

## Safety Literature 22<sup>nd</sup> March 2020

### A randomised feasibility study assessing an intervention to keep adults physically active after falls management exercise programmes end

Audsley S, Kendrick D, Logan P, Jones M, Orton E. Pilot Feasibility Stud. 2020; 6: e37.

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DOI 10.1186/s40814-020-00570-9 PMID 32161660

#### Abstract

**BACKGROUND:** Physical inactivity contributes to disability and falls in older adults. Falls prevention exercise (FaME) programmes improve physical activity and physical function and reduce falling rates. Improvements in physical function are reduced, and falls rates increase, if physical activity is not maintained. This research investigated the feasibility and acceptability of an intervention that aimed to maintain physical activity in older adults exiting FaME.

**METHODS:** The Keeping Adults Physically Active (KAPA) intervention comprised of six group sessions of motivational interviewing, delivered monthly by trained and mentor-supported postural stability instructor's after the FaME programme ceased. The KAPA intervention included participant manuals, illustrated exercise books, physical activity diaries and pedometers. A feasibility study was conducted in 8 FaME classes. The study design was a two-arm, cluster randomised, multi-site feasibility study comparing the KAPA intervention with usual care. A sample of 50 community-dwelling adults aged 65 years old or older were recruited. Recruitment, retention and attendance rates, self-reported physical activity and participant interviews were used to examine the feasibility and acceptability of the KAPA intervention.

**RESULTS:** Fifty of the sixty-seven (74.6%) participants invited into the study agreed to take part, 94.2% of the available KAPA sessions were attended and 92.3% of the recruited participants provided outcome data. The KAPA participants expressed positive views about the venues and postural stability instructors and reported enjoying the group interactions. Intervention participants discussed increasing their physical activity in response to the peer-support, illustrated home exercise booklet, physical activity diaries and pedometers. Most discussed the written tasks to be the least enjoyable element of the KAPA intervention. The proportion of participants reporting at least 150 minutes of moderate to vigorous physical activity per week rose from 56.3 to 62.5% in the intervention arm and from 41.4 to 52.0% in the usual care arm.

**CONCLUSIONS:** The participants found the KAPA intervention acceptable. Participants reported the exercise booklet, peer support and the physical activity monitoring tools encouraged them to keep active. A full-scale trial is needed to assess whether physical activity can be significantly maintained in response to the KAPA intervention. TRIAL REGISTRATION: Retrospectively registered on ClinicalTrials.gov (NCT03824015).

Language: en

#### Keywords

Falls prevention; Feasibility study; Older adults; Physical activity

## **A single question as a screening tool to assess fear of falling in young-old community-dwelling persons**

Belloni G, Büla C, Santos-Eggimann B, Henchoz Y, Seematter-Bagnoud L. *J. Am. Med. Dir. Assoc.* 2020; ePub(ePub): ePub.

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**DOI** 10.1016/j.jamda.2020.01.101 **PMID** 32165062

### **Abstract**

**OBJECTIVES:** Fear of falling (FOF) is common in older persons and related to negative outcomes. This study aimed to investigate the relationship between 2 FOF measures: the Falls Efficacy Scale-International (FES-I) and the single question on FOF and activity restriction (SQ-FAR). Factors associated with disagreement between the 2 measures were further examined.

**DESIGN:** Cross-sectional study. **SETTING AND PARTICIPANTS:** Participants (N = 1359) were community-dwelling persons aged 65 to 70 years who were enrolled in the Lausanne cohort 65+.

**METHODS:** Data included demographic, functional, cognitive, affective, and health status. FOF was measured with FES-I and the 3-level SQ-FAR (no FOF, FOF without activity restriction (AR), FOF with AR). FES-I concern about falling was categorized as low (score 16-19), moderate (score 20-27), and high (score 28-64).

**RESULTS:** Weighted agreement between the FES-I and the SQ-FAR was 87.8% (Kappa = 0.57). Using the FES-I as gold standard, the performance of SQ-FAR was good (specificity 86%; sensitivity 74%, negative predicting value 89%, positive predicting value 69%). Among participants with moderate/high FOF according to FES-I, male sex (P = .011) and the absence of previous falls (P < .001) were associated with disagreement between the 2 tools. Among participants with low FOF, female sex (P = .005), falls history (P < .001), and pre-frailty/frailty status (P = .050) were associated with disagreement.

**CONCLUSIONS AND IMPLICATIONS:** The SQ-FAR has a moderate agreement with FES-I and might be used as a screening tool. The results also may help design a step-by-step strategy to evaluate and address FOF in the clinical setting.

Language: en

### **Keywords**

FES-I; elderly; fear of falling; healthy aging; older adults

## Brain metabolic alterations herald falls in patients with Parkinson's disease

Isaias IU, Brumberg J, Pozzi NG, Palmisano C, Canessa A, Marotta G, Volkmann J, Pezzoli G. *Ann. Clin. Transl. Neurol.* 2020; ePub(ePub): ePub.

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**DOI** 10.1002/acn3.51013 **PMID** 32162447

### Abstract

Pathophysiological understanding of gait and balance disorders in Parkinson's disease is insufficient and late recognition of fall risk limits efficacious follow-up to prevent or delay falls. We show a distinctive reduction of glucose metabolism in the left posterior parietal cortex, with increased metabolic activity in the cerebellum, in parkinsonian patients 6-8 months before their first fall episode. Falls in Parkinson's disease may arise from altered cortical processing of body spatial orientation, possibly predicted by abnormal cortical metabolism.

Language: en

## Depression, falls, and osteoporotic fractures

Zhou J, Xue Y. *Osteoporos. Int.* 2020; ePub(ePub): ePub.

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**DOI** 10.1007/s00198-020-05347-7 **PMID** 32170397

### Abstract

We read the article by Afrin et al. with great interest [1]. In their study, the authors found that for postmenopausal women, falls in the previous 12 months were associated with fracture in the following 5 years through logistic regression models. They said the models were adjusted for baseline age, body mass index, dairy calcium intake, number of prescribed medications, number of chronic health disorders, current smoking, alcohol use, leisure physical activity, restricted mobility, and use of estrogen hormone therapy. However, in our opinion, the data of depression should be considered in the study.

Depression is a global public health concern [2]. Multiple studies have proved that depression was a risk factor for osteoporotic fractures [3,4,5]. In our previous study, we found that for postmenopausal women with osteoporosis, depression was associated with a higher risk of thoracolumbar fracture, with more fracture pain and lower quality of life in the 2 months following fracture [5]. Furthermore, a recent meta-analysis indicated that depression was significantly related to an increased risk of osteoporotic fracture and bone loss [6].

Falls are common in the elderly and a positive correlation between depression and falls was found in a few studies [7, 8]. Hoffman et al. found that among community-dwelling older adults, depression was associated with subsequent falls, but falls were not associated with later depression [7]. In a meta-analysis, the authors demonstrated that depression was a significant predictor of falls (OR = 1.46) [9]. Moreover, the Hendrich II Fall Risk Model is a widely used fall risk assessment tool, which is intended for the nurse at the point of care to predict patients' risk of falls [10]. In this model, depression is one of the eight risk factors.

Hence, given the sophisticated correlation among depression, falls, and osteoporotic fractures, it is necessary to take account of the data of depression in the adjusted models.

Language: en

## Effect of virtual reality on balance in individuals with Parkinson disease: a systematic review and meta-analysis of randomized controlled trials

Chen Y, Gao Q, He CQ, Bian R. Phys. Ther. 2020; ePub(ePub): ePub.

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DOI 10.1093/ptj/pzaa042 PMID 32157307

### Abstract

**BACKGROUND:** Virtual reality (VR) is a frequently used intervention for the rehabilitation of individuals with neurological disorders.

**PURPOSE:** The aims of this review were to identify the short-term effect of VR on balance and to compare it with the effect of active interventions in individuals with Parkinson disease (PD). **DATA SOURCES:** Searches for relevant articles available in English were conducted using the MEDLINE (via PubMed), EMBASE, CENTRAL, CINAHL, PsycINFO, and Physiotherapy Evidence Database databases from inception until March 2019. **STUDY SELECTION:** All randomized controlled trials comparing the effect of training with VR and the effect of training without VR on balance in individuals with PD were included. **DATA EXTRACTION:** Two authors independently extracted data, assessed the methodological quality, and evaluated the evidence quality of the studies. **DATA SYNTHESIS:** Fourteen randomized controlled trials including 574 individuals were eligible for qualitative analyses, and 12 of the studies involving 481 individuals were identified as being eligible for meta-analyses. Compared with active interventions, the use of VR improved the Berg Balance Scale score mean difference = 1.23; 95% CI = 0.15 to 2.31; I<sup>2</sup> = 56%). The Dynamic Gait Index and Functional Gait Assessment results were also significant after the sensitivity analyses (mean difference = 0.69; 95% CI = 0.12 to 1.26; I<sup>2</sup> = 0%). Both provided moderate statistical evidence. (However, the Timed "Up & Go" Test and the Activities-Specific Balance Confidence Scale did not differ significantly. **LIMITATIONS:** Publication bias and diversity in the interventions were the main limitations.

**CONCLUSIONS:** Existing moderate evidence of the effectiveness of VR with the Berg Balance Scale, Dynamic Gait Index, and Functional Gait Assessment for individuals with PD was promising. Although the differences did not reach the clinically important change threshold, VR was comparable to the active interventions and could be considered an adjuvant therapy for balance rehabilitation in individuals with PD.

Language: en

### Keywords

Balance; Meta-Analysis; Parkinson Disease; Virtual Reality

## Potential long-term impact of "On The Move" group-exercise program on falls and healthcare utilization in older adults: an exploratory analysis of a randomized controlled trial

Coyle PC, Perera S, Albert SM, Freburger JK, Vanswearingen JM, Brach JS. *BMC Geriatr.* 2020; 20(1): e105.

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DOI 10.1186/s12877-020-1506-3 PMID 32178633

### Abstract

**BACKGROUND:** Wellness program participation may reduce the risk of falling, emergency department-use, and hospitalization among older adults. "On the Move" (OTM), a community-based group exercise program focused on the timing and coordination of walking, improved mobility in older adults, but its impact on falls, emergency department-use, and hospitalizations remains unclear. The aim of this preliminary study was to investigate the potential long-term effects that OTM may have on downstream, tertiary outcomes.

**METHODS:** We conducted a secondary analysis of a cluster-randomized, single-blind intervention trial, which compared two community-based, group exercise programs: OTM and a seated exercise program on strength, endurance, and flexibility (i.e. 'usual-care'). Program classes met for 50 min/session, 2 sessions/week, for 12 weeks. Older adults ( $\geq 65$  years), with the ability to ambulate independently at  $\geq 0.60$  m/s were recruited. Self-reported incidence of falls, emergency department visitation, and hospitalization were assessed using automated monthly phone calls for the year following intervention completion. Participants with  $\geq 1$  completed phone call were included in the analyses. Incidence rate ratios (IRRs) and 95% confidence intervals (CIs) were calculated (reference = usual-care).

**RESULTS:** Participants ( $n = 248$ ) were similar on baseline characteristics and number of monthly phone calls completed. Participants in the seated exercise program attended an average of 2.9 more classes ( $p = .017$ ). Of note, all results were not statistically significant (i.e. 95% CI overlapped a null value of 1.0). However, point estimates suggest OTM participation resulted in a decreased incidence rate of hospitalization compared to usual-care (IRR = 0.88; 95% CI = 0.59-1.32), and the estimates strengthened when controlling for between-group differences in attendance (adjusted IRR = 0.82; 95% CI = 0.56-1.21). Falls and emergency department visit incidence rates were initially greater for OTM participants, but decreased after controlling for attendance (adjusted IRR = 1.08; 95% CI = 0.72-1.62 and adjusted IRR = 0.96; 95% CI = 0.55-1.66, respectively).

**CONCLUSION:** Compared to a community-based seated group exercise program, participation in OTM may result in a reduced risk of hospitalization. When OTM is adhered to, the risk for falling and hospitalizations are attenuated. However, definitive conclusions cannot be made. Nevertheless, it appears that a larger randomized trial, designed to specifically evaluate the impact of OTM on these downstream health outcomes is warranted. **TRIAL REGISTRATION:** Clinical trials.gov (NCT01986647; prospectively registered on November 18, 2013).

Language: en

### **Keywords**

Aging; Falls; Healthcare utilization; Mobility; Prevention; Wellness

## **The prevalence and correlates of fear of falling among older people in Bangladesh**

Rahman S, Islam SMS, Ali M, Khan A, Kim SY, Maddison R. Psychogeriatr. 2020; ePub(ePub): ePub.

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**DOI** 10.1111/psyg.12542 **PMID** 32162444

### **Abstract**

[Abstract unavailable]

Language: en



## **A study on the application of convolutional neural networks to fall detection evaluated with multiple public datasets**

Casilari E, Lora-Rivera R, García-Lagos F. *Sensors* (Basel) 2020; 20(5): e1466.

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**DOI** 10.3390/s20051466 **PMID** 32155936

### **Abstract**

Due to the repercussion of falls on both the health and self-sufficiency of older people and on the financial sustainability of healthcare systems, the study of wearable fall detection systems (FDSs) has gained much attention during the last years. The core of a FDS is the algorithm that discriminates falls from conventional Activities of Daily Life (ADLs). This work presents and evaluates a convolutional deep neural network when it is applied to identify fall patterns based on the measurements collected by a transportable tri-axial accelerometer. In contrast with most works in the related literature, the evaluation is performed against a wide set of public data repositories containing the traces obtained from diverse groups of volunteers during the execution of ADLs and mimicked falls. Although the method can yield very good results when it is hyper-parameterized for a certain dataset, the global evaluation with the other repositories highlights the difficulty of extrapolating to other testbeds the network architecture that was configured and optimized for a particular dataset.

Language: en

### **Keywords**

accelerometers; body sensor networks; classification algorithms; convolutional neural networks; fall detection system; machine learning; wearable sensors

## Characteristics of stepladder fall injuries: a retrospective study

Shigemura T, Murata Y, Yamamoto Y, Miura M, Maruyama J, Wada Y. *Eur. J. Trauma Emerg. Surg.* 2020; ePub(ePub): ePub.

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DOI 10.1007/s00068-020-01339-8 PMID 32166400

### Abstract

**BACKGROUND:** Stepladders are used to work at heights in daily life, but their structure and usage differs from that of a ladder; stepladders can fold and stand without support, whereas ladders cannot fold and, thus, require support from other objects. We hypothesised that this difference made ladder and stepladder fall injuries to differ in characteristics. To clarify this hypothesis, we performed a retrospective cohort study on the stepladder fall injuries and compared their characteristics with that of ladder fall injuries.

**MATERIALS AND METHODS:** We conducted a retrospective cohort study of injuries sustained from either ladder or stepladder falls. In this study, data were retrieved from the computerised database of Teikyo University Chiba Medical Center. Patients admitted to the orthopaedic department because of injury from ladder or stepladder fall were included. The following data were retrieved from the patient records: sex, age, height, body weight, body mass index (BMI), injury severity score (ISS), season, number of injury sites, details of injury and treatment option.

**RESULTS:** One hundred thirty-two patients were included in this study. 101 patients were injured from stepladder falls, and 31 patients were injured from ladder falls. The number of females sustaining injuries due to a stepladder fall was significantly higher than those due to a ladder fall. The most frequent type of injury after fall from stepladder was fracture (48.9%), whereas the most frequent type of injury after fall from ladder was contusion/sprain (56.4%). The most frequently injured body part from stepladder fall was lower extremity (32.6%). In contrast, the most frequently injured body part due to a ladder fall was spine (27.3%).

**CONCLUSION:** The current study found that the number of females sustaining injuries due to a stepladder fall was significantly higher than those due to a ladder fall. Furthermore, the most frequent body parts that needed surgery following a ladder fall injury were spine and upper extremity, whereas the most frequent body parts that needed surgery following a stepladder fall injury was lower extremity. Our study indicated that stepladder falls cause severe injuries and physical disability and can be a huge financial burden.

Language: en

### Keywords

Fall; Injury; Stepladder

## **Evaluation of the predictive accuracy of the interRAI Falls Clinical Assessment Protocol, Scott Fall Risk Screen, and a supplementary falls risk assessment tool used in residential long-term care: a retrospective cohort study**

Norman KJ, Hirdes JP. *Can. J. Aging* 2020; ePub(ePub): ePub.

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DOI 10.1017/S0714980820000021 PMID 32172692

### **Abstract**

Falls in residential long-term care (LTC) facilities continue to be a leading cause of injury for residents and cost for the health care system. Interdisciplinary clinical teams are responsible for assessing risk levels for their residents and developing appropriate care plans and interventions in response. This study compares the predictive accuracy of three separate fall risk assessment tools: the interRAI Falls Clinical Assessment Protocol (CAP), derived from the LTC Facility (LTCF) or Minimum Data Set (MDS) 2.0 assessments; the Scott Fall Risk Screen; and a modified Fall Risk Tool that was implemented as part of a provincial Fall Reduction Strategy in Nova Scotia. To conduct this retrospective cohort study, secondary data were collected from 1,553 LTC residents with interRAI assessments completed between March 1, 2015 and September 29, 2016, across Nova Scotia and New Brunswick. For each resident, data were collected regarding the three fall risk assessments, along with fall incident data for use in sensitivity, specificity, and logistic regression analyses. This study found that although all three tools had limitations with sensitivity or specificity thresholds, the interRAI Falls CAP delivered the highest accuracy with a c-statistic of 0.673, compared with the Scott Fall Risk Screen at 0.529 and the modified Fall Risk Tool at 0.609. When diseases that have been established to be a risk factor for falls were added to the model, the overall accuracy of the interRAI Falls CAP combined with those covariates increased to 0.749. These results suggest that the best practice guidelines for fall risk assessment be revisited, and that the interRAI Falls CAP could potentially be updated to include certain diseases and controls for optimal predictive ability.

Language: en

### **Keywords**

aging; assessment; chutes; falls; interRAI; long-term care; personnes âgées; risk; risque; seniors; soins de longue durée; vieillissement; évaluation

## **In-hospital fall and fracture risk with conditions in the Elixhauser Comorbidity Index: an analysis of state inpatient data**

Davis J, Casteel C, Peek-Asa C. J. Patient Saf. 2020; ePub(ePub): ePub.

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**DOI** 10.1097/PTS.0000000000000637 **PMID** 32168270

### **Abstract**

**OBJECTIVE:** In-hospital falls (IHF) are a significant burden to the healthcare industry and patients seeking inpatient care. Many falls lead to injuries that could be considered a hospital-acquired condition (HAC). We demonstrated how administrative data can be used to quantify how many IHFs occur and identify what conditions increase the risk for these falls.

**METHODS:** Iowa State Inpatient Database records from 2008 to 2014 for adults older than 50 years were used to quantify IHFs, falls resulting in an HAC (HAC IHFs), and fractures during in-hospital treatment. The medical conditions used in the Elixhauser Comorbidity Index were evaluated for the risk of the separate fall-related outcomes using Poisson regression.

**RESULTS:** There were 1770 records that had an IHF for an IHF rate of 0.26 per 1000 patient days. Psychoses (rate ratio = 1.95, 95% confidence interval = 1.63-2.34) and alcohol abuse (rate ratio = 1.77, 95% confidence interval = 1.40-2.24) showed the greatest increase in IHF risk. These conditions also increased the risk of HAC IHFs and in-hospital fractures. Fluid and electrolyte disorders, deficiency anemias, and chronic pulmonary disease increased the risk for IHFs/HAC IHFs but did not increase the risk of in-hospital fractures.

**CONCLUSIONS:** Administrative data can be used to track various fall-related outcomes occurring during inpatient treatment. Several conditions of the Elixhauser Comorbidity Index were identified as increasing the risk of fall-related outcomes and should be considered when evaluating a patient's risk of falling.

Language: en

## Is there an optimal recovery step landing zone against slip-induced backward falls during walking?

Wang S, Pai YC, Bhatt T. Ann. Biomed. Eng. 2020; ePub(ePub): ePub.

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DOI 10.1007/s10439-020-02482-4 PMID 32166627

### Abstract

Recovery stepping in response to forward slips has the potential to not only rebuild the base of support to prevent backward falling, but also provide extra limb support to prevent downward falling. Hence, recovery stepping is often necessary for fall prevention following an unexpected slip. However, less is known about whether recovery foot placement could affect the likelihood of recovery following a slip. The purpose of this study was to determine whether there is an optimal recovery landing zone within which older adults have a higher likelihood of recovery. 195 participants experienced a novel, unannounced forward slip while walking on a 7-m walkway. The center of mass (COM) stability (computed from its position and velocity), vertical limb support (computed from change in hip kinematics), and recovery limb joint moments (computed from joint kinematics and ground reaction force) in the sagittal plane were analyzed. The results showed that a longer distance between recovery foot landing position and the projected COM position at recovery foot touchdown (relative recovery step placement) was conducive to stability improvement but adverse to limb support enhancement, and vice versa for a shorter distance. Relative recovery step placement could predict the recovery likelihood with an accuracy of 67.3%, and the recovery rate was greater than 50% when the distance between recovery foot and COM is less than  $0.3 \times$  foot length. This study also found more posterior stepping could be attributed to insufficient ankle plantar flexor and hip flexor moments in the pre-swing phase, while more anterior stepping was induced by insufficient hip and knee extensor moments in the following swing phase.

Language: en

### Keywords

Joint moment; Limb support; Optimal landing zone; Recovery step; Stability

## Mechanisms of accidental fall injuries and involved injury factors: a registry-based study

Unguryanu TN, Grjibovski AM, Trovik TA, Ytterstad B, Kudryavtsev AV. *Inj. Epidemiol.* 2020; 7(1): e8.

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DOI 10.1186/s40621-020-0234-7 PMID 32172689

### Abstract

**BACKGROUND:** Falls are the leading cause of injury-related morbidity and mortality worldwide, but fall injury circumstances differ by age. We studied the circumstances of accidental fall injuries by age in Shenkursk District, Northwest Russia, using the data from the population-based Shenkursk Injury Registry.

**METHODS:** Data on accidental fall injuries (hereafter: fall injuries) occurring in January 2015-June 2018 were extracted from the Shenkursk Injury Registry (N = 1551) and categorized by age group (0-6, 7-17, 18-59, and 60+ years). The chi-square test and ANOVA were used to compare descriptive injury variables across age groups, and a two-step cluster analysis was performed to identify homogeneous groups of fall injuries by preceding circumstances.

**RESULTS:** Half of recorded fall injuries in the 0-6 year age group occurred inside dwellings (49%). The largest cluster of falls (64%) mainly included climbing up or down on home furnishings. In the 7-17 year age group, public outdoor residential areas were the most common fall injury site (29%), and the largest cluster of falls (37%) involved physical exercise and sport or play equipment. Homestead lands or areas near a dwelling were the most typical fall injury sites in the age groups 18-59 and 60+ years (31 and 33%, respectively). Most frequently, fall injury circumstances in these groups involved slipping on ice-covered surfaces (32% in 18-59 years, 37% in 60+ years).

**CONCLUSION:** The circumstances of fall injuries in the Shenkursk District varied across age groups. This knowledge can be used to guide age-specific preventive strategies in the study area and similar settings.

Language: en

### Keywords

Cluster analysis; Fall injuries; Injury registry; Shenkursk

## Potential long-term impact of "On The Move" group-exercise program on falls and healthcare utilization in older adults: an exploratory analysis of a randomized controlled trial

Coyle PC, Perera S, Albert SM, Freburger JK, Vanswearingen JM, Brach JS. *BMC Geriatr.* 2020; 20(1): e105.

### Affiliation

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DOI 10.1186/s12877-020-1506-3 PMID 32178633

### Abstract

**BACKGROUND:** Wellness program participation may reduce the risk of falling, emergency department-use, and hospitalization among older adults. "On the Move" (OTM), a community-based group exercise program focused on the timing and coordination of walking, improved mobility in older adults, but its impact on falls, emergency department-use, and hospitalizations remains unclear. The aim of this preliminary study was to investigate the potential long-term effects that OTM may have on downstream, tertiary outcomes.

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**CONCLUSION:** Compared to a community-based seated group exercise program, participation in OTM may result in a reduced risk of hospitalization. When OTM is adhered to, the risk for falling and hospitalizations are attenuated. However, definitive conclusions cannot be made. Nevertheless, it appears that a larger randomized trial, designed to specifically evaluate the impact of OTM on these downstream health outcomes is warranted.

**TRIAL REGISTRATION:** Clinical trials.gov (NCT01986647; prospectively registered on November 18, 2013).

Language: en

### Keywords

Aging; Falls; Healthcare utilization; Mobility; Prevention; Wellness

## Stats and ladders: injury risk and outcomes following falls from ladders

Melmer PD, Taylor R, Muertos K, Sciarretta JD. Am. J. Surg. 2020; ePub(ePub): ePub.

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DOI 10.1016/j.amjsurg.2020.02.051 PMID 32172926

### Abstract

Fatal lower level falls commonly result from ladder fall injuries (LFIs), an often-avoidable injury. We hypothesized that older patients' injury severity differs from younger patients falling from the same mechanism with fall height determining overall morbidity. A retrospective review was completed of all traumatic LFIs during a 6-year period resulting in 178 patients. The mean LFI height was  $10.9 \pm 6.0$  feet, the majority being male (87%), with a mean age of  $50.7 \pm 16.6$  years. The mean ISS was  $7.7 \pm 7.0$  (range, 1-38), 23.6% sustaining > 1 injury. Age inversely correlated with the mean LFI height with patients  $\geq 66$  years falling from significantly lower heights (12.3 ft For age group 18-45 y; 10.4 ft vs 9.0 ft ( $p = 0.003$ )) and having longer LOS (7.3 vs 3.8 days,  $P = 0.011$ ). No difference in ventilator requirement/days, blood product requirements, or mortality among age groups was observed. Geriatric patients sustain similar injury patterns at lower height levels compared to all ages. Injury prevention programs are necessary to reduce the incidence of a commonly preventable injury.

Language: en

### Keywords

Elderly; Fall from heights; Falls; Geriatrics; Injury prevention; Ladder injury



## Tailoring a comprehensive bundled intervention for ED fall prevention

Pop H, Lamb K, Livesay S, Altman P, Sanchez A, Nora ME. *J. Emerg. Nurs.* 2020; 46(2): 225-232.e3.

(Copyright © 2020, Emergency Nurses Association, Publisher Elsevier Publishing)

DOI 10.1016/j.jen.2019.11.010 PMID 32164934

### Abstract

**INTRODUCTION:** Falls in the emergency department pose an important challenge for patient safety. Multifactorial fall prevention bundles have been associated with a reduction in patient falls in the inpatient setting. The purpose of this project was to tailor and implement a comprehensive fall prevention bundle in our emergency department.

**METHODS:** Fall bundle components for this intervention were selected on the basis of a review of fall prevention research and included fall risk assessment, safe ambulation, safe toileting, staff communication, early warning, and patient education. The fall risk assessment was tailored to the emergency department through an appraisal of select inpatient fall risk assessments, literature search for ED-specific fall risk factors, and a site-specific chart review, after which pertinent fall risk factors were integrated into a modified screening. Fall prevention materials that were both practical and applicable to the emergency department and facilitated patient safety along each bundle domain were selected for implementation at our site.

**RESULTS:** The tailored fall prevention bundle was championed by the interdisciplinary ED Fall Prevention Team and implemented over the course of 5 months in 1 emergency department. Education on fall prevention equipment was delivered in a peer-to-peer format, and an online module was designed to guide staff through the new fall risk assessment. The fall prevention bundle was adopted into clinical practice after staff education was completed, and the fall risk screening was merged into the electronic medical record.

**DISCUSSION:** ED fall prevention requires a comprehensive bundled approach, which includes a fall risk screening and multifactorial interventions that are tailored to the ED setting. Successful implementation relies on the involvement of front-line staff from the design through the delivery of the bundled fall prevention measures. Continued inquiry and innovation in ED fall prevention will help provide a safer health care environment and improve patient outcomes.

Language: en

### Keywords

Emergency department; Fall prevention bundle; Fall risk screening; Patient safety