

### SafetyLit January 21, 2018

#### **A multicomponent exercise program improves physical function in long-term nursing home residents: a randomized controlled trial**

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*Exp. Gerontol.* 2018; ePub(ePub): ePub.

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**DOI** 10.1016/j.exger.2018.01.008 **PMID** 29326087

#### **Abstract**

To investigate the impact of a multicomponent exercise program on anthropometry, physical function, and physical activity on older adults living in long-term nursing homes (LTNH), we conducted a randomized controlled trial involving 112 participants aged  $84.9 \pm 6.9$  years. Participants were randomly assigned to an intervention (IG) or control group (CG). The IG participated in a 3-month multicomponent exercise intervention focused on strength, balance, stretching exercises, and walking recommendations. Subjects in the CG participated in routine activities. Analyses of outcome parameters were performed in the entire sample and in two subgroups, classified according to participants' physical function score at baseline. The group-by-time interaction, favoring the IG, was significant for the entire sample and for the participants in the low physical function subgroup for the following parameters: waist circumference, 30-s chair-stand, arm-curl, 8-ft timed up-and-go, SPPB score, gait speed, and Berg scale ( $p < .05$ ). In participants with higher physical function at baseline, significant group-by-time interaction was observed in the SPPB score and Berg scale ( $p < .05$ ). When differences were analyzed within groups, the IG maintained or improved in all assessed parameters, while participants in the CG showed a marked decline. Our study showed that a multicomponent exercise program is effective for older people living in LTNH. This is especially relevant in those with lower physical function scores. The lower efficacy of the program in participants with better function might be due to the insufficient exercise demands of our intervention for more fit residents. Future studies should analyze the effects of programs with higher intensities in older people with intermediate to high physical function.

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#### **PDF Y Endnote Y**

#### **A palliative approach to falls in advanced dementia**

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*Am. J. Geriatr. Psychiatry* 2017; ePub(ePub): ePub.

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**DOI** 10.1016/j.jagp.2017.11.014 **PMID** 29336907

#### **Abstract**

Falls are viewed as a preventable cause of injury, functional loss, and death in older adults with dementia, and have been used as a marker of quality of care in long-term care facilities. Despite

intensive intervention around fall prevention in these settings, falls and injury remain frequent, particularly among residents in the advanced stages of dementia. In this clinical review, we consider the common challenges and pitfalls in both the management of falls and the provision of palliative care in advanced dementia. We then describe a palliative approach to falls in advanced dementia that involves identifying individuals who would benefit from this care approach, framing falls and loss of mobility as a quality of life issue, and devising an individualized symptom assessment and management plan. A palliative approach can lead to recognition and acceptance that recurrent falls are often symptomatic of advanced dementia, and that not all falls are preventable. We conclude that falls in the advanced stage of dementia can be sentinel events indicating the need for a palliative approach to care. Rather than replace falls prevention activities, a palliative approach to falls prompts us to select dementia stage-appropriate interventions with a focus on symptom management, comfort, and dignity.

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#### PDF Y Endnote Y

#### **Accidental hypothermia as an independent risk factor of poor neurological outcome in older multiply injured patients with severe traumatic brain injury: a matched pair analysis**

Winkelmann M, Soechtig W, Macke C, Schroeter C, Clausen JD, Zeckey C, Krettek C, Mommsen P. *Eur. J. Trauma Emerg. Surg.* 2018; ePub(ePub): ePub.

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**DOI** 10.1007/s00068-017-0897-0 **PMID** 29318345

#### **Abstract**

**PURPOSE:** Patients with multiple injuries are particularly susceptible to accidental hypothermia which is correlated with an increased risk of post-traumatic complications and mortality; however, its impact on neurological outcome in cases where there is concomitant traumatic brain injury is underexplored.

**METHODS:** We analyzed severely injured patients (ISS  $\geq$  16) including a moderate-to-severe traumatic brain injury (AISHead  $\geq$  3). The primary endpoint was objective neurological recovery, expressed as Glasgow Outcome Scale (GOS) score at time of discharge. Secondary endpoints were mortality, systemic inflammatory response syndrome (SIRS), sepsis, acute respiratory distress syndrome (ARDS) and multiple organ dysfunction syndrome (MODS). Statistical analysis included logistic regression (odds ratio). The significance level in all analyses was  $p = 0.05$ .

**RESULTS:** We analyzed 278 patients (M age = 43 years, SD 19; M ISS = 32.8, SD 10.7). Mortality was 17% ( $n = 14$ ). 102 patients (37%) were hypothermic on admission. Hypothermic patients were more severely injured (ISS  $35.6 \pm 11.1$  vs.  $31.2 \pm 10.1$ ,  $p = 0.001$ ; APACHE II  $18.1 \pm 7.4$  vs.  $16.2 \pm 7.3$ ,  $p = 0.045$ ) and had a higher transfusion requirement. Mortality rate in hypothermic patients was increased (23.5 vs. 13.1%,  $p = 0.03$ ); however, hypothermia was not an independent predictor of mortality. Median GOS at discharge was 3 (IQR 3); in 47% of patients the outcome was favorable (GOS 4 or 5) and 36% it was poor (GOS 2 or 3). There were no differences in post-traumatic complications. Analysis of 73 matched pairs of hypothermic and normothermic patients could not prove hypothermia as an independent predictor of poor neurological outcome (OR 1.7, 95% CI 0.8-3.6,  $p = 0.1$ ) in the total population. However, older patients ( $> 41$  years) had a 4.2-times higher risk

(95% CI 1.4-12.7;  $p = 0.01$ ) of poor neurological outcome, if they were hypothermic on admission.

**CONCLUSIONS:** Accidental hypothermia seems to have a negative impact on neurological recovery in older patients with multiple injuries including traumatic brain injury which outweighs potential benefits.

#### **PDF Y Endnote Y**

#### **Association between falls and caregiving tasks among informal caregivers: Canadian Community Health Survey data**

Vaughon W, Lee Y, Gallo W, Kaufman J, Unuigbo A.

*Can. J. Aging* 2018; ePub(ePub): ePub.

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**DOI** 10.1017/S0714980817000496 **PMID** 29310730

#### **Abstract**

Falls are a common cause of morbidity and mortality in older adults. While research has explored the relationship between older care recipient falls and caregiver health, there has been little investigation of the relationship between caregiving tasks and falls in older caregivers. This study assessed associations between falls and caregiving frequency and type of caregiving tasks among informal older caregivers. Data from the Canadian Community Health Survey on Healthy Aging (Public Use Microdata File 2008-2009) ( $n = 2,934$ ) were examined, using descriptive and logistic regression analyses. Higher frequency of caregiving was positively associated with falls, although those who performed household chores were less likely to report falling in the past year.

**RESULTS** suggest there may be an association between factors related to caregiving and falls in older caregivers. More research using longitudinal and experimental data is needed to better understand the relationship between caregiving tasks and falls in older caregivers.

#### **PDF Y Endnote Y**

#### **Awareness and Functional Outcome of Hip Fracture-Related Falls among Patients with a History of Recurrent Falling**

Aizen E, Nixon H, Shugaev I.

*Isr. Med. Assoc. J.* 2018; 1(20): 38-42.

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**DOI** unavailable **PMID** 29333793

#### **Abstract**

**BACKGROUND:** There is little evidence about awareness and functional outcome of hip fracture-related falls among patients with a history of recurrent falling.

**OBJECTIVES:** To measure the awareness of recurrent falling in patients and to compare their functional outcomes with those who suffered hip fracture after a sporadic isolated fall.

**METHODS:** A prospective comparative study of patients after a hip fracture-related fall was conducted. Awareness of falls was measured and functional outcome was assessed by total and motor Functional Independence Measure (FIM) score changes and efficiency and scores at admission and on discharge.

**RESULTS:** Of 97 eligible participants, 49 (50.5%) were recurrent fallers. Of these recurrent falls, 19 (38.8%) were not reported, 16 (32.7%) were reported but no action was taken, and 7 (14.3%) were

reported and a partial assessment performed. A full assessment was performed in only 7 cases (14.3%). FIM scores on admission and discharge were significantly higher in once-fallers. A multiple linear regression analysis showed that being a once-faller was independently associated with higher total FIM at admission ( $\beta$  coefficient = 0.290,  $P = 0.004$ ), higher motor FIM at admission ( $\beta$  coefficient = 0.295,  $P = 0.003$ ), higher total FIM at discharge ( $\beta$  Coefficient = 0.264,  $P = 0.009$ ), and higher motor FIM at discharge ( $\beta$  coefficient = 0.230,  $P = 0.023$ ).

**CONCLUSIONS:** Awareness of the syndrome of recurrent falling is extremely low. Recurrent falls before a hip fracture-related fall is associated with substantial loss of functional independence. Being a recurrent faller adversely affects rehabilitation outcome of hip fracture patients.

#### **PDF Y Endnote Y**

#### **Baseline and pre-operative 1-year mortality risk factors in a cohort of 509 hip fracture patients consecutively admitted to a co-managed orthogeriatric unit (FONDA Cohort)**

Menéndez-Colino R, Alarcón T, Gotor P, Queipo R, Ramírez-Martín R, Otero A, González-Montalvo JI. *Injury* 2018; ePub(ePub): ePub.

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**DOI** 10.1016/j.injury.2018.01.003 **PMID**29329713

#### **Abstract**

**INTRODUCTION:** The aim of this study was to determine the patient characteristics that predict 1-year mortality after a hip fracture (HF).

**METHODS:** All patients admitted consecutively with fragility HF during 1 year in a co-managed orthogeriatric unit of a university hospital (FONDA cohort) were assessed. Baseline and admission demographic, clinical, functional, analytical and body-composition variables were collected in the first 72 h after admission. A protocol designed to minimize the consequences of the HF was applied. One year after the fracture patients or their carers were contacted by telephone to ascertain their vital status.

**RESULTS:** A total of 509 patients with a mean age of 85.6 years were included. One-year mortality was 23.2%. The final multivariate model included 8 independent mortality risk factors: age >85 years, baseline functional impairment in basic activities of daily living, low body mass index, cognitive impairment, heart disease, low hand-grip strength, anaemia at admission, and secondary hyperparathyroidism associated with vitamin D deficiency. The association of several of these factors greatly increased mortality risk, with an OR (95% confidence interval [CI]) of 5.372 (3.227-8.806) in patients with 4 to 5 factors, and an OR (95% CI) of 11.097 (6.432-19.144) in those with 6 or more factors.

**CONCLUSIONS:** In addition to previously known factors (such as age, impairment in basic activities of daily living, cognitive impairment, malnutrition and anaemia at admission), other factors, such as muscle strength and hyperparathyroidism associated with vitamin D deficiency, are associated with greater 1-year mortality after a HF.

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#### **PDF Y Endnote Y**

### **Classification and characterization of postural transitions using instrumented shoes**

Moufawad El Achkar C, Lenbole-Hoskovec C, Paraschiv-Ionescu A, Major K, Aminian K, Büla C.  
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**DOI** 10.1007/s11517-017-1778-8 **PMID** 29327335

#### **Abstract**

The frequency and quality of sit-to-stand and stand-to-sit postural transitions decrease with age and are highly relevant for fall risk assessment. Accurate classification and characterization of these transitions in daily life of older adults are therefore needed. In this study, we propose to use instrumented shoes for postural transition classification as well as transition duration estimation from insole force signals. In the first part, data were collected with 10 older adults and 10 young participants performing transitions in the laboratory while wearing the instrumented shoes, without arm assistance. A wavelet approach was used to transform the insole force data, and candidate events were selected for transition duration estimation. Transition durations were then validated against a model based on force plate reference. Vertical force estimation was also compared to force plate measurement. In the second part, postural transitions were classified in daily life using the instrumented shoes and validated against a highly accurate wearable system. Transition duration was estimated with an error ranging from 10 to 20% while the error for vertical force estimation was 7%. Postural transition classification was achieved with excellent sensitivity and precision exceeding 90%. In conclusion, the instrumented shoes are suitable for classifying and characterizing postural transitions in daily life conditions of healthy older adults. Graphical abstract "Experimental setup showing instrumented shoes, reference force plate, as well as IMUs used for postural transition classification and duration estimation comparison".

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### **Cognitive-motor interference during walking in older adults with probable mild cognitive impairment**

Klotzbier TJ, Schott N.

*Front. Aging Neurosci.* 2017; 9: e350.

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**DOI** 10.3389/fnagi.2017.00350 **PMID** 29321738 **PMCID** PMC5732228

#### **Abstract**

Although several studies have shown that dual-tasking (DT) mobility is impaired in Alzheimer's disease, studies on the effects of DT conditions in probable Mild Cognitive Impairment (pMCI) have not yielded unequivocal results. The objectives of the study were to (1) examine the effect of a concurrent task on a complex walking task in adults with cognitive impairment; and (2) determine whether the effect varied with different difficulty levels of the concurrent task. Furthermore, the study was designed to evaluate the Trail-Walking Test (TWT) as a potential detection tool for MCI. We examined DT performance in 42 young adults (mean age  $23.9 \pm 1.98$ ), and 43 older adults (mean age  $68.2 \pm 6.42$ ). The MoCA was used to stratify the subjects into those with and without pMCI. DT

was assessed using the TWT: participants completed 5 trials each of walking along a fixed pathway, stepping on targets with increasing sequential numbers (i.e., 1-2-...-15), and increasing sequential numbers and letters (i.e., 1-A-2-B-3-...-8). Motor and cognitive DT effects (DTE) were calculated for each task. ROC curves were used to distinguish younger and healthy older adults from older adults with pMCI. The TWT showed excellent test-retest reliability across all conditions and groups (ICC : 0.83-0.97). SEM% was also low (<11%) as was the MDC95% (<30%). Within the DT conditions, the pMCI group showed significantly longer durations for all tasks regardless of the cognitive load compared to the younger and the healthy older adults. The motor DTEs were greatest for the complex condition in older adults with pMCI more so than in comparison with younger and healthy older adults. ROC analyses confirmed that only the tasks with higher cognitive load could differentiate older adults with pMCI from controls (area under the curve >0.7,  $p < 0.05$ ). The TWT is a reliable DT mobility measure in people with pMCI. However, the condition with high cognitive load is more sensitive than the condition with low cognitive load in identifying pMCI. The TWT-3 thus could serve as a screening tool for early detection of individuals with pMCI. Future studies need to determine the neural correlates for cognitive-motor interference in older adults with pMCI.

#### PDF Y Endnote Y

#### Community peer-led falls prevention presentations: what do the experts suggest?

Khong LAM, Berlach RG, Hill KD, Hill AM.

*J. Prim. Prev.* 2018; ePub(ePub): ePub.

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**DOI** 10.1007/s10935-017-0500-9 **PMID** 29322357

#### Abstract

Falls among older adults are a major problem. Despite considerable progress in falls prevention research, older adults often show low motivation to engage in recommended preventive strategies. Peer-led falls prevention education for older adults may have potential for bridging the research evidence-practice gap, thereby promoting the uptake of falls prevention strategies. We evaluated peer educators' presentations of falls prevention education to community-dwelling older adults in regard to established criteria that were consistent with adult learning principles, the framework of health behaviour change, falls prevention guidelines, and recommendations for providing falls prevention information. We conducted a within-stage mixed model study using purposive and snowball sampling techniques to recruit 10 experts to evaluate video recordings of the delivery of three peer-led falls prevention presentations. Each expert viewed three videos and rated them using a questionnaire containing both open-ended and closed items. There was a good level of expert agreement across the questionnaire domains. Though the experts rated some aspects of the presentations highly, they thought that the presentations were mainly didactic in delivery, not consistently personally relevant to the older adult audience, and did not encourage older adults to engage in the preventive strategies that were presented. Based on the experts' findings, we developed five key themes and recommendations for the effective delivery of peer-led falls prevention presentations. These included recommending that peer educators share falls prevention messages in a more interactive and experiential manner and that uptake of strategies should be facilitated by encouraging the older adults to develop a personalised action plan.

FINDINGS suggest that if peer-led falls prevention presentations capitalise on older adults' capability, opportunity, and motivation, the older adults may be more receptive to take up falls prevention messages.

#### PDF Y Endnote Y

#### **Effect of low-cost resistance training on lower-limb strength and balance in institutionalized seniors**

Motalebi SA, Cheong LS, Iranagh JA, Mohammadi F.

Exp. Aging Res. 2018; 44(1): 48-61.

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**DOI** 10.1080/0361073X.2017.1398810 **PMID** 29336735

#### **Abstract**

**BACKGROUND/STUDY CONTEXT:** Given the rapid increase in the aging population worldwide, fall prevention is of utmost importance. It is essential to establish an efficient, simple, safe, and low-cost intervention method for reducing the risk of falls. This study examined the effect of 12 weeks of progressive elastic resistance training on lower-limb muscle strength and balance in seniors living in the Rumah Seri Kenangan, social welfare home in Cheras, Malaysia.

**METHODS:** A total of 51 subjects qualified to take part in this quasi-experimental study. They were assigned to either the resistance exercise group (n = 26) or control group (n = 25). The mean age of the 45 participants who completed the program was 70.7 (SD = 6.6). The exercise group met twice per week and performing one to three sets of 8 to 10 repetitions for each of nine lower-limb elastic resistance exercises. All exercises were conducted at low to moderate intensities in sitting or standing positions. The subjects were tested at baseline and 6 and 12 weeks into the program.

**RESULTS:** The results showed statistically significant improvements in lower-limb muscle strength as measured by five times sit-to-stand test (% $\Delta$  = 22.6) and dynamic balance quantified by the timed up-and-go test (% $\Delta$  = 18.7), four-square step test (% $\Delta$  = 14.67), and step test for the right (% $\Delta$  = 18.36) and left (% $\Delta$  = 18.80) legs. No significant changes were observed in static balance as measured using the tandem stand test (% $\Delta$  = 3.25), and one-leg stand test with eyes opened (% $\Delta$  = 9.58) and eyes closed (% $\Delta$  = -0.61) after completion of the program.

**CONCLUSION:** The findings support the feasibility and efficacy of a simple and inexpensive resistance training program to improve lower-limb muscle strength and dynamic balance among the institutionalized older adults.

#### PDF Y Endnote Y

#### **Effects of dual-task management and resistance training on gait performance in older individuals: a randomized controlled trial**

Wollesen B, Mattes K, Schulz S, Bischoff LL, Seydell L, Bell JW, von Duvillard SP.

*Front. Aging Neurosci.* 2017; 9: e415.

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**DOI** 10.3389/fnagi.2017.00415 **PMID** 29326581 **PMCID** PMC5733355

#### **Abstract**

**BACKGROUND:** Dual-task (DT) training is a well-accepted modality for fall prevention in older adults. DT training should include task-managing strategies such as task switching or task prioritization to

improve gait performance under DT conditions.

**METHODS:** We conducted a randomized controlled trial to evaluate a balance and task managing training (BDT group) in gait performance compared to a single task (ST) strength and resistance training and a control group, which received no training. A total of 78 older individuals ( $72.0 \pm 4.9$  years) participated in this study. The DT group performed task managing training incorporating balance and coordination tasks while the ST group performed resistance training only. Training consisted of 12 weekly sessions, 60 min each, for 12 weeks. We assessed the effects of ST and BDT training on walking performance under ST and DT conditions in independent living elderly adults. ST and DT walking (visual verbal Stroop task) were measured utilizing a treadmill at self-selected walking speed (mean for all groups:  $4.4 \pm 1$  km h<sup>-1</sup>). Specific gait variables, cognitive performance, and fear of falling were compared between all groups. **>Results:** Training improved gait performance for step length ( $p < 0.001$ ) and gait-line (ST:  $p < 0.01$ ; DT  $p < 0.05$ ) in both training groups. The BDT training group showed greater improvements in step length ( $p < 0.001$ ) and gait-line ( $p < 0.01$ ) during DT walking but did not have changes in cognitive performance. Both interventions reduced fear of falling ( $p < 0.05$ ).

**CONCLUSION:** Implementation of task management strategies into balance and strength training in our population revealed a promising modality to prevent falls in older individuals. Trial registration: German register of clinical trials DRKS00012382.

**PDF Y Endnote Y**

**Effects of the visual-feedback-based force platform training with functional electric stimulation on the balance and prevention of falls in older adults: a randomized controlled trial**

Li Z, Wang XX, Liang YY, Chen SY, Sheng J, Ma SJ.

*PeerJ* 2018; 6: e4244.

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**DOI** 10.7717/peerj.4244 **PMID** 29340245 **PMCID** PMC5768172

**Abstract**

**BACKGROUND:** Force platform training with functional electric stimulation aimed at improving balance may be effective in fall prevention for older adults. Aim of the study is to evaluate the effects of the visual-feedback-based force platform balance training with functional electric stimulation on balance and fall prevention in older adults.

**METHODS:** A single-centre, unblinded, randomized controlled trial was conducted. One hundred and twenty older adults were randomly allocated to two groups: the control group ( $n = 60$ , one-leg standing balance exercise, 12 min/d) or the intervention group ( $n = 60$ , force platform training with functional electric stimulation, 12 min/d). The training was provided 15 days a month for 3 months by physical therapists. Medial-lateral and anterior-posterior maximal range of sway with eyes open and closed, the Berg Balance Scale, the Barthel Index, the Falls Efficacy scale-International were assessed at baseline and after the 3-month intervention. A fall diary was kept by each participant during the 6-month follow-up.

**RESULTS:** On comparing the two groups, the intervention group showed significantly decreased ( $p < 0.01$ ) medial-lateral and anterior-posterior maximal range of sway with eyes open and closed. There was significantly higher improvement in the Berg Balance Scale ( $p < 0.05$ ), the Barthel Index ( $p < 0.05$ ) and the Falls Efficacy Scale-International ( $p < 0.05$ ), along with significantly lesser number



of injurious fallers ( $p < 0.05$ ), number of fallers ( $p < 0.05$ ), and fall rates ( $p < 0.05$ ) during the 6-month follow-up in the intervention group.

**CONCLUSION:** This study showed that the visual feedback-based force platform training with functional electric stimulation improved balance and prevented falls in older adults.

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### **Environmental and behavioral circumstances and consequences of falls in a senior living development**

Kim D, Ahrentzen S.

*J. Housing Elder.* 2017; 31(3): 286-301.

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**DOI** 10.1080/02763893.2017.1335667 **PMID** unavailable

#### **Abstract**

This article investigated the role of environmental and behavioral factors surrounding fall incidents in a senior living community. Using a mixed-methods approach, this research included both a retrospective analysis of fall reports and resident interviews. The quantitative analysis showed falls in the bedroom and bathroom were more likely to happen between 12 am and 8 am. Falls in the bathroom were more likely to result in severe injuries compared to falls in other rooms. The qualitative analysis identified three types of fall-related activity (transfer, ambulation, standing) and five behavioral factors surrounding fall incidents (transferring, slipping, misjudged behavior, tripping, health issue).

**PDF Y Endnote Y**

### **Evaluating the impact of a falls prevention community of practice in a residential aged care setting: a realist approach**

Francis-Coad J, Etherton-Beer C, Bulsara C, Blackburn N, Chivers P, Hill AM.

*BMC Health Serv. Res.* 2018; 18(1): e21.

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**DOI** 10.1186/s12913-017-2790-2 **PMID** 29334963

#### **Abstract**

**BACKGROUND:** Falls are a major socio-economic problem among residential aged care (RAC) populations resulting in high rates of injury including hip fracture. Guidelines recommend that multifactorial prevention strategies are implemented but these require translation into clinical practice. A community of practice (CoP) was selected as a suitable model to support translation of the best available evidence into practice, as it could bring together like-minded people with falls expertise and local clinical knowledge providing a social learning opportunity in the pursuit of a common goal; falls prevention. The aims of this study were to evaluate the impact of a falls prevention CoP on its membership; actions at facility level; and actions at organisation level in translating falls prevention evidence into practice.

**METHODS:** A convergent, parallel mixed methods evaluation design based on a realist approach using surveys, audits, observations and semi-structured interviews. Participants were 20 interdisciplinary staff nominating as CoP members between Nov 2013-Nov 2015 representing 13 facilities (approximately 780 beds) of a RAC organisation. The impact of the CoP was evaluated at

three levels to identify how the CoP influenced the observed outcomes in the varying contexts of its membership (level i.), the RAC facility (level ii.) and RAC organisation (level iii.).

**RESULTS:** Staff participating as CoP members gained knowledge and awareness in falls prevention ( $p < 0.001$ ) through connecting and sharing. Strategies prioritised and addressed at RAC facility level culminated in an increase in the proportion of residents supplemented with vitamin D ( $p = 0.002$ ) and development of falls prevention education. At organisation level a falls policy reflecting preventative evidence-based guidelines and a new falls risk assessment procedure with aligned management plans were written, modified and implemented. A key disabling mechanism identified by CoP members was limited time to engage in translation of evidence into practice whilst enabling mechanisms included proactive behaviours by staff and management.

**CONCLUSIONS:** Interdisciplinary staff participating in a falls prevention CoP gained connectivity and knowledge and were able to facilitate the translation of falls prevention evidence into practice in the context of their RAC facility and RAC organisation. Support from RAC organisational and facility management to make the necessary investment in staff time to enable change in falls prevention practice is essential for success.

#### **PDF Y Endnote Y**

#### **Factors related to older patients' fear of falling during the first mobilization after total knee replacement and total hip replacement**

Turhan Damar H, Bilik O, Karayurt O, Ursavas FE.

*Geriatr. Nurs.* 2018; ePub(ePub): ePub.

**Affiliation:** Department of Nursing, Cankiri Karatekin University, Cankiri, Turkey.

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**DOI** 10.1016/j.gerinurse.2017.12.003 **PMID** 29325717

#### **Abstract**

The aim of this study was to determine fear of falling in the first mobilization and affecting factors in older patients. The study had a descriptive and cross-sectional design. Data were collected in Izmir, Turkey between February 2014 and March 2016. The sample included 204 older patients undergoing joint replacement surgery. Fifty-seven-point four percent and 42.6% of the patients had total hip and knee replacement respectively. 42.2% of the patients had a severe fear of falling when they were first mobilized. There was a statistically significant difference between fear of falling in the first mobilization and the mean pain severity. In addition, the difference between fear of falling and the mean anxiety level was statistically significant. Pain and anxiety are important factors contributing to fear of falling in mobilization. The results of the study can help develop multidimensional strategies for reducing fear of falling in older people after joint replacement.

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#### **PDF Y Endnote Y**

#### **Falls assessment and interventions among older patients in two medical and one surgical hospital wards in Spain: a best practice implementation project**

Albornos-Muñoz L, Melián-Correa E, Acosta-Arrocha A, Gallo-Blanco C, Béjar-Bacas F, Alonso-Poncelas E, Serra-Estrada M, González-María E, Moreno-Casbas MT.

*JBI Database Syst. Rev Implement. Rep.* 2018; 16(1): 247-257.

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DOI 10.11124/JBISRR-2017-003349 PMID 29324564

### Abstract

**OBJECTIVE:** The current project aimed to improve fall prevention and management through clinical audits and the implementation of a quality-improvement cycle at the local level.

**INTRODUCTION:** Falls are one of the most common adverse events reported in hospitals; evidence-based fall prevention interventions aim to reduce the number of people who fall.

**METHODS:** A one-year clinical audit was conducted using a pre-post implementation audit method, namely the Joanna Briggs Institute's (JBI) Practical Application of Clinical Evidence System and the getting research into practice audit and feedback tool. Two medical wards and a surgical ward in a Spanish hospital participated. The subjects were evaluated at baseline and at a follow-up at six months after key strategies had been implemented.

**RESULTS:** Compliance rates for the evidence-based criteria were low in the baseline audit. Five barriers were identified in relation to fall assessment and management and, based on getting research into practice, strategies were designed, developed and implemented to overcome these barriers. After implementation, most of the fall-risk-assessment criteria showed an overall improvement, but there was no effect on care plan recording. Awareness of the assessment and management of fall risks were increased among professionals and patients on all three study wards.

**CONCLUSIONS:** The current project may improve compliance with regard to promoting evidence-based fall prevention and management interventions. Further audits are necessary to evaluate any improvements achieved, in particular, care plans.

**PDF N Endnote Y**

### Falls in cognitively impaired older adults: implications for risk assessment and prevention

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*J. Am. Geriatr. Soc.* 2018; ePub(ePub): ePub.

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DOI 10.1111/jgs.15219 PMID 29318592

### Abstract

**OBJECTIVES:** To provide an overview of the role of cognition in falls, with potential implications for managing and preventing falls in older adults.

**DESIGN:** Review. **SETTING:** Observational and interventional studies addressing the role of cognition on falls.

**PARTICIPANTS:** Community-dwelling older adults (65 years and older).

**MEASUREMENTS:** The relationship between gait and cognition in aging and neurodegeneration was reviewed in the medical literature to highlight the role of brain motor control deficits in fall risk. The benefits of dual-task gait assessments as a marker of fall risk were reviewed. Therapeutic approaches for reducing falls by improving certain aspects of cognition were appraised.

**RESULTS:** Low performance in attention and executive function are associated with gait slowing, instability, and future falls. Drug-enhancement of cognition may reduce falls in Parkinson's disease, and cognitive training, dual-task training, and virtual reality modalities are promising to improve mobility in sedentary older adults and in those with cognitive impairment and dementia.

**CONCLUSION:** Falls remain common in older people, with higher prevalence and morbidity in those who are cognitively impaired. Disentangling the mechanism and contribution of cognitive deficits in fall risk may open new treatment approaches. Mounting evidence supports that cognitive therapies help reduce falls.

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### **How Does Frailty Factor Into Mortality Risk Assessment of a Middle-Aged and Geriatric Trauma Population?**

Konda SR, Lott A, Saleh H, Schubl S, Chan J, Egol KA.

*Geriatr Orthop Surg Rehabil* 2017; 8(4): 225-230.

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(Copyright © 2017, Sage Publications)

**DOI** 10.1177/2151458517735202 **PMID** 29318084 **PMCID** PMC5755843

#### **Abstract**

**INTRODUCTION:** Frailty in elderly trauma populations has been correlated with an increased risk of morbidity and mortality. The Score for Trauma Triage in the Geriatric and Middle-Aged (STTGMA) is a validated mortality risk score that evaluates 4 major physiologic criteria: age, comorbidities, vital signs, and anatomic injuries. The aim of this study was to investigate whether the addition of additional frailty variables to the STTGMA tool would improve risk stratification of a middle-aged and elderly trauma population.

**METHODS:** A total of 1486 patients aged 55 years and older who met the American College of Surgeons Tier 1 to 3 criteria and/or who had orthopedic or neurosurgical traumatic consultations in the emergency department between September 2014 and September 2016 were included. The STTGMAORIGINAL and STTGMAFRAILITY scores were calculated. Additional "frailty variables" included preinjury assistive device use (disability), independent ambulatory status (functional independence), and albumin level (nutrition). The ability of the STTGMAORIGINAL and the STTGMAFRAILITY models to predict inpatient mortality was compared using area under the receiver operating characteristic curves (AUROCs).

**RESULTS:** There were 23 high-energy inpatient mortalities (4.7%) and 20 low-energy inpatient mortalities (2.0%). When the STTGMAORIGINAL model was used, the AUROC in the high-energy and low-energy cohorts was 0.926 and 0.896, respectively. The AUROC for STTGMAFRAILITY for the high-energy and low-energy cohorts was 0.905 and 0.937, respectively. There was no significant difference in predictive capacity for inpatient mortality between STTGMAORIGINAL and STTGMAFRAILITY for both the high-energy and low-energy cohorts.

**CONCLUSION:** The original STTGMA tool accounts for important frailty factors including cognition and general health status. These variables combined with other major physiologic variables such as age and anatomic injuries appear to be sufficient to adequately and accurately quantify inpatient mortality risk. The addition of other common frailty factors that account for does not enhance the STTGMA tool's predictive capabilities.

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### **Influences of a church-based intervention on falls risk among seniors**

Briggs M, Morzinski JA, Ellis J.

*WMJ Wis. Med. J.* 2017; 116(3): 161-164.

**Affiliation:** College of Nursing, University of Wisconsin-Milwaukee.

(Copyright © 2017, Wisconsin Medical Society)

**DOI** unavailable **PMID** 29323832

#### **Abstract**

**BACKGROUND AND OBJECTIVES:** Prior studies illustrate that community-based programs effectively decrease falls risk in older adults and that faith-based programs improve health behaviors. The literature is unclear whether faith-based initiatives reduce seniors' fall risks. To tackle this gap, a long-term partnership led by 10 urban churches, a nearby nursing school, and a medical school developed a study with 3 objectives: determine baseline health concerns associated with falls (eg, depression, polypharmacy), implement a nurse-led, faith-based health education initiative for community-dwelling African American seniors at-risk of hospitalization, and assess pre- to post-program fall frequency.

**METHODS:** The 100 Healthy, At-Risk Families study team implemented 8 monthly educational health sessions promoting self-care and social support. Community nurses led the 60- to 90-minute sessions at each of 10 churches. To collect study data, nurses interviewed enrolled seniors pre- and post-intervention. Descriptive and comparison statistics were analyzed in Excel and Statistical Package for Social Sciences.

**RESULTS:** Senior data at baseline found high rates of polypharmacy and physical imbalance, and no significant depression or gaps in social support. There was not a statistically significant change pre- to post-program in fall frequency "in prior year." **CONCLUSIONS:** Study findings reveal insights about African American senior health and fall risks. Church settings may provide a protective, psychosocial buffer for seniors, while polypharmacy and mobility/balance concerns indicate need for continued attention to fall risks. No increase in pre- to post-program falls was encouraging.

**PDF Y Endnote Y**

### **Masculinity and preventing falls: insights from the fall experiences of men aged 70 years and over**

#### **Citation**

Liddle JLM, Lovarini M, Clemson LM, Jang H, Lord SR, Sherrington C, Willis K.

*Disabil. Rehabil.* 2018; ePub(ePub): ePub.

**Affiliation:** Melbourne Health , La Trobe University , Parkville , Australia.

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**DOI** 10.1080/09638288.2017.1419381 **PMID** 29320881

#### **Abstract**

**PURPOSE:** To explore men's fall experiences through the lens of masculine identities so as to assist health professionals better engage men in fall prevention programs.

**METHODS:** Twenty-five men, aged 70-93 years who had experienced a recent fall, participated in a qualitative semi-structured interview. Men's willingness to engage in fall prevention programs taking account of individual contexts and expressions of masculinity, were conceptualised using constant comparative methods.

**RESULTS:** Men's willingness to engage in fall prevention programs was related to their perceptions of the preventability of falls; personal relevance of falls; and age, health, and capability as well as problem-solving styles to prevent falls. Fall prevention advice was rarely given when men accessed

the health system at the time of a fall.

**CONCLUSIONS:** Contrary to dominant expectations about masculine identity, many men acknowledged fall vulnerability indicating they would attend or consider attending, a fall prevention program. Health professionals can better engage men by providing consistent messages that falls can be prevented; tailoring advice, understanding men are at different stages in their awareness of fall risk and preferences for action; and by being aware of their own assumptions that can act as barriers to speaking with men about fall prevention. Implications for rehabilitation Men accessing the health system at the time of the fall, and during rehabilitation following a fall represent prime opportunities for health professionals to speak with men about preventing falls and make appropriate referrals to community programs. Tailored advice will take account of individual men's perceptions of preventability; personal relevance; perceptions of age, health and capability; and problem-solving styles.

**PDF Y Endnote Y**

**Muscle quality is associated with dynamic balance, fear of falling, and falls in older women**

Gadelha AB, Neri SGR, Nóbrega OT, Pereira JC, Bottaro M, Fonsêca A, Lima RM.

*Exp. Gerontol.* 2018; ePub(ePub): ePub.

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**DOI** 10.1016/j.exger.2018.01.003 **PMID** 29329971

**Abstract** [Abstract unavailable]

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**Period prevalence, risk factors and consequent injuries of falling among the Saudi elderly living in Riyadh, Saudi Arabia: a cross-sectional study**

Almegbel FY, Alotaibi IM, Alhusain FA, Masuadi EM, Al Sulami SL, Aloushan AF, Almuqbil BI.

*BMJ Open* 2018; 8(1): e019063.

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**DOI** 10.1136/bmjopen-2017-019063 **PMID** 29326189

**Abstract**

**OBJECTIVES:** Approximately 28% to 35% of people aged 65 and over fall each year. The consequent injuries of falls are considered a major public health problem. Falls account for more than half of injury-related hospitalisations among old people. The aim of this study was to measure a 1-year period prevalence of falling among old people in Riyadh, Saudi Arabia. In addition, this study described the most common risk factors and consequent injuries of falls. **SETTING AND PARTICIPANTS:** A cross-sectional survey was carried out in Riyadh, using a convenient sampling. The targeted population were Saudi citizens who were 60 years or above. Over a 6-month period, 1182 individuals were sampled (545 men and 637 women). **RESULTS:** The 1-year prevalence of falling among old Saudis ( $\geq 60$  years) was 49.9%. Our results show that 74% of the participants who experienced falls had postfall injuries. Old participants who were uneducated and those with middle school certification were associated with falls (adjusted OR (aOR) 1.72; 95% CI 1.15 to 2.56, aOR 1.81; 95% CI 1.15 to 2.85, respectively). Those who live in

rented houses had a higher risk of falls. Interestingly, having a caregiver was significantly associated with more falls (aOR 1.39; 95% CI 1.08 to 1.79). However, not using any medications was significantly related to fewer falls. In addition, old individuals using walking aids were more likely to fall than those who did not. Participants who mentioned 'not having stressors were associated with less frequent falls (aOR 0.62; 95% CI 0.39 to 0.97). Cerebrovascular accidents were strongly associated with falls with an estimated OR of 2.75 (95% CI 1.18 to 6.43). Moreover, osteoporosis, poor vision and back pain were found to be predictors for falls among the elderly.

**CONCLUSION:** 49.9% of elderly Saudis had experienced one or more falls during a 12-month period. Several preventable risk factors could be addressed by routine geriatric assessment. Research on the impact of these risk factors is needed.

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### **Predicting 1-year disability and mortality of injured older adults**

Jeffery AD, Dietrich MS, Maxwell CA.

*Arch. Gerontol. Geriatr.* 2018; 75: 191-196.

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**DOI** 10.1016/j.archger.2018.01.003 **PMID** 29331842

#### **Abstract**

**PURPOSE:** The growing incidence of elderly patients injured from falls, combined with a growing understanding of the contribution of cognition and frailty to mortality, prompted this work. Our objective was to develop a clinical risk prediction model for prognosticating disability and mortality among injured older adults 1 year after hospitalization.

**METHODS:** Secondary analysis of prospective longitudinal data from an urban Level 1 trauma center. A proportional odds regression model was used to model mortality and functional status as ordinal outcomes. Death was treated as the lowest functional status, and 3 ordered groups of the Barthel Index were treated as higher functional status. 188 patients aged 65 and older who were admitted through the emergency department from 2013 to 2014 with a primary injury diagnosis comprised the prospective cohort. Follow-up assessments were performed at 30-days, 90-days, 6-months, and 1-year. Predictors in the model included: baseline physical function, baseline cognition, two physical frailty measures, age, injury severity, a comorbidity index, gender, living location, mechanism of injury, and hospital admitting service.

**RESULTS:** The full model yielded an R<sup>2</sup> of 0.45, and Life Space Assessment, Vulnerable Elders Survey, and Injury Severity were the most influential predictors. Approximated models (to encourage clinical use) yielded an R<sup>2</sup> of 0.86. Calibration assessment (i.e., accuracy) demonstrated a mean squared error <0.003 at all 3 intercepts.

**CONCLUSIONS:** A moderate statistical signal was discovered that contributed to a highly accurate clinical prediction model. Approximated models and nomograms could be used by clinicians, patients, and families in shared decision making during hospitalization.

**PDF Y Endnote Y**

### **Relevance of frailty to mortality associated with the use of antipsychotics among community-residing older adults with impaired cognition**

Maxwell CJ, Campitelli MA, Hogan DB, Diong C, Austin PC, Amuah JE, Lapane K, Seitz DP, Gill SS, Gruneir A, Wodchis WP, Bronskill SE.

*Pharmacoepidemiol. Drug Saf.* 2018; ePub(ePub): ePub.

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(Copyright © 2018, John Wiley and Sons)

**DOI** 10.1002/pds.4385 **PMID** 29318705

#### **Abstract**

**PURPOSE:** To examine the association between new antipsychotic use and mortality over 6 months among community-based older adults with cognitive impairment, and variation in risk by frailty and sex.

**METHODS:** We conducted a retrospective cohort study of older (aged 66+) home care clients in Ontario, Canada, using linked administrative health and clinical databases. Included were clients with dementia and/or significant cognitive impairment assessed during April 2008 to March 2013. Frailty was defined using a validated 72-item index. Exposed were those newly dispensed an antipsychotic in the 6 months post cohort entry, with no such claims in the year prior to drug index date. Two-stage matching defined unexposed clients and their index date (matching on age, sex, frailty, assessment year, and propensity score). Outcome was time to death following index date. Cause-specific hazards models were used, and number needed to harm at 6 months was estimated from cumulative incidence function curves.

**RESULTS:** Among 4955 matched exposed-unexposed pairs, new antipsychotic users showed a significantly increased hazard of mortality at 1, 3, and 6 months relative to unexposed, with the highest risk observed in the first month (hazard ratio [HR] = 2.08 [95% CI, 1.79-2.43]). At 1 month, risk was significantly higher for robust (HR = 3.72 [95% CI, 2.45-5.66]) vs frail (HR = 1.74 [95% CI, 1.40-2.17],  $P = .002$ ) clients. The number needed to harm was 22.7 and did not vary by frailty but was lower for men (14.9) than for women (35.0).

**CONCLUSIONS:** Risk of antipsychotic-associated mortality was highest in the first month following exposure, varied significantly by client frailty, and was greater among men than among women.

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#### **PDF N Endnote Y**

### **Safer chairs for elderly patients: design evaluation using electromyography and force measurement**

Valipoor S, Pati D, Stock MS, Bazuin D.

*Ergonomics* 2018; ePub(ePub): ePub.

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**DOI** 10.1080/00140139.2018.1427804 **PMID** 29325515

#### **Abstract**

A vast majority of patient fall events in hospitals involve the elderly. In inpatient care settings, despite the risk of fall, patients are encouraged to leave their bed, move around their room, and sit on their chair to progress in their healing. Despite the vital role of patient chair design in improving recovery, few studies have examined the ergonomic requirements of safe patient chairs. This study



examined the impact of manipulating horizontal and vertical positions of armrests in a test chair on required physical effort during Stand-to-Sit-to-Stand (St-Si-St) transitions among fifteen elderly women. Physical effort was measured using: 1) surface electromyography (sEMG); 2) force measurement by load cells; 3) video recording.

FINDINGS showed non-linear patterns of change in required physical effort due to changes in armrests' height and distance. It was also found that minimum effort is associated with armrests higher and farther apart than those in typical patient chairs. Practitioner Summary: Safe chairs are essential for inpatient recovery, yet their ergonomic features are not investigated. Impact of changes in chair armrests on required physical effort was examined using Electromyography, force measurement, and video recording. Armrests higher and farther apart than those in typical patient chairs may be safer for elderly patients.

#### **PDF Y Endnote Y**

#### **The coordination of joint movements during sit-to-stand motion in old adults: the uncontrolled manifold analysis**

Anan M, Hattori H, Tanimoto K, Wakimoto Y, Ibara T, Kito N, Shinkoda K.

*Phys. Ther. Res.* 2017; 20(2): 44-50.

**Affiliation:** Department of Biomechanics, Institute of Biomedical and Health Sciences, Hiroshima University.

(Copyright © 2017, Japanese Society of Physical Therapy)

**DOI** 10.1298/ptr.E9923 **PMID** 29333362 **PMCID** PMC5743431

#### **Abstract**

**OBJECTIVE:** Sit-to-stand motion (STS) is a dynamic motion utilized in fundamental activities of daily living and requires extensive joint movement in the lower extremities and the trunk and coordination of multiple body segments. The present study aimed to investigate whether aging affects the motor coordination of joint movements required to stabilize the horizontal and vertical movement of center of mass using the uncontrolled manifold (UCM) analysis.

**METHOD:** We recruited 39 older adults with no musculoskeletal and/or neuromuscular conditions that affected STS, along with 21 healthy younger adults. All subjects performed five STS trials from a chair with the seat height adjusted to the length of their lower leg at a self-selected motion speed. Kinematic data were collected using a three-dimensional motion analysis system. We performed the UCM analysis to assess the effects of joint angle variance (elemental variable) to stabilize the horizontal and vertical movement of COM (performance variable) and calculated the joint angle variance that does not affect COM (VUCM), the variance that affects COM (VORT), and the synergy index ( $\Delta V$ ).

**RESULTS:**  $\Delta V$  values in the horizontal direction were higher in the older adults than in the younger adults, but  $\Delta V$  values in the vertical direction were lower in the older adults than in the younger adults.

**CONCLUSION:** Older adults require increasing levels of stabilization of horizontal movement of COM after buttocks-off in the STS maneuver. As a result, variance in the joint angle of the lower extremities indicated no kinematic synergy for stabilizing the vertical movement of COM.

#### **PDF Y Endnote Y**

### **Feasibility and predictive performance of the Hendrich Fall Risk Model II in a rehabilitation department: a prospective study**

Campanini I, Mastrangelo S, Bargellini A, Bassoli A, Bosi G, Lombardi F, Tolomelli S, Lusuardi M, Merlo A.

*BMC Health Serv. Res.* 2018; 18(1): e18.

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**DOI** 10.1186/s12913-017-2815-x **PMID** 29325560

#### **Abstract**

**BACKGROUND:** Falls are a common adverse event in both elderly inpatients and patients admitted to rehabilitation units. The Hendrich Fall Risk Model II (HIFRM) has been already tested in all hospital wards with high fall rates, with the exception of the rehabilitation setting. This study's aim is to address the feasibility and predictive performances of HIFRM in a hospital rehabilitation department.

**METHODS:** A 6 months prospective study in a Italian rehabilitation department with patients from orthopaedic, pulmonary, and neurological rehabilitation wards. All admitted patients were enrolled and assessed within 24 h of admission by means of the HIFRM. The occurrence of falls was checked and recorded daily. HIFRM feasibility was assessed as the percentage of successful administrations at admission. HIFRM predictive performance was determined in terms of area under the Receiver Operating Characteristic (ROC) curve (AUC), best cutoff, sensitivity, specificity, positive and negative predictive values, along with their asymptotic 95% confidence intervals (95% CI).

**RESULTS:** One hundred ninety-one patents were admitted. HIFRM was feasible in 147 cases (77%), 11 of which suffered a fall (7.5%). Failures in administration were mainly due to bedridden patients (e.g. minimally conscious state, vegetative state). AUC was 0.779(0.685-0.873). The original HIFRM cutoff of 5 led to a sensitivity of 100% with a mere specificity of 49%(40-57%), thus suggesting using higher cutoffs. Moreover, the median score for non-fallers at rehabilitation units was higher than that reported in literature for geriatric non fallers. The best trade-off between sensitivity and specificity was obtained by using a cutoff of 8. This lead to sensitivity = 73%(46-99%), specificity = 72%(65-80%), positive predictive value = 17% and negative predictive value = 97%. These results support the use of the HIFRM as a predictive tool.

**CONCLUSIONS:** The HIFRM showed satisfactory feasibility and predictive performances in rehabilitation wards. Based on both available literature and these results, the prediction of falls among all hospital wards, with high risk of falling, could be achieved by means of a unique tool and two different cutoffs: a standard cutoff of 5 in geriatric wards and an adjusted higher cutoff in rehabilitation units, with predictive performances similar to those of the best-performing pathology specific tools for fall-risk assessment.

#### **PDF Y Endnote Y**

### **Standing on a sliding board affects generation of anticipatory and compensatory postural adjustments**

Chen B, Lee YJ, Aruin AS.

*J. Electromyogr. Kinesiol.* 2017; 38: 168-174.

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(Copyright © 2017, Elsevier Publishing)

DOI 10.1016/j.jelekin.2017.12.008 PMID 29328985

### **Abstract**

Postural control is compromised in the presence of body instability. We studied anticipatory and compensatory postural adjustments people use to maintain balance while standing on an unstable surface and performing voluntary arm movements. Nine healthy participants stood on a sliding board (that was either locked and as such motionless or unlocked and as such free to move in the anterior-posterior direction) and performed fast bilateral arms flexion. Arm acceleration, bilateral electromyographic activity (EMG) of the trunk and lower extremity muscles and center of pressure (COP) displacements were recorded and analyzed within the intervals typical for the anticipatory (APAs) and compensatory (CPAs) postural adjustments. Peaks of acceleration of the arm movements were not different between the locked and unlocked conditions. Larger EMG integrals were seen in the muscles of the lower extremity in both APAs and CPAs when standing on the unlocked sliding board. No significant difference was observed in the trunk muscles. Larger maximum COP displacement was seen when participants stood on the locked board. The results demonstrated that when standing on a free to move sliding board and performing bilateral arm flexion, the central nervous system (CNS) does not slow down the arm movements; instead it modifies activation of the lower extremity muscles. The observed differences in APAs and CPAs between the locked and unlocked conditions suggest that the CNS employs similar strategy while controlling the focal part of the task and adjusts the activity of muscles that are close to the source of instability to control postural task.

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