Safety Literature 13th February 2022

A comparative analysis of selective serotonin reuptake inhibitors and fall risk in older adults

Haddad YK, Kakara R, Marcum ZA. J. Am. Geriatr. Soc. 2022; ePub(ePub): ePub.

DOI 10.1111/jgs.17686 **PMID** 35132611

Abstract

BACKGROUND: One in five older adults (age 65+) uses an antidepressant medication. However, little is known about how fall risk differs between commonly prescribed medications. We examine the comparative association between individual selective serotonin reuptake inhibitors (SSRI) and self-reported falls in older adults.

METHODS: We used data from 2010-2017 Medicare Current Beneficiary Surveys, a nationally representative survey of Medicare beneficiaries. We included participants from three different panels surveyed over two successive years. Participants were limited to community-dwelling Medicare beneficiaries 65+, enrolled in Medicare Part D, and taking an SSRI (n = 1023) during baseline years. Participants were asked about demographic and health characteristics, medication use (including dose, frequency, duration of use) and self-reported falls as any fall or recurrent falls in the past year. We compared individual SSRI (citalopram or escitalopram vs sertraline) use by the average monthly total standardized daily dose (TSDD) and self-reported falling, controlling for potential confounders. Descriptive analysis and multivariable logistic regressions were conducted using SAS-callable SUDAAN.

RESULTS: Citalopram/escitalopram (n = 460 users; 45.0% of all SSRI users) and sertraline (n = 294 users; 28.7% of all SSRI users) were the most commonly prescribed SSRIs. Overall, 36.3% of citalopram/escitalopram users and 39.4% of sertraline users reported a fall in the year following medication use. There were no statistically significant differences between sertraline and citalopram/escitalopram users of either low or medium TSDD levels in the risk of self-reported any or recurrent falls. However, users of high TSDD of sertraline (>75 mg) had a lower risk of recurrent falls compared to high TSDD citalopram (>30 mg) or escitalopram (>15 mg) daily for 30 days.

CONCLUSION: These findings suggest a potential comparative safety benefit of sertraline compared to citalopram/escitalopram at high doses related to recurrent falls. Additional comparative studies of individual antidepressants may better inform fall risk management and prescribing for older adults.

Language: en

Keywords

older adults; falls; antidepressants; SSRIs

A multidomain decision support tool to prevent falls in older people: the FinCH cluster RCT

Logan PA, Horne JC, Allen F, Armstrong SJ, Clark AB, Conroy S, Darby J, Fox C, Gladman JR, Godfrey M, Gordon AL, Irvine L, Leighton P, McCartney K, Mountain G, Robertson K, Robinson K, Sach TH, Stirling S, Wilson EC, Sims EJ. Health Technol. Assess. 2022; 26(9): 1-136.

DOI 10.3310/CWIB0236 **PMID** 35125131

Abstract

BACKGROUND: Falls in care home residents are common, unpleasant, costly and difficult to prevent.

OBJECTIVES: The objectives were to evaluate the clinical effectiveness and cost-effectiveness of the Guide to Action for falls prevention in Care Homes (GtACH) programme.

DESIGN: A multicentre, cluster, parallel, 1 : 1 randomised controlled trial with embedded process evaluation and economic evaluation. Care homes were randomised on a 1 : 1 basis to the GtACH programme or usual care using a secure web-based randomisation service. Research assistants, participating residents and staff informants were blind to allocation at recruitment; research assistants were blind to allocation at follow-up. NHS Digital data were extracted blindly. SETTING: Older people's care homes from 10 UK sites. PARTICIPANTS: Older care home residents. INTERVENTION: The GtACH programme, which includes care home staff training, systematic use of a multidomain decision support tool and implementation of falls prevention actions, compared to usual falls prevention care. OUTCOMES: The primary trial outcome was the rate of falls per participating resident occurring during the 90-day period between 91 and 180 days post randomisation. The primary outcome for the cost-effectiveness analysis was the cost per fall averted, and the primary outcome for the cost-utility analysis was the incremental cost per quality adjusted life-year. Secondary outcomes included the rate of falls over days 0-90 and 181-360 post randomisation, activity levels, dependency and fractures. The number of falls per resident was compared between arms using a negative binomial regression model (generalised estimating equation).

RESULTS: A total of 84 care homes were randomised: 39 to the GtACH arm and 45 to the control arm. A total of 1657 residents consented and provided baseline measures (mean age 85 years, 32% men). GtACH programme training was delivered to 1051 staff (71% of eligible staff) over 146 group sessions. Primary outcome data were available for 630 GtACH participants and 712 control participants. The primary outcome result showed an unadjusted incidence rate ratio of 0.57 (95% CI 0.45 to 0.71; $p < 0.01$) in favour of the GtACH programme. Falls rates were lower in the GtACH arm in the period 0-90 days. There were no other differences between arms in the secondary outcomes. Care home staff valued the

training, systematic strategies and specialist peer support, but the incorporation of the GtACH programme documentation into routine care home practice was limited. No adverse events were recorded. The incremental cost was £20,889.42 per Dementia Specific Quality of Life-based quality-adjusted life-year and £4543.69 per quality-adjusted life-year based on the EuroQol-5 dimensions, five-level version. The mean number of falls was 1.889 (standard deviation 3.662) in the GtACH arm and 2.747 (standard deviation 7.414) in the control arm. Therefore, 0.858 falls were averted. The base-case incremental cost per fall averted was £190.62.

CONCLUSION: The GtACH programme significantly reduced the falls rate in the study care homes without restricting residents' activity levels or increasing their dependency, and was cost-effective at current thresholds in the NHS. FUTURE WORK: Future work should include a broad implementation programme, focusing on scale and sustainability of the GtACH programme. LIMITATIONS: A key limitation was the fact that care home staff were not blinded, although risk was small because of the UK statutory requirement to record falls in care homes. TRIAL REGISTRATION: This trial is registered as ISRCTN34353836. FUNDING: This project was funded by the National Institute for Health Research (NIHR) Health Technology Assessment programme and will be published in full in Health Technology Assessment; Vol. 26, No. 9. See the NIHR Journals Library website for further project information.

Language: en

Keywords

CARE HOMES; FALLS PREVENTION; FRACTURE; INJURY; OLDER PEOPLE; REHABILITATION

Association between fall risk and assessments of single-task and dual-task walking among community-dwelling individuals with chronic stroke: a prospective cohort study

Tsang CSL, Miller T, Pang MYC. Gait Posture 2022; 93: 113-118.

DOI 10.1016/j.gaitpost.2022.01.019 **PMID** 35134650

Abstract

BACKGROUND: Falling and fall-related injuries are common among community-dwelling individuals with chronic stroke. Falls often occur during dual-task walking scenarios. Accurate fall prediction is critical for formulating effective fall prevention strategies. RESEARCH QUESTIONS: Can dual-task walking tests and corresponding single-task tests predict falls among individuals with chronic stroke? Are dual-task walking tests involving visuospatial cognition more effective in predicting falls than those involving other cognitive domains? METHODS: Ninety-three individuals with stroke (age: 62.4 ± 6.7 years; stroke duration: 5.6 ± 4.5 years) participated in this prospective cohort study. Two mobility tasks (level-ground walking and obstacle-crossing) were performed with and without two cognitive tasks (auditory clock test and auditory Stroop test). Demographic information and clinical measures of depression, motor function, walking speed and balance were collected. Monthly telephone interviews were conducted to collect data on fall incidence, related circumstances and injuries incurred during a 12-month follow-up period. Multivariate logistic regression analysis was performed to identify predictive factors associated with future risk of falls.

RESULTS: Thirty-six participants (39%) reported one or more falls during the follow-up period. The regression model including reaction time during the auditory clock task performance while negotiating obstacles correctly classified the fall status of 80% of the participants (72% future fallers and 84% non-fallers). Performance did not differ between fallers and non-fallers on any other measures tested. SIGNIFICANCE: Dual-task assessment combining an auditory clock task with an obstacle-crossing task has potential clinical utility for identifying future fall risk among people with chronic stroke.

Language: en

Keywords

Walking; Fall; Cognitive-motor; Dual-task; Interference; Stroke

Contribution of arm movements to balance recovery after tripping in older adults

Bruijn SM, Sloot LH, Kingma I, Pijnappels M. J. Biomech. 2022; 133: e110981.

DOI 10.1016/j.jbiomech.2022.110981 **PMID** 35123206

Abstract

Falls are common in daily life, often caused by trips and slips and, particularly in older adults, with serious consequences. Although arm movements play an important role in balance control, there is limited research into the role of arm movements during balance recovery after tripping in older adults. We investigated how older adults use their arms to recover from a trip and the difference in the effects of arm movements between fallers (n = 5) and non-fallers (n = 11). Sixteen older males and females (69.7 ± 2.3 years) walked along a walkway and were occasionally tripped over suddenly appearing obstacles. We analysed the first trip using a biomechanical model based on full-body kinematics and force-plate data to calculate whole body orientation during the trip and recovery phase. With this model, we simulated the effects of arm movements at foot-obstacle impact and during trip recovery on body orientation. Apart from an increase in sagittal plane forward body rotation at touchdown in fallers, we found no significant differences between fallers and non-fallers in the effects of arm movements on trip recovery. Like earlier studies in young adults, we found that arm movements during the recovery phase had most favourable effects in the transverse plane: by delaying the transfer of angular momentum of the arms to the body, older adults rotated the tripped side more forward thereby allowing for a larger recovery step. Older adults that are prone to falling might improve their balance recovery after tripping by learning to prolong ongoing arm movements.

Language: en

Keywords

Elderly; Perturbation; Accidental falls; Angular momentum; Arm swing; Gait stability; Upper extremity

Effect of fall direction on the lower hip fracture risk in athletes with different loading histories: a finite element modeling study in multiple sideways fall configurations

Abe S, Kouhia R, Nikander R, Narra N, Hyttinen J, Sievänen H. Bone 2022; ePub(ePub): ePub.

DOI 10.1016/j.bone.2022.116351 **PMID** 35131487

Abstract

Physical loading makes bones stronger through structural adaptation. Finding effective modes of exercise to improve proximal femur strength has the potential to decrease hip fracture risk. Previous proximal femur finite element (FE) modeling studies have indicated that the loading history comprising impact exercises is associated with substantially higher fracture load. However, those results were limited only to one specified fall direction. It remains thus unclear whether exercise-induced higher fracture load depends on the fall direction. To address this, using magnetic resonance images of proximal femora from 91 female athletes (mean age 24.7 years with >8 years competitive career) and their 20 non-athletic but physically active controls (mean age 23.7 years), proximal femur FE models were created in 12 different sideways fall configurations. The athletes were divided into five groups by typical loading patterns of their sports: high-impact (H-I: 9 triple- and 10 high-jumpers), odd-impact (O-I: 9 soccer and 10 squash players), high-magnitude (H-M: 17 powerlifters), repetitive-impact (R-I: 18 endurance runners), and repetitive non-impact (R-NI: 18 swimmers). Compared to the controls, the FE models showed that the HI and R-I groups had significantly ($p < 0.05$) higher fracture loads, 11-17% and 22-28% respectively, in all fall directions while the OI group had significantly 10-11% higher fracture loads in four fall directions. The H-M and R-NI groups did not show significant benefit in any direction. Also, the analyses of the minimum fall strength (MFS) among these multiple fall configurations confirmed significantly 15%, 11%, and 14% higher MFSs in these impact groups, respectively, compared to the controls. These results suggest that the lower hip fracture risk indicated by higher fracture loads in athletes engaged in high impact or repetitive impact sports is independent of fall direction whereas the lower fracture risk attributed to odd-impact exercise is more modest and specific to the fall direction. Moreover, in concordance with the literature, the present study also confirmed that the fracture risk increases if the impact is imposed on the more posterolateral aspect of the hip. The present results highlight the importance of engaging in the impact exercises to prevent hip fractures and call for retrospective studies to investigate whether specific impact exercise history in adolescence and young adulthood is also associated with lower incidence of hip fractures in later life.

Language: en

Keywords

Exercise; Fall; Hip fracture; Bone strength; Finite element modeling; Fracture prevention

Effect of osteoporosis-related reduction in the mechanical properties of bone on the acetabular fracture during a sideways fall: a parametric finite element approach

Khakpour S, Esrafilian A, Tanska P, Mononen ME, Korhonen RK, Jämsä T. PLoS One 2022; 17(2): e0263458.

DOI 10.1371/journal.pone.0263458 **PMID** 35130332

Abstract

PURPOSE: The incidence of acetabular fractures due to low-energy falls is increasing among the geriatric population. Studies have shown that several biomechanical factors such as body configuration, impact velocity, and trochanteric soft-tissue thickness contribute to the severity and type of acetabular fracture. The effect of reduction in apparent density and elastic modulus of bone as well as other bone mechanical properties due to osteoporosis on low-energy acetabular fractures has not been investigated.

METHODS: The current comprehensive finite element study aimed to study the effect of reduction in bone mechanical properties (trabecular, cortical, and trabecular + cortical) on the risk and type of acetabular fracture. Also, the effect of reduction in the mechanical properties of bone on the load-transferring mechanism within the pelvic girdle was examined.

RESULTS: We observed that while the reduction in the mechanical properties of trabecular bone considerably affects the severity and area of trabecular bone failure, reduction in mechanical properties of cortical bone moderately influences both cortical and trabecular bone failure. The results also indicated that by reducing bone mechanical properties, the type of acetabular fracture turns from elementary to associated, which requires a more extensive intervention and rehabilitation period. Finally, we observed that the cortical bone plays a substantial role in load transfer, and by increasing reduction in the mechanical properties of cortical bone, a greater share of load is transmitted toward the pubic symphysis.

CONCLUSION: This study increases our understanding of the effect of osteoporosis progression on the incidence of low-energy acetabular fractures. The osteoporosis-related reduction in the mechanical properties of cortical bone appears to affect both the cortical and trabecular bones. Also, during the extreme reduction in the mechanical properties of bone, the acetabular fracture type will be more complicated. Finally, during the final stages of osteoporosis (high reduction in mechanical properties of bone) a smaller share of impact load is transferred by impact-side hemipelvis to the sacrum, therefore, an osteoporotic pelvis might mitigate the risk of sacral fracture.

Language: en

Effects of treadmill slip and trip perturbation-based balance training on falls in community-dwelling older adults (STABILITY): study protocol for a randomised controlled trial

Nørgaard JE, Andersen S, Ryg J, Stevenson AJT, Andreasen J, Danielsen MB, Oliveira ASC, Jørgensen MG. BMJ Open 2022; 12(2): e052492.

DOI 10.1136/bmjopen-2021-052492 **PMID** 35131823

Abstract

INTRODUCTION: Falls among older adults are most frequently caused by slips and trips and can have devastating consequences. Perturbation-based balance training (PBT) have recently shown promising fall preventive effects after even small training dosages. However, the fall preventive effects of PBT delivered on a treadmill are still unknown. Therefore, this parallel-group randomised controlled trial aims to quantify the effects of a four-session treadmill-PBT training intervention on falls compared with treadmill walking among community-dwelling older adults aged 65 years or more.

METHODS AND ANALYSIS: 140 community-dwelling older adults will be recruited and randomised into either the treadmill-PBT or the treadmill walking group. Each group will undergo three initial training sessions within a week and an additional 'booster' session after 26 weeks. Participants in the treadmill-PBT group will receive 40 slip and/or trip perturbations induced by accurately timed treadmill belt accelerations at each training session. The primary outcome of interest is daily life fall rates collected using fall calendars for a follow-up period of 52 weeks. Secondary outcomes include physical, cognitive and social-psychological fall-related risk factors and will be collected at the pre-training and post-training test and the 26-week and 52-week follow-up tests. All outcomes will be analysed using the intention-to-treat approach by an external statistician. A Poisson's regressions with bootstrapping, to account for overdispersion, will be used to compare group differences in fall rates. ETHICS AND DISSEMINATION: The study protocol has been approved by the North Denmark Region Committee on Health Research Ethics (N-20200089). The results will be disseminated in peer-reviewed journals and at international conferences. TRIAL REGISTRATION NUMBER: NCT04733222.

Language: en

Keywords

preventive medicine; sports medicine; geriatric medicine

Impact of CoViD-19 stay-at-home restrictions on falls in one community of high-risk older adults

McIntyre CC, Prichett L, McNabney MK. J. Appl. Gerontol. 2022; ePub(ePub): ePub.

DOI 10.1177/07334648211073607 **PMID** 35120423

Abstract

AIM: To examine the relationship between falls among high-risk older adults at one Program of All-Inclusive Care for the Elderly (PACE) and the COVID-19 closure of its Day Health Center (DHC), which provides participants with social and rehabilitative services and contributes to their weekly physical activity.

METHODS: Self-reported falls during the 3 months before the DHC's closure ("pre-COVID-19") were compared in number and in character to falls during its closure ("COVID-19").

RESULTS: One thirty five participants were enrolled during the entire 6-month period; 37% (n = 50) fell during this time. These participants experienced fewer falls during COVID-19 (mean = 0.64) than they did pre-COVID-19 (mean=1.24, p =.0003).

CONCLUSIONS: In this population of high-risk, community-dwelling older adults, an abrupt reduction in activity levels may have reduced falls. Physical activity has been shown to both increase and protect against falls in older adults. The long-term consequences of a comparably prolonged period of inactivity merit further study.

Language: en

Keywords

physical activity; COVID-19; frailty; falls

Nurse-led home modification interventions for community-dwelling older adults with dementia and their impact on falls prevention

Yeni C, Yılmaz M. Br. J. Community Nurs. 2022; 27(2): 78-88.

DOI 10.12968/bjcn.2022.27.2.78 **PMID** 35137618

Abstract

This quasi-experimental study aimed to investigate the effects of nurse-led home modification interventions on the family members of home-dwelling older adults with dementia. The sample consisted of 42 older adults diagnosed with dementia and their family members. A number of validated tools were used. Three home visits were undertaken, a training package with family members was instigated, and the patients were followed up for a 6-month period. It was determined that there was a decrease in falls in the first 3-month period (p=0.002). The number of falls in the second 3-month period was lower in the older adults who had their homes modified (p=0.000). Family-centred, nurse-led home-modification interventions can be effective in the prevention and reducing of falls in older adults with dementia.

Language: en

Keywords

dementia; falls; home modifications; prevention of falls

Prevalence, physical characteristics, and fall risk in older adults with and without possible sarcopenia

Lim SK, Kong S. Aging Clin. Exp. Res. 2022; ePub(ePub): ePub.

DOI 10.1007/s40520-022-02078-z **PMID** 35133613

Abstract

BACKGROUND: Recently, the Asian Working Group for Sarcopenia (AWGS) 2019 consensus redefined the sarcopenia including possible sarcopenia, sarcopenia and severe sarcopenia and grip strength cutoff value by sex. AIMS: This study aimed to assess the prevalence, physical characteristics, physical fitness, and fall risk in older adults living in local communities, with possible sarcopenia using the diagnostic criteria suggested by the AWGS 2WG.

METHODS: A total of 431 participants (123 men and 308 women) aged 65-97 years were enrolled in this study. Based on the diagnostic criteria of possible sarcopenia suggested by AWGS 2, study participants were divided into normal and possible sarcopenia (grip strength: < 28 kg and < 18 kg for men and women, respectively) groups. Independent t-tests and logistic regression analyses were conducted to compare the differences between the two groups.

RESULTS: The possible prevalence of sarcopenia was 23.7%. Possible sarcopenia was present in older adults with lower weight, body mass index (BMI), skeletal muscle mass, and fat-free mass ($P < 0.05$) than those in the normal group. Older men with possible sarcopenia had poorer upper and lower body strength, aerobic endurance, lower body flexibility, agility and dynamic balance, and a higher fall risk than those in the normal group ($P < 0.05$). Older women with possible sarcopenia had a 2.5-fold and 3.3-fold higher fall risk than women in the normal group in both an unadjusted model ($P = 0.001$) and in a model adjusted for age and BMI ($P < 0.001$). However, there were no significant differences in fall risk among older men.

CONCLUSION: The diagnostic criteria suggested by AWGS 2 may be highly useful for screening for declining physical function.

Language: en

Keywords

Falls; Physical fitness; Older adults; Sarcopenia; Grip strength

The onset of falls and its effects on perceived social exclusion and loneliness. Evidence from a nationally representative longitudinal study

Petersen N, König HH, Hajek A. Arch. Gerontol. Geriatr. 2022; 100: e104622.

DOI 10.1016/j.archger.2022.104622 **PMID** 35121241

Abstract

PURPOSE: It remains unclear how falls affect older people's social relations. In particular, the characteristics of fallers in their second half of life are unclear. Several studies have reported that people with a low educational level fall more often, and that low educational level is a predictor for perceived social exclusion. We conducted the first longitudinal analysis on the association between falls and social relations among people of different educational levels.

METHODS: Longitudinal data were used from two waves (2014 and 2017) of the German Ageing Survey with an analytical sample of 11,227 individuals aged ≥ 40 years. Fall history in the past 12 months (yes; no) was assessed. Perceived social exclusion (outcome measure) was assessed using a validated scale developed by Bude and Lantermann. Loneliness (outcome measure) was measured using a short form of the validated De Jong Gierveld Loneliness Scale.

RESULTS: Controlling for various potential confounding variables, fixed effects regression analysis stratified by educational level and gender revealed that experiencing a fall was associated with greater perceived social exclusion ($\beta = 0.21$ $p < 0.05$) among men with low/medium educational level. The experience of a fall was not associated with increased loneliness.

CONCLUSION: Our results suggest an association between falls and feelings of social exclusion. This association was found only for men in their second half of life with low/medium educational level. Falls were not associated with loneliness.

Language: en

Keywords

Falls; Loneliness; Social isolation; Educational level; Social exclusion

Which potentially inappropriate medications list can detect patients at risk of readmissions in the older adult population admitted for falls? An observational multicentre study using a clinical data warehouse

Assi R, Schwab C, El Abd A, Fernandez C, Hindlet P. Drugs Aging 2022; ePub(ePub): ePub.

DOI 10.1007/s40266-022-00921-6 **PMID** 35118603

Abstract

BACKGROUND AND OBJECTIVE: Hospital readmissions are common in the older adult population and potentially inappropriate medications are known to be involved in these readmissions. Several lists of potentially inappropriate medications have been published in diverse countries in order to adapt the lists to local specificities. Among them, the Beers Criteria(®) were first published in 1991 in the USA, followed by the French Laroche list, the Norwegian NORGEP criteria, the German PRISCUS list, the Austrian consensus panel list and the European list, EU-7. The main objective was to detect which potentially inappropriate medications list can better detect hospital readmissions within 30 days in the older adult population hospitalised for fall-related injuries.

METHODS: We conducted a multicentre, observational, retrospective cohort study. Data from older patients initially hospitalised for falls in 2019 and discharged home were retrieved from the Clinical Data Warehouse. Exposure to potentially inappropriate medications was classified according to the six lists mentioned above. The local ethics committee approved the study protocol (number CER-2020-79).

RESULTS: After adjustments using propensity score matching, taking a potentially inappropriate medication as per the Laroche and PRISCUS lists was associated with a 30-day hospital readmission with an odds ratio of 1.58 (95% confidence interval 1.06-2.37) and 1.68 (95% confidence interval 1.13-2.50), respectively, while the other four studied lists showed no associations with readmissions.

CONCLUSIONS: Our study evidenced that not all lists published allow the accurate prediction of hospital readmissions to the same extent. We found that the Laroche and PRISCUS lists were associated with increased 30-day all-cause hospital readmissions after an index admission with a fall-related injury.

Language: en

Appendicular and mid-thigh lean mass are associated with muscle strength, physical performance, and dynamic balance in older persons at high risk of falls

Bani Hassan E, Phu S, Vogrin S, Duque G. Gait Posture 2022; 93: 90-95.

DOI 10.1016/j.gaitpost.2022.01.022 **PMID** 35121486

Abstract

BACKGROUND: Falls in older persons are associated with muscle mass and strength alterations, which may also affect balance parameters. However, the most appropriate combined approach to assess muscle and balance components that predict falls in older persons is still lacking. RESEARCH QUESTION: We hypothesized that appendicular lean and/or mid-thigh mass and muscle strength and performance are positively associated with balance indices and fall risk in older persons.

METHODS: Cross-sectional analyses of retrospective data from 260 participants with risk and/or history of falls examined at a Falls and Fracture Clinic. Assessments included a comprehensive clinical exam, bone densitometry and body composition by DXA, grip strength, gait speed, posturography, timed up and go (TUG) and four-square step (FSST) tests. Retrospective falls and fracture history was collected. Associations between appendicular and mid-thigh lean mass and muscle strength/performance vs balance indicators were determined before and after adjusting for age and gender.

RESULTS: Mean age of participants was 78 ± 6.7 (65-96) years. Both appendicular and mid-thigh lean masses corrected for BMI (but not for height(2)), and muscle strength and performance measures are associated with better dynamic balance. Conversely, static balance indicators showed less consistent associations with lean mass. Only TUG and sit to stand time consistently showed significant associations with most static balance indicators. SIGNIFICANCE: Combined with strength and performance parameters, ALM and mid-thigh estimates adjusted by BMI strongly correlate with dynamic balance parameters and could become practical elements of falls risk assessment as well as markers of therapeutic response to falls prevention interventions.

Language: en

Keywords

Falls; Balance; Mid-thigh; Muscle; Osteosarcopenia; Sarcopenia

Designing and implementing a zero harm falls prevention program: a quality improvement study

Wilson MA, Hacker Teper M, Sinno M, Kohlberger K, Nuseir D, Chan A, Palomera-Dinglasan K, Leon L, Donaldson D, Taher A. J. Nurs. Care Qual. 2022; ePub(ePub): ePub.

DOI 10.1097/NCQ.0000000000000617 **PMID** 35125453

Abstract

BACKGROUND: Inpatient falls with harm have severe implications on patients and the health care system.

PURPOSE: We implemented a zero harm approach to falls prevention, which aimed to reduce falls with injury by 25% within 1 year.

METHODS: We implemented a multifaceted and multidisciplinary quality improvement falls prevention strategy that included facilitating organization-wide education, adopting the Morse Fall Risk Assessment tool, displaying real-time unit-specific falls rates, and implementing a transparent root-cause analysis process after falls. Our outcome measure was falls with injury per 1000 patient-days.

RESULTS: We observed a decrease in the rate of patient falls with injury from 2.03 (baseline period) to 1.12 (1 year later) per 1000 patient-days. We also observed increases in awareness around falls prevention and patient safety incident reporting.

CONCLUSIONS: Our zero harm approach reduced falls with injury while improving our patient safety culture.

Language: en

The influence of fall direction and hip protector on fracture risk: FE model predictions driven by experimental data

Galliker ES, Laing AC, Ferguson SJ, Helgason B, Fleps I. Ann. Biomed. Eng. 2022; ePub(ePub): ePub.

DOI 10.1007/s10439-022-02917-0 **PMID** 35129719

Abstract

Hip fractures in older adults, which often lead to lasting impairments and an increased risk of mortality, are a major public health concern. Hip fracture risk is multi-factorial, affected by the risk of falling, the load acting on the femur, and the load the femur can withstand. This study investigates the influence of impact direction on hip fracture risk and hip protector efficacy. We simulated falls for 4 subjects, in 7 different impact directions (15° and 30° anterior, lateral, and 15°, 30°, 60°, and 90° posterior) at two different impact velocities (2.1 and 3.1 m/s), all with and without hip protector, using previously validated biofidelic finite element models. We found the highest number of fractures and highest fragility ratios in lateral and 15° posterior impacts. The hip protector attenuated femur forces by 23-49 % for slim subjects under impact directions that resulted in fractures (30° anterior to 30° posterior). The hip protector prevented all fractures (6/6) for 2.1 m/s impacts, but only 10% of fractures for 3.1 m/s impacts. Our results provide evidence that, regarding hip fracture risk, posterior-lateral impacts are as dangerous as lateral impacts, and they support the efficacy of soft-shell hip protectors for anterior- and posterior-lateral impacts.

Language: en

Keywords

Impact; Elderly; Bone; Femur; Finite element model; Hip protector; Impact direction