

Safety Literature 13th September 2020

A mixed methods systematic review of informal caregivers' experiences of fall risk among community-dwelling elders with dementia

Zhou Y, Strayer AT, Phelan EA, Sadak T, Hooyman NR. Health Soc. Care Community 2020; ePub(ePub): ePub.

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DOI 10.1111/hsc.13148 PMID 32893451

Abstract

Evidence on effective fall prevention strategies for community-dwelling elders with dementia is limited, although these elders are at high risk of falling. Informal caregivers may play an essential role in managing fall risk for elders with dementia. Thus, understanding caregiver's experiences is critically important. This systematic review aims to (a) identify caregivers' perceptual, emotional and behavioural responses to fall risk in elders with dementia and (b) examine the outcomes and effects of caregiver behavioural responses. A mixed methods systematic review of 10 databases (PubMed, PsycINFO, CINAHL, Social Service Abstracts, Social Work Abstracts, EMBASE, Web of Science, Scopus, Cochrane Library and TRIP Medical Database) was conducted. We searched English language, peer-review articles (January 1, 1985-March 20, 2020) that met the predefined inclusion/exclusion criteria. Study quality was assessed using the Mixed Methods Appraisal Tool. Data were analysed using thematic synthesis techniques. Twenty-nine studies were included. Six analytic themes were generated concerning caregivers' perceptual, emotional and behavioural responses: (a) fear of the negative health consequences of falls; (b) limited insights into factors contributing to falls; (c) varying expectations of managing fall risk; (d) multi-level efforts; (e) struggling with responsibilities; and (f) inaction and withdrawal. The findings about the outcomes and effects of caregivers' behaviours were synthesised into three analytic themes: (a) multi-faceted outcomes; (b) uncertain and inconsistent evidence; and (c) unclear associations. The study generated new insights in understanding caregivers' responses of fall risk among community-dwelling elders with dementia and identified significant gaps in examining the impact of caregivers' responses and what shapes these responses. Investment in understanding caregivers' perspectives will inform future interventions and policies to reduce negative outcomes for elders, caregivers and care systems.

Language: en

Keywords

prevention; dementia; systematic review; fall risk; caregiver; elders

A motor learning approach to reducing fall-related injuries

Hsieh KL, Sosnoff JJ. *J. Mot. Behav.* 2020; ePub(ePub): ePub.

(Copyright © 2020, Informa - Taylor and Francis Group)

DOI 10.1080/00222895.2020.1814195 **PMID** 32883190

Abstract

Falls are the leading cause of injury related death in older adults. In this piece, a motor learning lens is applied to falls, and falls are viewed as three interdependent phases: 1) destabilization, 2) descent, and 3) impact. This review examines how movements can be performed in the descent and impact phases to potentially reduce fall-related injuries. The evidence that movements performed during the descent and impact phases are voluntary motor skills that can be learned by older adults is reviewed. Data from young adult and older adult studies suggest that safe landing strategies can reduce impact force, are voluntary, and are learnable. In conclusion, safe landing strategies may provide a complimentary approach to reduce fall-related injuries.

Language: en

Keywords

falls; older adults; motor learning; motor skills; safe landing

A prospective comparison of frailty scores and fall prediction in acutely injured older adults

Tejiram S, Cartwright J, Taylor SL, Hatcher VH, Galet C, Skeete DA, Romanowski KS. J. Surg. Res. 2020; 257: 326-332.

(Copyright © 2020, Elsevier Publishing)

DOI 10.1016/j.jss.2020.08.007 PMID 32889331

Abstract

BACKGROUND: Elderly (65 and older) fall-related injuries are a significant cause of morbidity and mortality. Although frailty predicts poor outcomes in geriatric trauma, literature comparing frailty scoring systems remains limited. Herein, we evaluated which frailty scoring system best predicts falls over time in the elderly.

MATERIALS AND METHODS: Acute surgical patients 65 y and older were enrolled and prospectively observed. Demographics and frailty, assessed using the FRAIL Scale, Trauma Specific Frailty Index (TSFI), and Canadian Frailty Scale (CSHA-CFS), were collected at enrollment and 3 mo intervals following discharge for 1 y. Surveys queried the total number and timing of falls. Changes in frailty over time were assessed by logistic regression and area under the curve (AUC).

RESULTS: Fifty-eight patients were enrolled. FRAIL Scale and CSHA-CFS scores did not change over time, but TSFI scores did ($P \leq 0.01$). Worsening frailty was observed using TSFI at 6 ($P \leq 0.01$) and 12 mo ($P \leq 0.01$) relative to baseline. Mortality did not differ based on frailty using any frailty score. Increasing frailty scores and time postdischarge was associated with increased odds of a fall. AUC estimates with 95% CI were 0.72 [0.64, 0.80], 0.81 [0.74, 0.88], and 0.76 [0.68, 0.84] for the FRAIL Scale, TSFI, and CSHA-CFS, respectively.

CONCLUSIONS: The risk of falls postdischarge were associated with increased age, time postdischarge, and frailty in our population. No scale appeared to significantly outperform the other by AUC estimation. Further study on the longitudinal effects of frailty is warranted.

Language: en

Keywords

Trauma; Frailty; Elderly; Geriatric

Analysis of the nursing diagnosis risk for falls in older adults with hypertension

Ferreira GO, Moreira RP, Felício JF, Guerra FVG, Cavalcante TF, Rouberte ESC. *Int. J. Nurs. Knowl.* 2020; ePub(ePub): ePub.

(Copyright © 2020, John Wiley and Sons)

DOI 10.1111/2047-3095.12303 **PMID** 32909694

Abstract

OBJECTIVES: To analyze the Nursing Diagnosis risk for falls indicators in aged with hypertension and to verify the association of this diagnosis with sociodemographic variables and antihypertensive agents used by the aged.

METHODS: Analytical study, cross-sectional with quantitative approach. It was carried out in three health units in the city of Redenção, Ceará, Brazil, in the Brazilian Northeast. A total of 153 elderly subjects participated in the study. Statistical analysis was performed using Fisher's exact test, Pearson's chi-square test and multinomial logistic regression of variables that presented association with the Nursing Diagnosis.

RESULTS: Use of throw rugs, difficulties with gait, acute illness ($p = .004$), age greater than or equal to 65 years and impaired vision were associated with the Nursing Diagnosis risk for falls (00155). The work situation (retired) was the only sociodemographic variable that had a significant association with the risk for falls. Antihypertensive agents were not associated with the diagnosis.

CONCLUSION: Age greater than or equal to 65 years, use of throw rugs, difficulties with gait, acute illness, and impaired vision can be useful to infer the risk for falls and to confirm their presence in the aged with hypertension.

IMPLICATIONS FOR NURSING PRACTICE: This study provides data that can help nurses in the process of inferring the diagnosis risk for falls in the aged with hypertension, which streamlines the planning and implementation of preventive interventions.

Language: en

Keywords

aged; hypertension; nurse; Accidental fall; nursing diagnosis

Association between sarcopenia and fall characteristics in older adults with fragility hip fracture

Lim SK, Beom J, Lee SY, Kim BR, Chun SW, Lim JY, Shin Lee E. Injury 2020; ePub(ePub): ePub.

(Copyright © 2020, Elsevier Publishing)

DOI 10.1016/j.injury.2020.08.031 PMID 32900471

Abstract

INTRODUCTION: Sarcopenia is known as a risk factor for falls and hip fracture, and understanding fall characteristics is important for the fall-prevention programs. The aim of this study is to investigate whether sarcopenia is associated with fall characteristics in older adults with fragility hip fracture.

METHODS: A cross-sectional study was conducted in 147 patients over 65 years of age who had undergone a two-week postoperative rehabilitation for hip fracture. Fall characteristics included the fall type, direction and location. Fall types were categorized into two groups: fragile falls, leg weakness during walking, changing positions or standing; non-fragile falls, slipping or tripping while walking. Correlations between sarcopenia and fall characteristics, and of fall type with sarcopenia and fall characteristics were analyzed. Logistic regression analyzes were used to identify independent risk factors for fragile falls.

RESULTS: Sarcopenia was significantly correlated with fragile falls ($r = .222$, $p = .007$) and was more prevalent in the fragile fall group than the non-fragile fall group (53.5% vs. 32.9%). Sarcopenia (OR = 2.354, 95% CI 1.177-4.709, $p = .016$), moderate comorbidities (OR = 3.572, 95% CI 1.109-11.501, $p = .033$) and severe comorbidities (OR = 5.396, 95% CI 1.476-19.729, $p = .011$) by the Charlson Comorbidity Index were significant independent risk factors for fragile falls.

CONCLUSIONS: Sarcopenia was correlated with fragile falls; moreover, it was a risk factor for all of these fall types in older adults with fragility hip fracture. Based on these associations, targeted fall-prevention programs for older adults with sarcopenia, a high risk factor of falls and fractures, could help reduce the incidence rates of falls and fragility hip fracture.

Language: en

Keywords

Falls; Sarcopenia; Older adults; Fall characteristics; Hip fracture

Can the loco-check be used as a self-check tool for evaluating fall risk among older subjects? A prospective study

Shigematsu H, Wada M, Miyata S, Kisanuki O, Tatsumi H, Nishimori K, Hara R, Tanaka M, Kawasaki S, Suga Y, Yamamoto Y, Okuda A, Tanaka Y. *J. Orthop. Sci.* 2020; ePub(ePub): ePub.

(Copyright © 2020, Holtzbrinck Springer Nature Publishing Group)

DOI 10.1016/j.jos.2020.07.020 PMID 32900567

Abstract

BACKGROUND: Japan has now become a super-aged society. Notably, as the Japanese society ages, the prevalence of falls, which represent an aging-related problem, has increased. Locomotive syndrome (LS) is a condition of decreased mobility due to locomotive organ disorder. The loco-check is simple tool to detect early-stage LS. The loco-check comprises seven items relating to daily activities. Higher numbers of affirmative answers in the loco-check are negatively associated with physical functions. The purpose of this study was to examine the potential correlation between the number of affirmative answers given on the "loco-check" survey and the likelihood of experiencing at least one fall during the following one-year period.

METHODS: This prospective study included 154 cases (35 men, 119 women), all aged 65 years or older, answered the loco-check at baseline. As part of their normal treatment process, the participants made monthly visits to the out-patient department; thus, at each of these visits for the following 12 months a medical doctor interviewed each patient to determine whether they had experienced a fall during the previous month.

RESULTS: The mean age of the sample was 77.3 years, and the median number of affirmative answers given was 2.0. The number of affirmative answers significantly correlated with the cases which had a fall event within the follow-up period. Specifically, an increase in one "yes" answer on the loco-check increased the relative risk of fall (odds ratio: 1.32; 95% Confidence interval (CI): 1.03-1.70). In addition, the risk of fall was high in cases which showed the number of affirmative answers given on the loco-check ≥ 4 (odds ratio: 9.26; 95% CI: 1.05-81.7).

CONCLUSION: The number of affirmative answers given on the loco-check is positively correlated with a fall event within the following year.

Language: en

Diagnostic balance tests for assessing risk of falls and distinguishing older adult fallers and non-fallers: a systematic review with meta-analysis

Kozinc, Löffler S, Hofer C, Carraro U, Sarabon N. *Diagnostics* (Basel) 2020; 10(9).

(Copyright © 2020, MDPI: Multidisciplinary Digital Publishing Institute)

DOI 10.3390/diagnostics10090667 PMID 32899201

Abstract

Falls are a major cause of injury and morbidity in older adults. To reduce the incidence of falls, a systematic assessment of the risk of falling is of paramount importance. The purpose of this systematic review was to provide a comprehensive comparison of the diagnostic balance tests used to predict falls and for distinguishing older adults with and without a history of falls. We conducted a systematic review of the studies in which instrumented (force plate body sway assessment) or other non-instrumented balance tests were used. We analyzed the data from 19 prospective and 48 retrospective/case-control studies. Among the non-instrumented tests, the single-leg stance test appears to be the most promising for discrimination between fallers and non-fallers. In terms of body sway measures, the center-of-pressure area was most consistently associated with falls. No evidence was found for increased benefit of the body sway test when cognitive tasks were added, or the vision was eliminated. While our analyses are limited due to the unbalanced representation of different test and outcome measures across studies, we can recommend the single-leg test for the assessment of the risk of falling, and the measurements of body sway for a more comprehensive assessment.

Language: en

Keywords

falls; older adults; body sway; fall history; functional reach; Romberg test; single-leg test

Does yoga reduce the risk of falls in older people?

Tew GA, Ward L, Hewitt C, Tiedemann A. *BMJ* 2020; 370: m3246.

(Copyright © 2020, BMJ Publishing Group)

DOI 10.1136/bmj.m3246 PMID 32883704

Abstract

Nearly a third of people aged over 65 years and over half of people older than 80 have a fall at least once a year. Falls and fall related injuries can be life changing and may result in chronic disability, admission to assisted living, or death. A fall can also precipitate a fear of falling, which may lead to restriction of activity and hence physical deconditioning. This in turn increases the risk of future falls.

Clinical guidelines from several countries recommend multifactorial interventions for preventing falls in older people, with exercise as a key component. A recent Cochrane review (108 randomised controlled trials, 23 407 participants) concluded there is strong evidence that well designed exercise programmes reduce the number of falls by about a quarter among older people living in the community. Such programmes also reduce the number of people experiencing one or more falls. Exercise that mainly involved balance and functional training reduced falls.

Yoga is a mind-body practice that typically involves a combination of physical postures, breathing exercises, and concentration/meditation. Yoga has become a popular means of promoting physical and mental wellbeing and is shown to improve health related quality of life in older people. Evidence from observational studies suggests it is an acceptable and attractive form of exercise ...

Language: en

Effectiveness of exercise intervention on fall-related fractures in older adults: a systematic review and meta-analysis of randomized controlled trials

Wang Q, Jiang X, Shen Y, Yao P, Chen J, Zhou Y, Gu Y, Qian Z, Cao X. *BMC Geriatr.* 2020; 20(1): e322.

(Copyright © 2020, Holtzbrinck Springer Nature Publishing Group - BMC)

DOI 10.1186/s12877-020-01721-6 **PMID** 32887571

Abstract

BACKGROUND: Exercise intervention can significantly improve physical function and bone strength; however, the effect of exercise on fall-related fractures in older adults remains controversial. This study aimed to assess the effectiveness of exercise intervention on fall-related fractures in older adults by conducting a meta-analysis of randomized controlled trials (RCTs).

METHODS: PubMed, EMBASE, and Cochrane databases were systematically searched for RCTs through November 24, 2019 to investigate the effectiveness of exercise intervention on fall-related fractures in older adults. Pooled relative risk (RR) with 95% confidence interval (CI) was calculated using the random-effects model. Sensitivity, subgroup, and publication bias analyses were also conducted.

RESULTS: A total of 7704 older adults and 428 fall-related fracture events from 20 RCTs were selected for the final meta-analysis. The follow-up duration across included trials ranged from 6.0 months to 7.0 years. The pooled RR suggested that exercise intervention was associated with a reduced fall-related fracture risk in older adults (RR: 0.74; 95% CI: 0.59-0.92; $P = 0.007$; $I^2 = 12.6\%$). The pooled conclusion was robust and not affected by any individual trial. Subgroup analysis revealed that the significant effect of exercise intervention on fall-related fractures was mainly detected when the study reported results from both male and female subjects, when it did not report the baseline body mass index, when individuals received both home- and center-based interventions, when the follow-up duration was > 1.0 year, and when it was a high-quality study.

CONCLUSIONS: Regular exercise intervention could prevent fall-related fractures in older adults. Further large-scale RCTs should be conducted to assess the effectiveness of different exercise programs on fall-related fractures at various sites.

Language: en

Keywords

Exercise; Meta-analysis; Older adults; Fracture risk

Evaluating a two-level vs. three-level fall risk screening algorithm for predicting falls among older adults

Mielenz TJ, Kannoth S, Jia H, Pullyblank K, Sorensen J, Estabrooks P, Stevens JA, Strogatz D. *Front. Public Health* 2020; 8: e373.

(Copyright © 2020, Frontiers Editorial Office)

DOI 10.3389/fpubh.2020.00373 PMID 32903603

Abstract

Background and Objectives: Falls account for the highest proportion of preventable injury among older adults. Thus, the United States' Centers for Disease Control and Prevention (CDC) developed the Stopping Elderly Accidents, Deaths, and Injuries (STEADI) algorithm to screen for fall risk. We referred to our STEADI algorithm adaptation as "Quick-STEADI" and compared the predictive abilities of the three-level (low, moderate, and high risk) and two-level (at-risk and not at-risk) Quick-STEADI algorithms. We additionally assessed the qualitative implementation of the Quick-STEADI algorithm in clinical settings. **Research Design and Methods:** We followed a prospective cohort (N = 200) of adults (65+ years) in the Bassett Healthcare Network (Cooperstown, NY) for 6 months in 2019. We conducted a generalized linear mixed model, adjusting for sociodemographic variables, to determine how baseline fall risk predicted subsequent daily falls. We plotted receiver operating characteristic (ROC) curves and measured the area under the curve (AUC) to determine the predictive ability of the Quick-STEADI algorithm. We identified a participant sample (N = 8) to gauge the experience of the screening process and a screener sample (N = 3) to evaluate the screening implementation.

RESULTS: For the three-level Quick-STEADI algorithm, participants at low and moderate risk for falls had a reduced likelihood of daily falls compared to those at high risk (-1.09, p = 0.04; -0.99, p = 0.04). For the two-level Quick-STEADI algorithm, participants not at risk for falls were not associated with a reduced likelihood of daily falls compared to those at risk (-0.89, p = 0.13). The discriminatory ability of the three-level and two-level Quick-STEADI algorithm demonstrated similar predictability of daily falls, based on AUC (0.653; 0.6570). Furthermore, participants and screeners found the Quick-STEADI algorithm to be efficient and viable.

DISCUSSION and Implications: The Quick-STEADI is a suitable, alternative fall risk screening algorithm. Qualitative assessments of the Quick-STEADI algorithm demonstrated feasibility in integrating a falls screening program in a clinical setting. Future research should address the validation and the implementation of the Quick-STEADI algorithm in community health settings to determine if falls screening and prevention can be streamlined in these settings. This may increase engagement in fall prevention programs and decrease overall fall risk among older adults.

Language: en

Keywords

injury prevention; injury; older adults; falls prevention; falls risk; falls screening

Fall-related efficacy is associated with the progression of frailty in community-dwelling older people

Kamide N, Inoue N, Sakamoto M, Sato H, Shiba Y. *Nippon Ronen Igakkai Zasshi* 2020; 57(3): 308-315.

(Copyright © 2020, Japan Geriatrics Society)

DOI 10.3143/geriatrics.57.308 PMID 32893213

Abstract

AIM: The goal of this study was to verify the association between frailty and fall-related efficacy in community-dwelling older people by performing a cross-sectional and longitudinal data analysis.

METHODS: In this study, 339 people aged 65 years and older participated in a baseline survey. Furthermore, people who were not identified as frail in the baseline survey participated in a follow-up survey 6 months later. Frailty was assessed in the baseline and follow-up surveys after 6 months using the Kihon checklist. Fall-related efficacy was assessed at baseline using the short Falls Efficacy Scale International (short FES-I). Potential confounding factors, such as the lower limb functions and psychological functions, were also investigated at baseline. The association between frailty and short FES-I was analyzed using a logistic regression analysis adjusted for potential confounding factors.

RESULTS: At baseline and the follow-up survey, 10.1% and 6.3% of the participants were judged to demonstrate frailty, respectively. The results of the baseline and follow-up data analysis showed that even if potential confounding factors were adjusted for, the short FES-I was significantly associated with frailty. Furthermore, the ability to distinguish the onset of frailty using the short FES-I was analyzed using a receiver operating characteristic curve, and the area under curve, sensitivity, and specificity values were 0.78, 0.92 and 0.56, respectively.

CONCLUSIONS: A clear association between frailty and fall-related efficacy was thus observed, as indicated in the cross-sectional and longitudinal data analysis. Furthermore, based on the results of the longitudinal data analysis, the short FES-I was found to be able to predict the progression of frailty and it can thus be a useful screening tool for assessing frailty.

Language: ja

Keywords

Longitudinal study; Frailty; Cross-sectional study; Community-dwelling older people; Fall-related efficacy

Frailty and risk of re-hospitalisation and mortality for aged care residents following a fall injury hospitalisation

Mitchell R, Ting HP, Draper B, Close J, Harvey L, Brodaty H, Driscoll TR, Braithwaite J. *Australas. J. Ageing* 2020; ePub(ePub): ePub.

(Copyright © 2020, Australian Council on the Ageing, Publisher John Wiley and Sons)

DOI 10.1111/ajag.12847 PMID 32881277

Abstract

OBJECTIVES: To examine the role of frailty in risk of re-hospitalisation and mortality for aged care residents following a fall injury hospitalisation.

METHODS: Retrospective analysis of linked hospitalisation and aged care data of adults aged ≥ 65 years residing in aged care. A semi-competing risk analysis examined risk of hospital readmission.

RESULTS: Residents who had intermediate or high frailty, who were aged 70-79 or 80-89 years, who had 1-2 or ≥ 3 comorbidities, sustained a hip fracture, and who had either low, moderate or high complex health-care requirements had a higher risk of being readmitted to hospital. Frailty was not associated with mortality for those with no hospital readmission or mortality after readmission.

CONCLUSIONS: Frailty is an important prognostic factor associated with readmission for residents of aged care hospitalised for a fall injury. Frailty screening could assist to identify people at a high risk of re-hospitalisation following a fall injury.

Language: en

Keywords

aged care; comorbidities; fall injury; frailty

Increased risk of falls, fall-related injuries and fractures in people with type 1 and type 2 diabetes - a nationwide cohort study

Rasmussen NH, Dal J, den Bergh JV, de Vries F, Jensen MH, Vestergaard P. *Curr. Drug Saf.* 2020; ePub(ePub): ePub.

(Copyright © 2020, Bentham Science Publishers)

DOI 10.2174/1574886315666200908110058 PMID 32900349

Abstract

INTRODUCTION: People with diabetes could have an increased risk of falls as they show more complications, morbidity and use of medication compared to the general population. This study aimed to estimate the risk of falls and to identify risk factors associated with falls in people with diabetes. The second aim was to estimate fall-related injuries including lesions and fractures including their anatomic localization in people with diabetes compared with the general population.

Methods: From the Danish National Patient Register we identified people with Type 1 Diabetes (T1D) (n=12,896), Type 2 Diabetes (T2D) (n=407,009). The cohort was divided into two groups with respective control groups matched on age and sex (1:1). All episodes of people hospitalized with a first fall from 1996 to 2017 were analyzed using a Cox proportional-hazards model. Risk factors such as age, sex, diabetic complications, a history of alcohol abuse and the use of medication were included in an adjusted analysis. The incidence rate and rate ratio of falls and the anatomic localization of fall-related injuries as lesions and fractures were identified.

Results and Discussion: The cumulative incidence, of falls requiring hospital treatment, was 13.3% in T1D, 11.9% in T2D. In the adjusted analysis T1D and T2D were associated with a higher risk of falls [T1D, Hazard Ratio (HR): 1.33 (95% CI: 1.25 - 1.43), T2D, HR: 1.19 (95% CI: 1.16 - 1.22), respectively]. Women [group 1, HR 1.21 (CI:95%:1.13 - 1.29), group 2, HR 1.61 (CI:95%:1.58-1.64)], aged >65 years [groups 1, HR 1.52 (CI:95%:1.39 - 1.61), group 2, HR 1.32 (CI:95%:1.58-1.64)], use of selective serotonin receptor inhibitors (SSRI) [group 1, HR 1.35 (CI:95%:1.1.30 - 1.40), group 2, HR 1.32 (CI:95%:1.27-1.38)], opioids [group 1, HR 1.15 (CI:95%:1.12 - 1.19), group 2, HR 1.09 (CI:95%:1.05-1.12)] and a history of alcohol abuse [group 1, HR 1.77 (CI:95%:1.17 - 2.15), group 2, HR 1.88 (CI:95%:1.65-2.15)] were significantly associated with an increased risk of falls in both groups. The incidence rate ratios (IRR) of fall-related injuries as hip, pelvis/lower-back and skull/facial fractures were higher in people with T2D than controls [IRR 1.08 (CI:95%:1.02-1.15), IRR 1.21 (CI:95%: 1.12-1.48) and IRR 1.11 (CI:95%:1.02-1.21)].

Conclusion: People with diabetes have an increased risk of first fall and a higher incidence of fall-related injuries including fractures. Advanced aging and sex are non-modifiable risk factors, whereas diabetes, the use of SSRIs and opioids and alcohol abuse could be potentially modifiable risk factors for falls. Gaining information on risk factors for falls could guide the management of diabetes treatment i.e. choice of drugs, which enables us to improve treatment particularly in people with a high risk of falls and fractures associated with high mortality.

Language: en

Keywords

falls; fall-related injuries; fractures; lesions; Type 1 diabetes; type 2 diabetes

Predicting short-term risk of falls in a high-risk group with dementia

Mehdizadeh S, Sabo A, Ng KD, Mansfield A, Flint AJ, Taati B, Iaboni A. *J. Am. Med. Dir. Assoc.* 2020; ePub(ePub): ePub.

(Copyright © 2020, Lippincott Williams and Wilkins)

DOI 10.1016/j.jamda.2020.07.030 PMID 32900610

Abstract

OBJECTIVES: To develop a prognostic model to predict the probability of a short-term fall (within the next 7 to 30 days) in older adults with dementia.

DESIGN: Prospective observational study.

SETTING AND PARTICIPANTS: Fifty-one individuals with dementia at high risk of falls from a specialized dementia inpatient unit.

METHODS: Clinical and demographic measures were collected and a vision-based markerless motion capture was used to record the natural gait of participants over a 2-week baseline. Falls were tracked throughout the length of stay. Cox proportional hazard regression analysis was used to build a prognostic model to determine fall-free survival probabilities at 7 days and at 30 days. The model's discriminative ability was also internally validated.

RESULTS: Fall history and gait stability (estimated margin of stability) were statistically significant predictors of time to fall and included in the final prognostic model. The model's predicted survival probabilities were close to observed values at both 7 and 30 days. The area under the receiver operating curve was 0.80 at 7 days, and 0.67 at 30 days and the model had a discrimination performance (the Harrel concordance index) of 0.71.

CONCLUSIONS AND IMPLICATIONS: Our short-term falls risk model had fair to good predictive and discrimination ability. Gait stability and recent fall history predicted an imminent fall in our population. This provides some preliminary evidence that the degree of gait instability may be measureable in natural everyday gait to allow dynamic falls risk monitoring. External validation of the model using a separate data set is needed to evaluate model's predictive performance.

Language: en

Keywords

accidental falls; Walking; computer vision; survival analysis; gait stability

Recipient and instructor perspectives of an adapted exercise-based fall prevention programme for adults aged 50+ years with vision impairment: a qualitative study nested within a randomised controlled trial

Dillon L, Clemson L, Nguyen H, Jakobsen KB, Martin J, Tinsley F, Keay L. *BMJ Open* 2020; 10(9): e038386.

(Copyright © 2020, BMJ Publishing Group)

DOI 10.1136/bmjopen-2020-038386 PMID 32883736

Abstract

OBJECTIVE: Older adults with vision impairment currently have no access to tailored fall prevention programmes. Therefore, the purpose of this study, nested within an ongoing randomised controlled trial (RCT), is to document the adaptation of an existing fall prevention programme and investigate the perspectives of instructors involved in delivery and the older adults with vision impairment receiving the programme (recipients).

DESIGN: We documented programme adaptations and training requirements, and conducted semistructured, individual interviews with both the instructors and the recipients of the programme from 2017 to 2019. The content of each interview was analysed using behaviour change theory through deductive qualitative analysis.

SETTING: New South Wales and Australian Capital Territory, Australia.

PARTICIPANTS: The 11 trained instructors interviewed were employees of a vision rehabilitation organisation and had delivered at least one programme session as part of the RCT. The 154 recipients interviewed were community-dwelling adults aged ≥ 50 years with vision impairment and no diagnosis of dementia, and had completed their participation in the programme as part of the intervention group of the RCT.

RESULTS: Six key themes were identified relating to recipient (delivery aptitude, social norms, habit formation) and instructor (individualised adaptation, complimentary to scope of practice, challenges to delivery) perspectives. With initial training, instructors required minimal ongoing support to deliver the programme and made dynamic adaptations to suit the individual circumstances of each recipient, but cited challenges delivering the number of programme activities required. Recipient perspectives varied; however, most appreciated the delivery of the programme by instructors who understood the impact of vision impairment.

CONCLUSIONS AND IMPLICATIONS: This novel qualitative study demonstrates that the adapted programme, delivered by instructors, who already have expertise delivering individualised programmes to older people with vision impairment, may fill the gap for a fall prevention programme in this population.

TRIAL REGISTRATION NUMBER: ACTRN12616001186448.

Language: en

Keywords

epidemiology; preventive medicine; qualitative research; public health; geriatric medicine; ophthalmology

Relating Parkinson freezing and balance domains: a structural equation modeling approach

Peterson DS, Van Liew C, Stuart S, Carlson-Kuhta P, Horak FB, Mancini M. Parkinsonism Relat. Disord. 2020; 79: 73-78.

(Copyright © 2020, Elsevier Publishing)

DOI 10.1016/j.parkreldis.2020.08.027 PMID 32889503

Abstract

BACKGROUND: People with PD who exhibit freezing of gait (FOG) also exhibit poor balance compared to those who do not freeze. However, balance is a broad construct that can be subdivided into subdomains that include dynamic balance (gait), anticipatory postural adjustments (APAs) & gait initiation, postural sway in stance, and automatic postural responses (e.g., reactive stepping). Few studies have provided a robust investigation on how each of these domains is impacted by FOG, and no studies have compared balance across groups while rigorously controlling for disease severity.

METHODS: Structural equation modeling was used to evaluate the relationships between FOG and balance domains constructed as latent variables and controlling for disease severity. Domains included: dynamic balance (gait), APAs, postural sway, and reactive stepping. Models were run relating domains to both the presence and severity of FOG.

RESULTS: Latent variables reflecting domains of Gait and APAs, but not postural sway or reactive stepping, were significantly related to the severity of FOG. Models for presence of FOG showed the same results, as Gait and APAs, but not postural sway or reactive stepping, were related to presence of FOG.

CONCLUSION: These results are consistent with hypotheses that balance deficits in people with PD who freeze are most pronounced in gait and anticipatory postural adjustments. Reactive stepping and postural sway domains are less effected in PD patients who freeze compared to those who do not. These findings suggest that rehabilitative strategies focused on gait and APAs may be most effective for people with PD who freeze.

Language: en

Keywords

Gait; Freezing of gait; Parkinson's disease; Postural instability; Posture

The effect of Tai Chi exercise on postural time-to-contact in manual fitting task among older adults

Pan J, Liu C, Li L, Zhang S. *Gait Posture* 2020; 82: 61-67.

(Copyright © 2020, Elsevier Publishing)

DOI 10.1016/j.gaitpost.2020.08.124 PMID 32896796

Abstract

BACKGROUND: A fall would impact elderly population's quality of life, which associate with diminished physical and psychological function, and can even be life-threatening. Tai Chi has been used to improve age-related postural instability in locomotion. However, it does not fully explain the mechanism of a lower risk of falling among the Tai Chi population compared to other healthy older adults.

RESEARCH QUESTION: The maintenance of postural stability is more complicated than minimizing postural movements. Postural time to contact is an important temporal measure of postural stability under fitting tasks, which might further clarify the benefits of long term Tai Chi exercise.

METHODS: Participants were required to fit a block (90 × 90 mm) through two different openings (130 × 130 mm and 100 × 100 mm) at two different distances (arm's length or 130 % of arm's length). Kistler forceplate and Vicon system were used to collect center of pressure and kinematic data, respectively. Postural time to contact was used to assess instantaneous perturbation for postural system.

RESULTS: Tai Chi group exhibited significant longer postural time to contact in quiet standing and shorter postural time to contact in fitting tasks, expecting for close-small condition, compared to the brisk walking and sedentary groups ($p < .05$). In addition, both large and small opening condition, Tai Chi group showed a shorter postural time to contact than brisk walking and sedentary groups ($p < .0001$).

SIGNIFICANCE: Long term Tai Chi exercise would promote the regulation of posture and decrease the postural constrain to increase the overall stability when performing fitting tasks. Therefore, Tai Chi exercise can be considered as a feasible method to enhance postural control and stability in older adult.

Language: en

Keywords

Tai Chi; Fitting task; Postural stability; Time to contact

Impact of societal restrictions and lockdown on trauma admissions during the COVID-19 pandemic: a single centre cross-sectional observational study

Med SJB, Mwagiru D, Thakur I, Moghadam A, Oh T, Hsu J. ANZ J. Surg. 2020; ePub(ePub): ePub.

(Copyright © 2020, Royal Australasian College of Surgeons, Publisher John Wiley and Sons)

DOI 10.1111/ans.16307 **PMID** 32894624

Abstract

BACKGROUND: Societal restrictions and lockdown during the COVID-19 pandemic have had a significant impact on volume and nature of trauma admissions. We assessed the impact of COVID-19 related societal restrictions and lockdown on trauma admissions to single Level 1 Trauma Center in Westmead, Australia. We hypothesized that the number of trauma admissions would decrease and number of admissions due to self-harm and assault (specifically domestic violence) would increase.

METHODS: Data was collected from the prospectively maintained Westmead Hospital Trauma Registry. The primary outcome compared the average number of trauma admissions during March and April during years 2016 to 2020. Analysis of Variance (ANOVA) was used to analyze means. Pairwise differences among group means were evaluated with Tukey's Honestly Significant Difference test. Secondary outcomes compared were in-hospital interventions and patient outcomes.

RESULTS: There was a 23-34% decrease (p value 0.018) in the mean monthly average trauma admissions during March/April 2020 compared with previous years 2016-2019. Additionally, there was a 40-52% decrease (p value 0.025) and 13-29% decrease (p value 0.020) in admissions due to road traffic collisions and falls respectively.

CONCLUSIONS: There was a significant decrease in the overall number of trauma related admissions during the COVID-19 related period of societal restrictions and lockdown. This was due to a decrease in minor traumas, falls and road traffic collisions. There was no difference in the number of admissions secondary to major traumas, self-harm or assault. This article is protected by copyright. All rights reserved.

Language: en

Keywords

Trauma; COVID-19; SARS-CoV-2; Admissions

Prediction of falls in acute care using the Morse Fall Risk Scale

Jewell VD, Capistran K, Flecky K, Qi Y, Fellman S. *Occup. Ther. Health Care* 2020; ePub(ePub): ePub.

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DOI 10.1080/07380577.2020.1815928 PMID 32907452

Abstract

The high number of patient falls occurring within acute care hospitals throughout the United States has led to increased patient impairment and contributed to rising healthcare costs. The Morse Fall Risk Scale is a commonly used assessment tool for prediction of a patient's potential for experiencing a fall while in a healthcare facility. This retrospective study reviewed the use of the Morse Fall Risk Scale in a 300+ bed acute care hospital setting to determine adequacy for patient fall predictions over a four-month period. Use of multivariate regressions and Chi-Square test statistics revealed the Morse Fall Risk Scale was a predictor of patients' fall risk in this setting with other significant predictors of fall risk potential including male gender and diagnosis (neurologic, cardiac, general medical/surgical conditions). Patients experiencing a fall had a statistically significant longer hospital stay. Occupational therapy practitioners play an important role on the interdisciplinary team by providing a comprehensive fall assessment, developing fall prevention programs, and providing discharge recommendations.

Language: en

Keywords

falls; fall risk; hospital; Acute Care; Morse Fall Risk Scale

Thoracolumbar spinal fractures associated with ground level falls in the elderly: an analysis of 254,486 emergency department visits

Grabel ZJ, Lunati MP, Segal DN, Kukowski NR, Yoon ST, Jain A. *J. Clin. Orthop. Trauma* 2020; 11(5): 916-920.

(Copyright © 2020, Elsevier Publishing)

DOI 10.1016/j.jcot.2020.04.009 **PMID** 32879581

Abstract

Study design: retrospective.

Objectives: To investigate the epidemiology of elderly (age ≥ 65 years) patients who presented to the emergency department (ED) in the United States with thoracolumbar (TL) fractures after ground level falls.

Methods: Using the National Emergency Department Sample database, we queried all ED visits in the United States from 2009 through 2012 of elderly patients who presented after ground level falls. We identified patients who sustained TL fractures with and without neurological injury. Resulting data was used to analyze the fracture prevalence, ED and patient characteristics, associated injuries, treatment patterns, inpatient mortality, and hospital charges.

Results: Of the 6,654,526 ED visits in the elderly for ground level falls, 254,486 (3.8%) were associated with a diagnosis of TL fracture. 39% patients had multiple injuries, and upper extremity fractures were the most common associated injuries. Overall, 55.6% were admitted to the hospital. Of those, 77.7% were treated non-operatively, 20.4% were treated with cement augmentation alone, 1.5% were treated with spinal fusion surgery, and 0.4% were treated with spinal decompression alone. The overall rate of inpatient mortality was 2.14%.

Conclusions: This investigation evaluated the epidemiology of elderly patients who presented to the ED in the United States with TL fractures after ground level falls. The study demonstrated a rather high incidence of TL fractures in this patient cohort. As a result, it is important for ED physicians and orthopaedic surgeons to be highly suspicious of TL fractures in elderly patients who sustain low energy trauma. With the continued aging of the population and rising health care costs, future effort ought to focus on fall prevention and increased surveillance for TL injuries in the elderly.

Language: en

Keywords

Mortality; Elderly; Ground level falls; Thoracolumbar fractures