int. J. Environ. Res. Public Health 2018; 15(6): e15061292.

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Abstract

Objective: We performed a systematic review with meta-analysis and meta-regression to determine if mind-body movements (MBM) could be effective in rehabilitating balance function among stroke survivors.

Methods: A literature search was conducted using major Chinese and English electronic databases from an inception until January 2018. Randomized controlled studies were included in our meta-analysis. Data was independently extracted by two review authors using a pre-developed table and confirmed by a third party to reach a consensus. Pooled effect size (Hedge's g) was computed while the random-effect model was set.

Results: The meta-analytic results showed a significant benefit of the MBM intervention on increased balance function compared to the control groups (Hedge's $g = 1.59$, CI 0.98 to 2.19, $p < 0.001$, $I^2 = 94.95\%$). Additionally, the meta-regression indicated that the total number of sessions ($\beta = 0.00142$, 95% CI 0.0039 to 0.0244, $p = 0.0067$) and dose of weekly training ($\beta = 0.00776$, 95% CI 0.00579 to 0.00972, $p = 0.00$) had significantly positive effects on balance function.

Conclusions: The study encouraging findings indicate the rehabilitative effect of a MBM intervention for balance function in stroke survivors. However, there were significant limitations in the design among several of the included trials. Additional studies with more robust methodologies are needed to provide a more definitive conclusion.

PDF Y Endnote Y

Hyponatremia, falls and bone fractures: a systematic review and meta-analysis

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Clin. Endocrinol. 2018; ePub(ePub): ePub.

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Abstract

OBJECTIVE: To perform a meta-analysis based on published studies that compared falls and bone fractures between patients with and without hyponatremia.

CONTEXT: There is evidence suggesting that hyponatremia is associated with an increased risk of falls and bone fractures.

DESIGN: An extensive Medline, Embase and Cochrane search was performed to retrieve all studies published up to, April 30th 2017, using the following words: "hyponatremia" or "hyponatraemia"

AND "falls" and "bone fractures". A meta-analysis was performed including all studies comparing falls and bone fractures in subjects with or without hyponatremia.

PATIENTS AND RESULTS: Out of 216 retrieved articles, 15 studies satisfied inclusion criteria encompassing a total of 51,879 patients, of whom 2,329 were hyponatremic. Across all studies hyponatremia was associated with a significantly increased risk of falls (MH-OR =2.14[1.71; 2.67]. This result was confirmed when only hospitalized patients were considered (MH-OR=2.44 [1.97;3.02]). A meta-regression analysis showed that the hyponatremia-related risk of falls was higher in those studies considering a lower serum [Na⁺] cut-off to define hyponatremia. Interestingly, the estimated risk of falls related to hyponatremia was already significantly higher when a serum [Na⁺] cut-off of 135 mmol/l was considered (MH-OR= 1.26[1.23;1.29]). The presence of hyponatremia was also associated with a higher risk of fractures, particularly hip fractures (MH-OR= 2.00[1.43;2.81]).

CONCLUSIONS: This study confirms that hyponatremia is associated with an increased risk of falls and bone fractures. The clinical, social and economic relevance of such association is strengthened by the increased incidence of hyponatremia in older people. This article is protected by copyright. All rights reserved.

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Impact of the CMS no-pay policy on hospital-acquired fall prevention related practice patterns

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Abstract

BACKGROUND AND OBJECTIVES: In October 2008, the Centers for Medicare & Medicaid Services (CMS) stopped reimbursing hospitals for costs related to patient falls. This study aimed to examine whether the CMS no-pay policy influenced four fall prevention practices: bed alarms, sitters, room changes, and physical restraints.

RESEARCH DESIGN AND METHODS: Using electronic medical record data collected from four hospitals between 2005 and 2010, this secondary observational analysis examined the associations between the CMS no-pay policy and nursing interventions and medical orders related to fall prevention. Multivariable generalized linear mixed models with logit link function and accommodation for matching was used to assess the associations between the CMS no-pay policy and nursing interventions and medical orders.

RESULTS: After the CMS policy change, nurses were more likely to perform one or more fall-related interventions (adjusted odds ratio (aOR): 1.667; 95% confidence interval (CI): 1.097-2.534). Of the four prevention practices, the use of bed alarms (aOR: 2.343; 95% CI: 1.409-3.897) increased significantly after the CMS policy change.



DISCUSSION AND IMPLICATIONS: The CMS no-pay policy increased utilization of fall prevention strategies despite little evidence that these measures prevent falls.

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The reliance on vestibular information during standing balance control decreases with severity of vestibular dysfunction

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Abstract

The vestibular system is involved in gaze stabilization and standing balance control. However, it is unclear whether vestibular dysfunction affects both processes to a similar extent. Therefore, the objective of this study was to determine how the reliance on vestibular information during standing balance control is related to gaze stabilization deficits in patients with vestibular dysfunction. Eleven patients with vestibular dysfunction and twelve healthy subjects were included. Gaze stabilization deficits were established by spontaneous nystagmus examination, caloric test, rotational chair test, and head impulse test. Standing balance control was assessed by measuring the body sway (BS) responses to continuous support surface rotations of 0.5° and 1.0° peak-to-peak while subjects had their eyes closed. A balance control model was fitted on the measured BS responses to estimate balance control parameters, including the vestibular weight, which represents the reliance on vestibular information. Using multivariate analysis of variance, balance parameters were compared between patients with vestibular dysfunction and healthy subjects. Robust regression was used to investigate correlations between gaze stabilization and the vestibular weight. Our results showed that the vestibular weight was smaller in patients with vestibular dysfunction than in healthy subjects ($F = 7.67$, $p = 0.011$). The vestibular weight during 0.5° peak-to-peak support surface rotations decreased with increasing spontaneous nystagmus eye velocity ($\rho = -0.82$, $p < 0.001$). In addition, the vestibular weight during 0.5° and 1.0° peak-to-peak support surface rotations decreased with increasing ocular response bias during rotational chair testing ($\rho = -0.72$, $p = 0.02$ and $\rho = -0.67$, $p = 0.04$, respectively). These findings suggest that the reliance on vestibular information during standing balance control decreases with the severity of vestibular dysfunction. We conclude that particular gaze stabilization tests may be used to predict the effect of vestibular dysfunction on standing balance control.

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