

Safety Literature 30th June 2024

Metabolic syndrome is associated with an increased risk of falls in the elderly

Alzahrani MS, Vennu V. Natl. Med. J. India 2023; 36(6): 370-373.

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DOI: 10.25259/NMJI_944_2021

PMID: 38909297

Abstract

Numerous studies have investigated the causes of falls in the elderly. However, there is little information about metabolic syndrome (MS) as a risk factor for falls in older adults. No evaluations have given a qualitative overview of studies examining the relationship between MS and falls in the elderly. We did a literature search in electronic databases to look for studies that assessed a link between MS and falls among people over the age of 55 years. We found three studies of high quality. These included 2774 people with an average age of 72 years. Even after controlling for other risk factors, two studies found that MS was significantly associated with an older adult's 1.3-2.5-fold increased risk of falling. We found that MS and its independent components were strongly linked with falls among the elderly, even after correcting for numerous variables.

Language: en

Keywords: Humans; Risk Factors; Aged; Female; Male; Middle Aged; *Accidental Falls/statistics & numerical data; *Metabolic Syndrome/epidemiology

Factors associated with falls in community-dwelling older adults: a subgroup analysis from a telemergency service

Casabona E, Riva-Rovedda F, Castello A, Sciarrotta D, Di Giulio P, Dimonte V. *Geriatrics (Basel)* 2024; 9(3).

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DOI: 10.3390/geriatrics9030069 **PMID:** 38920425 **PMCID:** PMC11203033

Abstract

According to the number of falls, fallers can be single (only one fall) or recurrent (two or more falls), with different risk profiles for loss of independence and frailty. The presence of risk factors in community-dwelling single- and recurrent fallers using a wearable fall-detection device, such as the Personal Emergency Response System (PERS), as part of a telemergency service, is still unknown. This article evaluates how using a PERS, within a telemergency service, helps identify risk profiles and assessment of any differences between non-fallers and fallers in community-dwelling older adults. A sub-group analysis was performed, dividing users into non-fallers (n = 226) and fallers (≥ 1 fall; n = 89); single-fallers (n = 66) and recurrent fallers (n = 23). Median age was higher in fallers (87.7 years vs. 86), whereas recurrent fallers were less independent, had fewer comorbidities, and had more low-extremity disabilities. The use of the PERS for medical problems (Adjusted OR = 0.31), excluding falls, support calls (Adjusted OR = 0.26), and service demands (Adjusted OR = 0.30), was significantly associated with a fall risk reduction. The findings suggest that the integration within a telemergency service may impact on fall-risk factors.

Language: en

Keywords: aged; fall detection device; independent living; personal emergency response system; recurrent falls; risk-profile

The ability of physical performance measures to identify fall risk in older adults living with dementia: a systematic review and meta-analysis

Chan WLS, Pin TW, Chan JYH, Siu GCH, Tsang SMH. *J. Am. Med. Dir. Assoc.* 2024; ePub(ePub): ePub.

(Copyright © 2024, Lippincott Williams and Wilkins)

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PMID: 38908396

Abstract

OBJECTIVES: To determine whether physical performance measures commonly used in clinical settings can discriminate fallers from nonfallers and predict falls in older adults with dementia.

DESIGN: Systematic review and meta-analysis. **SETTING AND PARTICIPANTS:** Older adults with dementia residing in the community, hospitals, and residential care facilities.

METHODS: MEDLINE, Embase, PsycINFO, CINAHL, SPORTDiscus, the Cochrane Library, and the PEDro databases were searched from inception until December 27, 2023 (PROSPERO registration number: CRD42022303670). Retrospective or prospective studies that evaluated the associations between physical performance measures and falls in older adults with dementia were included. A random effects model was used to calculate the standardized mean difference (SMD) and 95% CI for each physical performance measure between fallers and nonfallers. Sensitivity analyses were conducted on the longitudinal studies to determine the ability of physical performance measures to predict future falls.

RESULTS: Twenty-eight studies were included in this review ($n = 3542$). The 5-time chair stand test [SMD = 0.23 (0.01, 0.45)], the Berg Balance Scale [SMD = -0.52 (-0.87, -0.17)], postural sway when standing on the floor [SMD = 0.25 (0.07, 0.43)] and on a foam surface [SMD = 0.45 (0.25, 0.66)], and the Short Physical Performance Battery total score [SMD = -0.46 (-0.66, -0.27)] could discriminate fallers from nonfallers. Sensitivity analyses showed that gait speed could predict future falls in longitudinal cohort studies [SMD = -0.29 (-0.49, -0.08)]. Subgroup analyses showed that gait speed [SMD = -0.21 (-0.38, -0.05)] and the Timed Up and Go test [SMD = 0.54 (0.16, 0.92)] could identify fallers staying in residential care facilities or hospitals.

CONCLUSIONS AND IMPLICATIONS: The 5-time chair stand test, the Berg Balance Scale, postural sway when standing on the floor and a foam surface, and the Short Physical Performance Battery can be used to predict falls in older adults with dementia. Gait speed and the Timed Up and Go test can be used to predict falls in institutionalized older adults with dementia. Clinicians are recommended to use these physical performance measures to assess fall risk in older adults with dementia.

Language: en

Keywords: dementia; Falls; physical performance; discriminative ability; outcome measures

Fall assessment and intervention among community-dwelling older people in a primary health care center in Spain: a best practice implementation project

Fernández MG, Pantiga MM, Fernández CP, Muñoz LA, Guerrero CG. JBI Evid. Implement. 2024; ePub(ePub): ePub.

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PMID: 38916444

Abstract

INTRODUCTION: The implementation of fall prevention programs in the community is complex. Although there is solid scientific evidence that supports the effectiveness of such programs, there are multiple barriers that should be addressed using multifaceted strategies.

AIMS: The aim of this project was to increase compliance with evidence-based recommendations regarding fall risk screening and preventive interventions among older adults in a primary health care setting.

METHODS: This project used a pre-/post-implementation clinical audit based on the JBI Evidence Implementation Framework. Eight audit criteria were derived from JBI evidence summaries. The sample size was 62 patients aged 70 years or older. Data collection methods included a review of medical records and a questionnaire. A baseline audit was conducted and five barriers to best practice were identified. Strategies were then developed to increase compliance with the evidence-based recommendations, guided by JBI's Getting Research into Practice (GRiP) analysis. A follow-up audit was conducted in July 2022 to evaluate changes in compliance with best practices.

RESULTS: The baseline audit showed 0% compliance with best practice recommendations for seven out of eight audit criteria. Five barriers were identified: (1) absence of fall risk screening tools, (2) lack of fall prevention intervention protocols, (3) insufficient reporting of fall episodes in the records, (4) need for staff training, and (5) high staff turnover. Following the implementation of a fall risk assessment and intervention protocol, along with staff training, seven out of eight audit criteria increased from 0% to between 22.6% and 100%.

CONCLUSIONS: This evidence-based implementation project improved nursing practice in relation to compliance with best practice interventions to prevent falls. **SPANISH**

ABSTRACT: <http://links.lww.com/IJEBH/A229>.

Language: en

Validation of the Saga Fall Injury Risk Model

Hirata R, Katsuki NE, Yaita S, Nakatani E, Shimada H, Oda Y, Tokushima M, Aihara H, Fujiwara M, Tago M. *Int. J. Med. Sci.* 2024; 21(8): 1378-1384.

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DOI: 10.7150/ijms.92837 PMID: 38903917 PMCID: PMC11186423

Abstract

BACKGROUND: Predicting fall injuries can mitigate the sequelae of falls and potentially utilize medical resources effectively. This study aimed to externally validate the accuracy of the Saga Fall Injury Risk Model (SFIRM), consisting of six factors including age, sex, emergency transport, medical referral letter, Bedriddenness Rank, and history of falls, assessed upon admission.

METHODS: This was a two-center, prospective, observational study. We included inpatients aged 20 years or older in two hospitals, an acute and a chronic care hospital, from October 2018 to September 2019. The predictive performance of the model was evaluated by calculating the area under the curve (AUC), 95% confidence interval (CI), and shrinkage coefficient of the entire study population. The minimum sample size of this study was 2,235 cases.

RESULTS: A total of 3,549 patients, with a median age of 78 years, were included in the analysis, and men accounted for 47.9% of all the patients. Among these, 35 (0.99%) had fall injuries. The performance of the SFIRM, as measured by the AUC, was 0.721 (95% CI: 0.662-0.781). The observed fall incidence closely aligned with the predicted incidence calculated using the SFIRM, with a shrinkage coefficient of 0.867.

CONCLUSIONS: The external validation of the SFIRM in this two-center, prospective study showed good discrimination and calibration. This model can be easily applied upon admission and is valuable for fall injury prediction.

Language: en

Keywords: Humans; Risk Factors; Adult; Aged; Female; Logistic Models; Male; Middle Aged; Incidence; Accidental Falls; Prospective Studies; Young Adult; Aged, 80 and over; *Accidental Falls/statistics & numerical data; Accidental Injuries; Risk Assessment/statistics & numerical data/methods; Validation Studies; Wounds and Injuries/epidemiology

A new perspective to interpret how the vestibular efferent system correlates the complexity of routine balance maintenance with management of emergency fall prevention strategies

Longridge NS, Mallinson AI. *Audiol. Res.* 2024; 14(3): 518-544.

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PMID: 38920965

Abstract

Bipedalism is unique among mammals. Until modern times, a fall and resulting leg fracture could be fatal. Balance maintenance after a destabilizing event requires instantaneous decision making. The vestibular system plays an essential role in this process, initiating an emergency response. The afferent otolithic neural response is the first directionally oriented information to reach the cortex, and it can then be used to initiate an appropriate protective response. Some vestibular efferent axons feed directly into type I vestibular hair cells. This allows for rapid vestibular feedback via the striated organelle (STO), which has been largely ignored in most texts. We propose that this structure is essential in emergency fall prevention, and also that the system of sensory detection and resultant motor response works by having efferent movement information simultaneously transmitted to the maculae with the movement commands. This results in the otolithic membrane positioning itself precisely for the planned movement, and any error is due to an unexpected external cause. Error is fed back via the vestibular afferent system. The efferent system causes macular otolithic membrane movement through the STO, which occurs simultaneously with the initiating motor command. As a result, no vestibular afferent activity occurs unless an error must be dealt with.

Language: en

Keywords: ambulation feedforward evolution; hair cells; otoliths; utricle saccule; vestibular efferents; vestibular morphology

Exercise-based interventions targeting balance and falls in people with COPD: a systematic review and meta-analysis

Loughran KJ, Emerson J, Avery L, Suri S, Flynn D, Kaner E, Rapley T, Martin D, McPhee J, Fernandes-James C, Harrison SL. *Eur. Respir. Rev.* 2024; 33(172): e240003.

(Copyright © 2024, European Respiratory Society)

DOI: 10.1183/16000617.0003-2024

PMID: 38925795

Abstract

INTRODUCTION: This review quantifies the mean treatment effect of exercise-based interventions on balance and falls risk in people with COPD.

METHODS: A structured search strategy (2000-2023) was applied to eight databases to identify studies evaluating the impact of exercise-based interventions (≥ 14 days in duration) on balance or falls in people with COPD. Pooled mean treatment effects (95% confidence intervals (CIs), 95% prediction intervals (PIs)) were calculated for outcomes reported in five or more studies. Inter-individual response variance and the promise of behaviour change techniques (BCTs) were explored.

RESULTS: 34 studies (n=1712) were included. There were greater improvements in balance post intervention compared to controls for the Berg Balance Scale (BBS) (mean 2.51, 95% CI 0.22-4.80, 95% PI -4.60-9.63), Timed Up and Go (TUG) test (mean -1.12 s, 95% CI -1.69- -0.55 s, 95% PI -2.78-0.54 s), Single-Leg Stance (SLS) test (mean 3.25 s, 95% CI 2.72-3.77 s, 95% PI 2.64-3.86 s) and Activities-specific Balance Confidence (ABC) scale (mean 8.50%, 95% CI 2.41-14.58%, 95% PI -8.92-25.92%). Effect on falls remains unknown. Treatment effects were larger in male versus mixed-sex groups for the ABC scale and SLS test, and in balance training versus other exercise-based interventions for the BBS and TUG test. Falls history was not associated with changes in balance. Meta-analysis of individual response variance was not possible and study-level results were inconclusive. Eleven promising BCTs were identified (promise ratio ≥ 2).

CONCLUSION: Evidence for the effect of exercise-based interventions eliciting clinically important improvements in balance for people with COPD is weak, but targeted balance training produces the greatest benefits. Future exercise interventions may benefit from inclusion of the identified promising BCTs.

Language: en

Keywords: Humans; Risk Factors; Aged; Female; Male; Middle Aged; Treatment Outcome; Recovery of Function; *Accidental Falls/prevention & control; *Exercise Therapy/methods; *Postural Balance; *Pulmonary Disease, Chronic

Obstructive/physiopathology/therapy/diagnosis; Lung/physiopathology

Factors associated with fear of falling and fall-related injuries among people who use wheelchairs and motorized mobility scooters: a cross-sectional study

Moein S, Peterson EW, Rice LA. *Disabil. Rehabil.* 2024; ePub(ePub): ePub.

(Copyright © 2024, Informa - Taylor and Francis Group)

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PMID: 38910322

Abstract

PURPOSE: To identify the factors associated with the fear of falling (FOF) and fall-related injuries (FRI) among full-time wheelchair and motorized mobility scooter (WC/S) users with various health conditions.

METHODS: This cross-sectional study included participants (≥ 18 years old) who used WC/S for at least one year for $\geq 75\%$ of mobility and had a history of ≥ 1 fall in the past three years. Logistic regression models identified factors associated with FOF (yes/no) and FRI (yes/no) during the past year. Data on demographics, prior falls, mental health, environmental accessibility, and WC/S usage were used as independent variables.

RESULTS: Among 156 participants, 96% reported at least one fall within the past year, among whom 94.6% reported FOF, and 74% reported FRI within the same period. FOF was associated with fall incidence in the past year (OR = 17.75, $p = 0.001$). FRI was associated with higher levels of anxiety (OR = 1.15, $p = 0.003$) and fewer hours of WC/S use per week (OR = 0.98, $p = 0.012$).

CONCLUSION: This study highlights the high prevalence of FOF and FRI among WC/S users who had falls. The findings emphasized the relation between prior fall experiences and FOF and underscored the significance of addressing anxiety symptoms and WC/S usage in relation to FRI.

Language: en

Keywords: wounds and injuries; rehabilitation; Accidental falls; fear of falling; wheelchair

Measurement properties of backward walking and its sensitivity and feasibility in predicting falls in people with multiple sclerosis

Monaghan PG, Takla TN, Chargo AN, Edwards EM, Yu B, Myers E, Daugherty AM, Fritz NE. *Int. J. MS Care* 2024; 26: 155-166.

(Copyright © 2024, Clinicians Group)

DOI: 10.7224/1537-2073.2023-091 **PMID:** 38915880 **PMCID:** PMC11195663

Abstract

BACKGROUND: People with multiple sclerosis (MS) experience mobility impairments that elevate fall risk, increasing the need to identify clinical measures that accurately predict falls. Backward walking (BW) better differentiates fallers from nonfallers in MS. However, no studies have reported the measurement properties of the backward walking Timed 25-Foot Walk (B-T25-FW) and BW metrics, like BW velocity. Additionally, it is unknown whether BW can predict future falls in MS or its link to activity levels. This study assessed the reliability and responsiveness of B-T25-FW and BW metrics, including BW velocity. It also examined whether BW could predict falls at 3 and 6 months and its association with activity levels.

METHODS: During 2 separate visits, 23 people with MS completed the forward walking Timed 25-Foot Walk (F-T25-FW) and B-T25-FW, as well as forward walking and BW assessments in which spatiotemporal measures were recorded. Test-retest reliability was determined with intraclass correlation coefficients, and minimum detectable changes were calculated. Correlation analyses explored the relationship between BW velocity, B-T25-FW, prospective falls, and activity levels.

RESULTS: B-T25-FW and BW velocity exhibited excellent test-retest reliability. Large effect sizes to interpret clinically meaningful change in the B-T25-FW and BW velocity were also found. Both metrics demonstrated modest negative correlations with falls at 3 and 6 months and correlated strongly with very active minutes at 3- and 6-months post study.

CONCLUSIONS: The B-T25-FW and BW velocity are effective and reliable in clinical use for evaluating functional mobility in people with MS, are sensitive enough to detect subtle changes, and may be a meaningful marker for tracking disease progression and treatment efficacy.

Language: en

Keywords: mobility; walking; falls; backward walking; physical function

Falls and fractures among nursing home residents treated with pimavanserin versus other atypical antipsychotics: analysis of medicare beneficiaries with Parkinson's disease psychosis

Rajagopalan K, Rashid N, Gopal D, Doshi D. *Drugs Real World Outcomes* 2024; ePub(ePub): ePub.

(Copyright © 2024, Holtzbrinck Springer Nature Publishing Group)

DOI: 10.1007/s40801-024-00433-2

PMID: 38914856

Abstract

BACKGROUND: Reducing falls and fractures remains an important clinical goal in managing older residents with Parkinson's disease psychosis (PDP) in long-term care/nursing home (LTC/NH) settings.

OBJECTIVES: This analysis examined risk of all-cause falls or fractures among PDP residents on continuous monotherapy with pimavanserin (PIM) versus (i) other atypical antipsychotics (AAPs) [quetiapine (QUE), risperidone (RIS), olanzapine (OLA), aripiprazole (ARI)] and (ii) QUE.

METHODS: A retrospective analysis of parts A, B, and D claims from a 100% Medicare sample (2013-2019) in LTC/NH settings was conducted. LTC/NH residents in the USA initiating continuous monotherapy (PIM versus other AAPs; PIM versus QUE) for ≥ 6 months between 01 January 2014 and 31 December 2018 were 1:1 propensity score matched (PSM) on 31 variables (age, sex, race, region, and 27 Elixhauser comorbidities). Outcomes included three measures: risks of falls only, fractures only, and falls/fractures during 6-months follow-up. Demographic characteristics were described using chi-square and t-tests. Generalized linear models were used to assess difference in risks of falls/fractures.

RESULTS: Of 7187 residents, 47.59% ($n = 3420$) were female and mean age was 78.8 (± 7.75) years. In total, 14% ($n = 1005$) were on PIM and 86% ($n = 6182$) were on other AAPs. After PSM, falls only among PIM residents ($n = 1005$) was 4.58% ($n = 46$) versus 7.66% ($n = 77$) for other AAPs ($n = 1005$) [relative risk (RR) = 0.63 (0.46, 0.86), $p < 0.05$] and 8.26% ($n = 83$) for QUE ($n = 1005$) residents ($p < 0.05$). Fractures only among PIM residents was 1.39% ($n = 14$) compared with 2.09% ($n = 21$) for other AAPs ($p = 0.31$) and 1.89% ($n = 19$) for QUE ($p = 0.49$), respectively. Taken together, falls/fractures among PIM residents were 5.67% ($n = 57$) versus 9.05% ($n = 91$) for other AAPs [RR = 0.63 (0.46, 0.86), $p < 0.05$] and 9.55% ($n = 96$) for QUE ($p < 0.05$), respectively.

CONCLUSIONS: In this analysis of LTC/NH residents with PDP, PIM had a 37% and 41% lower risk of all-cause falls/fractures versus other AAPs and versus QUE, respectively.

Language: en

Emergency department falls interventions improve osteoporosis management in frail older adults

Rosario BH, Yi-En CS, Barrera VC, Diraviyam B, Low SL, Lien C, Wilkinson SP, Tun MH, Koh XY, Loi FC, Hock AAS. *Ann. Acad. Med. Singapore* 2023; 52(6): 327-330.

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Abstract

Singapore's population is ageing rapidly and by 2030, around 1 in 4 citizens will be aged 65 and above.¹ Older adults represent 21-40% of emergency department (ED) users and proportionally are the highest users of ED services.²

One-third of community dwellers over 65 years of age fall each year, and 50% will fall again, with 10% of falls resulting in serious injuries such as hip fractures, head injuries, injury-related disability and death.³ Frailty is common in older adults and can be prevented or at least delayed⁴ with ED frailty interventions and hospital avoidance.⁵ This letter describes Singapore's introduction of falls interventions and osteoporosis management in older adults attending an ED short stay unit (SSU) and describes integration of geriatric services in the ED.

The ED SSU is a protocol-led unit, staffed by emergency medicine physicians, with a 23-hour maximum length of stay. The falls protocol (FP) was introduced on 10 March 2019, and operates from Sunday 12pm to Friday 9am, following a service development collaboration between geriatricians and emergency medicine physicians. Inclusion criteria identify older adults with falls and aim to avoid acute hospital admission by undertaking comprehensive geriatric assessments (CGA) in the ED SSU administered by a consultant geriatrician, geriatric resident physician and an ED nurse who has received basic training in geriatric care, called a Geriatric Care Champion. A retrospective review was undertaken after 7 months to assess effectiveness of the FP, and a comparator group (CG) was identified in falls patients admitted to SSU under the Blunt Trauma and Head Injury Protocols at our institution between 1 January 2018 and 31 December 2018. Electronic patient records were reviewed, and data collection included demographics, functional assessments, hospital utilisation and mortality. Falls history and injurious fall defined by the presence of fracture, compliance to bone health recommendations, uptake of bone mineral density (BMD) scan and anti-resorptive treatment were reviewed and assumed compliant if anti-resorptive treatment was commenced following the SSU visit. Rockwood's Clinical Frailty Scale (CFS)⁶ was calculated from the CGA and/or Occupational Therapy assessments and categorised into: CFS 1-3; CFS 4-5; and CFS 6-9. Ethics review exemption was granted by the SingHealth Centralised Institutional Review Board. Descriptive statistics of demographic and clinical variables were compared between FP group and CG. The categorical outcome measures were analysed using chi-squared or Fisher's Exact test and presented as proportions and percentages. T-test was used for continuous data and presented as means and standard deviations. Data were analysed using Stata version 14 (Stata Corp, College Station, TX, US).

Language: en

Keywords: Humans; Aged; Female; Male; Aged, 80 and over; Singapore; *Accidental Falls/prevention & control; *Emergency Service, Hospital; *Frail Elderly; *Osteoporosis/therapy; Osteoporotic Fractures/prevention & control

Visitor restrictions during the COVID-19 pandemic and increased falls with harm at a Canadian hospital: an exploratory study

Shennan S, Coyle N, Lockwood B, DiDiodato G. J. Patient Saf. 2024; ePub(ePub): ePub.

(Copyright © 2024, Lippincott Williams and Wilkins)

DOI: 10.1097/PTS.0000000000001237

PMID: 38917342

Abstract

BACKGROUND: Falls with harms (FWH) in hospitalized patients increase costs and lengths of stay. The COVID-19 pandemic has resulted in more FWH. Additionally, the COVID-19 pandemic has resulted in increased patients in isolation with fewer visitors. Their relationship with falls has not been previously studied.

METHODS: This is a retrospective, single-site, 12-month before pandemic-12-month after pandemic, observational study. Multiple logistic regression analysis was used to model FWH outcome and associations with isolation and visitor restrictions.

RESULTS: There were 4369 isolation events and 385 FWH among 22,505 admissions during the study period. Unadjusted analysis demonstrated a FWH risk of 1.33% (95% CI 0.99, 1.67) in those who were placed in isolation compared to 1.80% (95% CI 1.60, 2.00) in those without an isolation event ($\chi^2 = 4.73, P = 0.03$). The FWH risk during the different visitor restriction periods was significantly higher compared to the prepandemic period ($\chi^2 = 20.81, P < 0.001$), ranging from 1.28% (95% CI 1.06, 2.50) in the prepandemic period to 2.03% (95% 1.66, 2.40) with no visitors permitted (phase A) in the pandemic period. After adjusting for potential confounders and selection bias, only phase A visitor restrictions were associated with an increased FWH risk of 0.75% (95% CI 0.32, 1.18) compared to no visitor restrictions.

INTERPRETATION: Our results suggest a moderately strong association between hospitalized patient FWH risk and severe visitor restrictions. This association was muted in phases with even minor allowances for visitation. This represents the first report of the adverse effects of visitor restriction policies on patients' FWH risks.

Language: en

Effect of multicomponent exercise intervention in community dwelling frail elderly: a systematic review and meta-analysis

Wang H, Liang Y, Wu H, Shi H, Hou R. Arch. Gerontol. Geriatr. 2024; 126: e105543.

(Copyright © 2024, Elsevier Publishing)

DOI: 10.1016/j.archger.2024.105543

PMID: 38908349

Abstract

OBJECTIVE: To assess the impact of multicomponent exercises on physical functions of frail elderly in communities, evaluating their effect on muscle strength, balance, and endurance, and their influence on quality of life.

METHOD: PubMed, Embase, Cochrane, and Web of Science were searched to collect relevant randomized controlled trials. The search cutoff date was January 24, 2024. Included studies met pre-specified inclusion and exclusion criteria. Data analysis was performed using Revman 5.4 and Stata 15.0 software.

RESULT: This analysis included 19 studies. After 12 weeks, the multicomponent exercises significantly enhanced participants' performance in various physical function assessments. Specifically, in the Timed Up and Go Test, the exercise group showed a significant reduction in time [SMD = -0.86 (95 % CI: -1.40 to -0.33)]. In the Short Physical Performance Battery, interventions shorter than 6 weeks significantly increased scores [SMD = 1.01 (95 % CI: 0.64 to 1.37)], and those longer than 6 weeks showed improvements [SMD = 0.53 (95 % CI: 0.26 to 0.80)]. Muscle strength also improved, with handgrip strength and knee extensor strength enhancements [SMD = 0.93 (95 % CI: 0.27 to 1.59); SMD = 0.72 (95 % CI: 0.24 to 1.20)]. However, there was no statistically significant difference in walking speed between the groups [SMD = 0.04 (95 % CI: -0.33 to 0.40)].

CONCLUSION: Although multicomponent exercises significantly improve muscle strength, balance, and endurance in frail elderly individuals, there is no conclusive evidence of their effect on enhancing quality of life or long-term health outcomes. Further research is needed to explore the specific impacts of different types and intensities of exercises on this population.

Language: en

Keywords: Meta-analysis; Frail elderly; Multicomponent exercise

Successful ageing is associated with falls among older adults in India: a large population based across-sectional study based on LASI

Wang Y, Leng S, Jin Y, Tang X, Zhu X, An L. BMC Public Health 2024; 24(1): e1682.

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DOI: 10.1186/s12889-024-19181-7

PMID: 38914970

Abstract

BACKGROUND: Falls are common in the elderly and can lead to adverse consequences, like injuries, hospitalization, disability even mortality. Successful ageing emerged in sight to assess physical, psychological and social status of older adults. This study is conducted to explore the association between them in a large Indian community-dwelling population.

METHODS: Data were based on the wave 1 survey of the Longitudinal Ageing Study in India (LASI). People aged 60 and above with complete information were included. The elderly met five standards including absence of chronic diseases, freedom from disability, high cognitive ability, free from depressive symptoms and active social engagement, were classified into successful agers. The assessment of falls, fall-related injuries and multiple falls depended on interview. Multivariate logistic regression was conducted to find the associations between falls, fall-injury, multiple falls and successful ageing after adjusting both socio-demographic and biological covariates. The log-likelihood ratio test was calculated interactions in subgroups.

RESULTS: 31,345 participants in LASI were finally included in our study. Of them, 20.25% reported fall, and 25% were classified into successful agers. After full adjustment, successful ageing was negatively associated with falls (OR 0.70; 95%CI 0.65-0.76) and multiple falls (OR 0.70; 95%CI 0.63-0.78). And the association did not show the significance in older adults with fall-related injuries (OR 0.86; 95%CI 0.72-1.04).

CONCLUSIONS: Successful ageing was negatively associated with falls and multiple falls, but not fall-related injuries in older people in India. Future studies are demanded to explore the causal relationship and to reveal the underlying mechanism.

Language: en

Keywords: Humans; Cross-Sectional Studies; Risk Factors; Aged; Female; Male; Middle Aged; Aged, 80 and over; Falls; Longitudinal Studies; Age; *Accidental Falls/statistics & numerical data; Aging/physiology; India/epidemiology; Successful ageing

The relationship between asymmetrical grip strength criteria and fall incidence among middle-aged and older Chinese adults

Wang Y, Li Z, Li M, Chen X. Eur. Geriatr. Med. 2024; ePub(ePub): ePub.

(Copyright © 2024, Elsevier Publishing)

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PMID: 38907785

Abstract

PURPOSE: Current handgrip strength (HGS) protocols employ a variety of criteria, affecting the assessment of asymmetric HGS. The impact of these different criteria on fall prediction is understudied. This study was devised to compare the relative performance of average and maximum HGS asymmetry criteria as tools to predict fall incidence among middle-aged or older adults in China.

METHODS: 9627 Chinese adults 50+ years of age who were participants in the China Health and Retirement Longitudinal Study (2013-2015 waves) were evaluated. The measurement of HGS was achieved based on either the maximum recorded value (HGS_{max}) or the average (HGS_{ave}), and these values were employed for the calculation of HGS asymmetry. Fall incidence over a 2-year period was evaluated based on self-reported data. Logistic regression analyses were utilized to determine the predictive performance of HGS_{max} asymmetry or HGS_{ave} asymmetry when gauging 2-year fall risk.

RESULTS: Significant differences in overall rates of HGS asymmetry and the rates of subdivisions thereof were observed when comparing the HGS_{max} and HGS_{ave} criteria, with moderate consistency ($\kappa = 0.599$, $p < 0.001$). Over the 2-year follow-up period, 1743 fall incidents were recorded. Adjusted logistic regression models indicated that only HGS_{max} asymmetry $> 30.0\%$ was significantly related to fall risk ($p = 0.034$, odds ratio = 1.36, 95% confidence interval: 1.02-1.81).

CONCLUSION: These findings highlight the importance of HGS criteria in detecting HGS asymmetry, and suggest that HGS_{max} is a more robust criterion for predicting fall risk among Chinese adults 50+ years of age.

Language: en

Keywords: Aging; Asymmetry; Fall; Handgrip strength; Measurement criterion

The impact of cognitive-motor interference on balance and gait in hearing-impaired older adults: a systematic review

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Abstract

BACKGROUND: Hearing impairments are a rising burden in our aging society. Hearing loss is associated with reduced cognitive performance as well as decrements in balance and gait. Therefore, impaired hearing affects also dual tasking (DT). The aim of this review is to summarize the evidence for DT performance decrements of older adults with hearing impairments during maintaining balance or walking.

METHODS: The systematic literature research according to PRISMA guidelines was conducted using MEDLINE, APA Psych-Info, and Web of Science. Inclusion criteria were: Independent living older people ≥ 60 years with hearing impairments, use of a DT paradigm to test hearing impaired older adults within a balance or walking condition.

RESULTS: N = 57 studies were found within the databases. Eight studies were included (N = 456 participants (58% women), including n = 200 older hearing-impaired persons with different levels of hearing loss). Most of the included studies oriented their inclusion criteria for hearing-impairments at thresholds for mild hearing loss with Pure Tone Average (0.5-4 kHz) ≥ 25 and < 40 dB. Three of the studies focused on DT balance performance and five used DT walking comparing participants with and without hearing loss. For DT balance and gait performance, higher decrements for the hearing-impaired group were observed compared to healthy older adults. Performance decrements were accompanied by reduced compensatory strategies in balance performance.

CONCLUSION: More pronounced decrements in DT performance were observed for participants with hearing impairments compared to those without. This implies that hearing-impaired older adults might need specific interventions to reduce the cognitive-motor interference (CMI) to maintain balance control or walking stability in daily situations that require managing of cognitive and motor tasks simultaneously. However, taking all results into account the underlying mechanisms of CMI for this target group needs to be further examined. **TRIAL REGISTRATION:** This review was registered at Prospero with the ID CRD42022340232.

Language: en

Keywords: Balance; Cognitive-motor interference; Gait; Hearing loss

Risk factors for falls in Parkinson's disease: a cross-sectional observational and Mendelian randomization study

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Abstract

BACKGROUND: Patients with Parkinson's disease (PD) exhibit a heightened risk of falls and related fractures compared to the general population. This study aims to assess the clinical characteristics associated with falls in the patient with PD and to gain further insight into these factors through Mendelian randomization analysis.

METHODS: From January 2013 to December 2023, we included 591 patients diagnosed with Parkinson's disease at Shenzhen Baoan People's Hospital. Using univariate and multivariate logistic regression analyses, we identified clinical variables associated with falls. We constructed a nomogram based on these variables and evaluated the predictive efficacy of the model. Additionally, we employed summary statistics from genome-wide association studies to conduct two-sample Mendelian randomization (MR) analyses on key variables influencing falls.

RESULTS: Compared to the control group, we identified osteoporosis, motor dysfunction, higher Hoehn and Yahr scale as significant risk factors for falls in PD patients. Conversely, treatment with levodopa and a higher level of education exhibited a protective effect against the risk of falling. MR analysis further confirmed a causal relationship between osteoporosis, education level and falls in PD patients.

CONCLUSION: Osteoporosis and educational attainment are correlated with falls in Parkinson's disease.

Language: en

Keywords: osteoporosis; clinical prediction; falls; Mendelian randomization; Parkinson's disease