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A multidisciplinary intervention to prevent subsequent falls and health service use following fall-related paramedic care: a randomised controlled trial

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Age Ageing 2017; 46(2): 200-207.

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Abstract

BACKGROUND: approximately 25% of older people who fall and receive paramedic care are not subsequently transported to an emergency department (ED). These people are at high risk of future falls, unplanned healthcare use and poor health outcomes.

OBJECTIVE: to evaluate the impact of a fall-risk assessment and tailored fall prevention interventions among older community-dwellers not transported to ED following a fall on subsequent falls and health service use.

DESIGN, SETTING, PARTICIPANTS: Randomised controlled trial involving 221 non-transported older fallers from Sydney, Australia.

INTERVENTION: the intervention targeted identified risk factors and used existing services to implement physiotherapy, occupational therapy, geriatric assessment, optometry and medication management interventions as appropriate. The control group received individualised written fall prevention advice.

MEASUREMENTS: primary outcome measures were rates of falls and injurious falls. Secondary outcome measures were ambulance re-attendance, ED presentation, hospitalisation and quality of life over 12 months. Analysis was by intention-to-treat and per-protocol according to self-reported adherence using negative binominal regression and multivariate analysis.

RESULTS: ITT analysis showed no significant difference between groups in subsequent falls, injurious falls and health service use. The per-protocol analyses revealed that the intervention participants who adhered to the recommended interventions had significantly lower rates of falls compared to non-adherers (IRR: 0.53 (95% CI : 0.32-0.87)).

CONCLUSION: a multidisciplinary intervention did not prevent falls in older people who received paramedic care but were not transported to ED. However the intervention was effective in those who adhered to the recommendations. **TRIAL REGISTRATION:** the trial is registered at the Australian New Zealand Clinical Trials Registry: ACTRN 12611000503921, 13/05/2011.

PDF Y Endnote Y

Aerobic-synergized exercises may improve fall-related physical fitness in older adults

Chang YC, Wang JD, Chen HC, Hu SC.

J. Sports Med. Phys. Fitness 2017; 57(5): 660-669.

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DOI 10.23736/S0022-4707.16.05728-5 **PMID** 28399621

Abstract

BACKGROUND: The purpose of the present study was to determine whether a synergistic exercise model based on aerobics with additional fall-preventive components could provide extra benefits compared with the same duration of aerobic-synergistic exercise alone.

METHODS: A total of 102 adults aged 65 years and over from three geographically separated communities were assigned to three groups: the general aerobic exercise (GAE) group (N.=44), the GAE plus ball game group (BG group; N.=30) and the GAE plus square-stepping exercise group (SSE group; N.=28). Each group participated in one hour of exercise intervention and two hours of leisure activities twice weekly for 12 weeks. Each exercise session consisted of one hour of combined exercises performed in the following order: 10 minutes of warm-up activities, 20 minutes of aerobics, 20 minutes of the respective exercise model, and 10 minutes of cool-down activities. Functional fitness tests, including aerobic endurance, leg strength, flexibility, reaction time, static balance and mobility, were measured before and after the intervention. Paired t-tests and mixed model analyses were conducted to compare the differences in each measurement within and among the groups.

RESULTS: All of the groups exhibited significantly positive effects ($P<0.05$), including improvements in aerobic endurance, leg muscle strength, static balance, and mobility, after the intervention. There were no significant differences in these improvements in the other two groups compared with group GAE. However, group BG and group SSE showed significantly greater improvements in mobility compared with group GAE ($P<0.05$).

CONCLUSIONS: We conclude that a combination of aerobics and selected fall-prevention exercises performed over a consistent period may improve mobility without compromising the fundamental benefits of aerobics. Future studies using randomized control trials with recorded fall events and a longer period of follow-up are indicated to validate the effects of fall prevention exercises.

PDF (Not yet available) Endnote Y

Analgesic use and risk of recurrent falls in participants with or at risk of knee osteoarthritis: data from the osteoarthritis initiative

Lo-Ciganic WH, Floden L L, Lee JK, Ashbeck EL, Zhou L, Chinthammit C, Purdy AW, Kwoh CK.
Osteoarthritis Cartilage 2017; ePub(ePub): ePub.

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DOI 10.1016/j.joca.2017.03.017 **PMID** 28385483

Abstract

OBJECTIVE: Few studies have compared the risk of recurrent falls across different types of analgesic use, and were limited to adjust for potential confounders (e.g., pain/depression severity). We aimed to assess analgesic use and the subsequent risk of recurrent falls, among participants with or at risk of knee osteoarthritis (OA).

METHODS: A longitudinal analysis included 4,231 participants aged 45-79 years at baseline with 4-year follow-up from the Osteoarthritis Initiative (OAI) cohort study. We grouped participants into six mutually exclusive subgroups based on annually assessed analgesic use in the following hierarchical order of analgesic/central nervous system potency: use of (1)opioids, (2)antidepressants, (3)other prescription pain medications, (4)over-the-counter pain medications, (5)nutraceuticals, and (6)no analgesics. We used multivariable modified Poisson regression models with a robust error variance

to estimate the effect of analgesic use on the risk of recurrent falls(≥ 2) in the following year, adjusted for demographics and health status/behavior factors.

RESULTS: Opioid use increased from 2.7% at baseline to 3.6% at the 36-month visit (>80% using other analgesics/nutraceuticals), while other prescription pain medication use decreased from 16.7% to 11.9% over this time period. Approximately 15% of participants reported recurrent falls. Compared to those not using analgesics, participants used opioids and/or antidepressants had a 22-25% increased risk of recurrent falls (opioids: $RR_{adjusted}=1.22$, $95\%CI=1.04-1.45$; antidepressants: $RR_{adjusted}=1.25$, $95\%CI=1.10-1.41$).

CONCLUSION: Participants with or at risk of knee OA who were on opioids and antidepressants with/without other analgesics/nutraceuticals may have an increased risk of recurrent falls after adjusting for potential confounders. Use of opioids and antidepressants warrants caution.

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PDF Y Endnote Y

Characteristics and fall experiences of older adults with and without fear of falling outdoors

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Aging Ment. Health 2017; ePub(ePub): ePub.

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(Copyright © 2017, Informa - Taylor and Francis Group)

DOI 10.1080/13607863.2017.1309639 **PMID** 28393552

Abstract

OBJECTIVE: Using a theoretical model that combines an ecological perspective and Bandura's theory of self-efficacy as a guide, we sought to compare experiences and characteristics of community dwelling older adults with and without concern about falling outdoors.

METHOD: A survey of randomly selected community dwelling older adults across NYC (N = 120) was conducted using the outdoor falls questionnaire. Descriptive quantitative analyses of participant characteristics were conducted for all participants and for those with and without concern about falling outside. Conventional content analysis using two coders was employed to examine outdoor fall experiences for each group. A mixed methods matrix was used to integrate qualitative and quantitative findings.

RESULTS: Some participant characteristics were more common among those with a concern about falling outside such as decreased functional status, female gender, and number of prior outdoor falls. As per descriptions of outdoor fall experiences, participants with concern were more likely to report a fall while climbing stairs or stepping up a curb, describe an intrinsic factor as a cause of their fall, use an injury prevention strategy during the fall, sustain a moderate to severe injury, seek medical attention, have had an ambulance called, require help to get up, and describe implementation of a behavioral change after the fall.

CONCLUSIONS: Differences exist in participant characteristics and outdoor fall experiences of those with and without concern about falling outside. The proposed model can be used to understand fear of falling outdoors and can help to inform the target population and content of intervention programs.

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Concurrent validation of an index to estimate fall risk in community dwelling seniors through a wireless sensor insole system: a pilot study

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Gait Posture 2017; 55: 6-11.

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(Copyright © 2017, Elsevier Publishing)

DOI 10.1016/j.gaitpost.2017.03.037 **PMID** 28407507

Abstract

Falls are a major health problem for older adults with immediate effects, such as fractures and head injuries, and longer term effects including fear of falling, loss of independence, and disability. The goals of the WIISEL project were to develop an unobtrusive, self-learning and wearable system aimed at assessing gait impairments and fall risk of older adults in the home setting; assessing activity and mobility in daily living conditions; identifying decline in mobility performance and detecting falls in the home setting. The WIISEL system was based on a pair of electronic insoles, able to transfer data to a commercially available smartphone, which was used to wirelessly collect data in real time from the insoles and transfer it to a backend computer server via mobile internet connection and then onwards to a gait analysis tool. Risk of falls was calculated by the system using a novel Fall Risk Index (FRI) based on multiple gait parameters and gait pattern recognition. The system was tested by twenty-nine older users and data collected by the insoles were compared with standardized functional tests with a concurrent validity approach. The results showed that the FRI captures the risk of falls with accuracy that is similar to that of conventional performance-based tests of fall risk. These preliminary findings support the idea that the WIISEL system can be a useful research tool and may have clinical utility for long-term monitoring of fall risk at home and in the community setting. Copyright © 2017 Elsevier B.V. All rights reserved.

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Dancing in time: feasibility and acceptability of a contemporary dance programme to modify risk factors for falling in community dwelling older adults

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BMC Geriatr. 2017; 17(1): e83.

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(Copyright © 2017, BioMed Central)

DOI 10.1186/s12877-017-0476-6 **PMID** 28399803

Abstract

BACKGROUND: Falls are a common cause of injury in older adults, with the prevention of falls being a priority for public health departments around the world. This study investigated the feasibility, and impact of an 8 week contemporary dance programme on modifiable physical (physical activity status, mobility, sedentary behaviour patterns) and psychosocial (depressive state, fear of falling) risk factors for falls.

METHODS: An uncontrolled 'pre-post' intervention design was used. Three groups of older (60 yrs.+) adults were recruited from local community groups to participate in a 3 separate, 8 week dance programmes. Each programme comprised two, 90 min dance classes per week. Quantitative measures of physical activity, sedentary behaviour, depression, mobility and fear of falling were

measured at baseline (T1) and after 8 weeks of dance (T2). Weekly attendance was noted, and post-study qualitative work was conducted with participants in 3 separate focus groups. A combined thematic analysis of these data was conducted.

RESULTS: Of the 38 (Mean Age = 77.3 ± 8.4 yrs., 37 females) who attended the dance sessions, 22 (21 females; 1 male; mean age = 74.8, ±8.44) consented to be part of the study. Mean attendance was 14.6 (±2.6) sessions, and mean adherence was 84.3% (±17). Significant increases in moderate and vigorous physical activity were noted, with a significant decrease in sitting time over the weekdays ($p < 0.05$). Statistically significant decreases in the mean Geriatric Depression Scale ($p < 0.05$) and fear of falling ($p < 0.005$) score were noted, and the time taken to complete the TUG test decreased significantly from 10.1 s to 7.7 s over the 8 weeks ($p < 0.005$). Themes from the focus groups included the dance programme as a means of being active, health Benefits, and dance-related barriers and facilitators.

CONCLUSIONS: The recruitment of older adults, good adherence and favourability across all three sites indicate that a dance programme is feasible as an intervention, but this may be limited to females only. Contemporary dance has the potential to positively affect the physical activity, sitting behaviour, falls related efficacy, mobility and incidence of depression in older females which could reduce their incidence of falls. An adequately powered study with control groups are required to test this intervention further.

PDF Y Endnote Y

Decreasing fall risk: intensive cognitive training and blood pressure control

Manning KJ, Wolfson LI.

J. Am. Geriatr. Soc. 2017; ePub(ePub): ePub.

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(Copyright © 2017, John Wiley and Sons)

DOI 10.1111/jgs.14896 **PMID** 28388811

Abstract [Abstract unavailable] Editorial

PDF Y Endnote Y

Effects of holding an external load on the standing balance of older and younger adults with and without chronic low back pain

Shigaki L, Vieira ER, de Oliveira Gil AW, Araújo CG, Carmargo MZ, Sturion LA, de Oliveira MR, da Silva RA.

J. Manipulative Physiol. Ther. 2017; ePub(ePub): ePub.

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(Copyright © 2017, Elsevier Publishing)

DOI 10.1016/j.jmpt.2017.01.007 **PMID** 28395983

Abstract

OBJECTIVE: The purpose of this study was to assess the effect of holding an external load on the standing balance of younger and older adults with and without chronic low back pain (CLBP).

METHODS: Twenty participants with and 20 without CLBP participated in the study. Each group contained 10 younger (50% men) and 10 older adults (50% men). Participants were instructed to look straight ahead while standing on a force platform during two 120-second trials with and

without holding an external load (10% of body mass). The center of pressure area, mean velocity, and mean frequency in the anteroposterior and mediolateral directions were measured.

RESULTS: Older adults had worse standing balance than younger adults did ($P < .001$, $d = 0.20$). There were no significant balance differences between participants with and without CLBP within age groups during standing balance condition. However, holding the external load significantly increased postural instability for both age groups and CLBP status, with mean effect size across center of pressure variables of $d = 0.82$ for older participants without CLBP and $d = 2.65$ for younger participants without CLBP. These effects for people with CLBP were $d = 1.65$ for subgroup of older and $d = 1.60$ for subgroup of younger participants.

CONCLUSION: Holding an external load of 10% of body mass increased postural instability of both younger and older adults with and without CLBP. Copyright © 2017. Published by Elsevier Inc.

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Efficacy of rhythmic exercise and walking exercise in older adults' exercise participation rates and physical function outcomes

Park YS, Koh K, Yang JS, Shim JK. *Geriatr. Gerontol. Int.* 2017; ePub(ePub): ePub.

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(Copyright © 2017, Japan Geriatrics Society, Publisher John Wiley and Sons)

DOI 10.1111/ggi.13046 **PMID** 28402049

Abstract

AIM: The purpose of the present study was to evaluate the efficacy of two different exercise types, rhythmic exercise designed from local music and dance (RE) and walking exercise (WE), in terms of exercise participation and physical function changes in older adults over a period of 12 weeks.

METHODS: Exercise participation was assessed through the attendance rate and retention rate, and physical function was evaluated through the Short Physical Performance Battery, static balance test and gait test.

RESULTS: The RE group showed significantly higher attendance and retention rates; greater improvement in Short Physical Performance Battery scores; and greater improvement in static balance, as compared with the WE. No differences were found between the RE and WE groups in gait parameters.

CONCLUSIONS: The results suggest that RE was more effective than WE in retaining exercise participation and improving physical function in older adults. © 2017 Japan Geriatrics Society.

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Fall-induced wounds and lacerations in older Finns between 1970 and 2014

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Aging Clin. Exp. Res. 2017; ePub(ePub): ePub.

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(Copyright © 2017, Editrice Kurtis)

DOI 10.1007/s40520-017-0753-4 **PMID** 28382605

Abstract

BACKGROUND: Fall-induced injuries in elderly people are a growing public health issue.

AIM: We aimed to determine the current trends in the fall-induced severe wounds and lacerations among older adults in Finland-an EU country with a well-defined Caucasian population of 5.5 million.

METHODS: The injury trends were assessed by taking into account all persons 80 years of age or older who were admitted to Finnish hospitals for primary treatment of these injuries during 1970-2014.

RESULTS: The number of fall-induced severe wounds and lacerations among 80-year-old or older Finnish adults showed a sharp increase during the 44-year follow-up, from 52 in 1970 to 1393 in 2014. The age-adjusted incidence of injury (per 100,000 persons) also showed a clear rise from 1970 to 2014: from 98.3 to 511.5 in women, and from 92.0 to 395.3 in men. In both sexes, the increase was greatest in the oldest age group (persons 90 years of age or older).

CONCLUSIONS: The number of fall-induced severe wounds and lacerations among older Finnish persons rose in 1970-2014 with a rate that could not be explained merely by demographic changes. Further studies should focus on detailed understanding of the reasons for the rise and assessing possibilities for fall and injury prevention.

PDF Y Endnote Y

Falls as an extreme situation for people with mental disorders: a review

Mosler D.

Arch. Budo Sci. Martial Arts 2016; 12(1): 87-94.

(Copyright © 2016, Medical Science International)

DOI unavailable **PMID** unavailable

Abstract

People with mental disorders are divided for categories based on aetiology of their disabilities. Intellectual disability is mostly born with neurodevelopmental disorder, while other mental disorders are acquired as a result of mental illness. Sometimes this both types mixed as result of one of another.

The aim of this study is generalization of knowledge about similarities between fall risk factors and motor behaviour of people with different type of mental disorders. Despite differences in classification and description in literature, individuals with those type of impairment have many common factors that can put them together in terms of fall risk analysis. From physiotherapist point of view, their cognitive and motor dysfunctions are mostly similar, which allows them to be put in the same high risk of fall group, despite separate analysis in literature. Alongside with common anti-psychotic drug treatment, which leaves extra-pyramidal side effects that affects motor functioning, people with mental disorders could be one of groups of the highest risk of injury or mortality caused by a fall, not to mention appearing of depressive symptoms and fear of falling.

Elderly with mental disorders could fall event more frequent that once a year. Necessity of hospitalization caused by a fall could take place up to 60% of population of people with intellectual disability. People with mental disorders under drug treatment are up to 70% more likely to fall.

Fall prevention programs could decrease fall risk and fall rates but effects of therapy are not everlasting and there is necessity to design good strategy for a life time for individuals with mental disorders to eliminate trauma from these extreme phenomena for them.

PDF Y Endnote Y

Falls risks and prevention behaviors among community-dwelling homebound and non-homebound older adults

Casteel C, Jones J, Gildner P, Bowling JM, Blalock SJ.

J. Appl. Gerontol. 2016; ePub(ePub): ePub.

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(Copyright © 2016, Sage Publications)

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Abstract

The objectives were to examine falls risk factors to determine how the magnitude of risk may differ between homebound and non-homebound older adults, and to describe falls prevention behaviors and participation in falls prevention education. A cross-sectional survey was conducted with convenience samples of community-dwelling older adults recruited through Meals on Wheels programs (homebound, n = 80) and senior centers (non-homebound, n = 84) in North Carolina. Data were collected during home visits and included an interview and medication inventory. Multivariate negative binomial regression with robust variance estimation modeled risk factors for falls. Risk factors for falls observed in both the homebound and non-homebound populations are consistent with what is known in the literature. However, the magnitude of the risk was higher in the homebound than in the non-homebound population with respect to vision impairments, number of high-risk and over-the-counter medications, and use of walking aids. Few participants reported participating in a falls prevention program.

PDF Y Endnote Y

Home intervention as a tool for nursing care: evaluation of the satisfaction of the elderly

Nogueira IS, Previato GF, Scolari GA, Gomes AC, Carreira L, Baldissera VD.

Rev. Gaucha Enferm. 2017; 37(Spe): e68351.

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(Copyright © 2017, Escola de Enfermagem da Universidade Federal do Rio Grande e do Sul)

DOI 10.1590/1983-1447.2016.esp.68351 **PMID** 28403315

Abstract

OBJECTIVE: To evaluate the results of home nursing interventions according to the satisfaction of the elderly users.

METHODS: Ex-post facto evaluative, qualitative and descriptive research, conducted from November 2015 to January 2016 with 12 dependent elderly individuals accompanied by an extension project in the city of Maringá, PR, Brazil. Data were collected after home interventions based on the Single-User Treatment Project, by means of semi-structured interviews subjected to content analysis and the theoretical framework of Donabedian.

RESULTS: The following thematic categories emerged: "home nursing intervention: synonymous with joy, distraction and bonding" and "home nursing intervention: health and lifestyle transformations".

CONCLUSION: The home nursing interventions had positive results that signal the quality of the provided care.

PDF Y Endnote Y

Parkinsonian signs are a risk factor for falls

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Gait Posture 2017; 55: 1-5.

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(Copyright © 2017, Elsevier Publishing)

DOI 10.1016/j.gaitpost.2017.03.039 **PMID** 28407503

Abstract

BACKGROUND: Parkinsonian signs are common, non-specific findings in older adults and associated with increased rates of dementia and mortality. It is important to understand which motor outcomes are associated with parkinsonian signs.

OBJECTIVES: To determine the role of parkinsonian signs on fall rates among older adults.

METHODS: We conducted a longitudinal study of primary care patients from the University of Pennsylvania Health System. Adults over 55 years were assessed at baseline through surveys and a neurological examination. We recorded falls over the following 2 years. Parkinsonian signs were defined as the presence of 2 of 4 cardinal signs. Incident falls were compared between subjects with and without parkinsonian signs, and modified Poisson regression used to adjust for potential confounders in the relationship between parkinsonian signs and falls.

RESULTS: 982 subjects with a mean age of 68 (s.d. 8.8) years participated. 29% of participants fell and 12% exhibited parkinsonian signs at baseline. The unadjusted RR for falls among individuals with parkinsonian signs was 1.36 (95% CI 1.05-1.76, $p=0.02$). After adjusting for age, cognitive function, urinary incontinence, depression, diabetes, stroke and arthritis, individuals with parkinsonian signs were still 38% more likely to fall than those without parkinsonian signs (RR 1.38, 95% CI 1.04-1.82; $p=0.03$). Falls among those with parkinsonian signs were more likely to lead to injury (53% vs 37%; $p=0.04$).

CONCLUSIONS: Parkinsonian signs are a significant, independent risk factor for falls. Early detection of this clinical state is important in order to implement fall prevention programs among primary care patients. Copyright © 2017 Elsevier B.V. All rights reserved.

PDF Y Endnote Y

Perceived control and aging: a mini-review and directions for future research

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(Copyright © 2017, Karger Publishers)

DOI 10.1159/000468540 **PMID** 28391279

Abstract

This brief review on perceived control and aging is organized according to 3 perspectives of research involving description, explanation, and modification. An extensive body of literature has utilized cross-sectional and correlational methods to describe the sociodemographic variations and outcomes associated with perceived control. This work has focused on differences in perceived control as a function of age, sex, education, socioeconomic status, and culture and has identified positive associations with many aging-related outcomes involving health and well-being. With growing evidence regarding the health benefits of perceived control in the context of a declining sense of control with aging, there has been an increased effort to uncover the mechanisms involved, with the hopes of developing methods to maintain and/or promote adaptive control beliefs throughout adulthood. Through longitudinal and experimental work, researchers are beginning to clarify the directionality and elucidate the mechanisms to explain the associations. Recent evidence from longitudinal studies shows that control beliefs have an impact on subsequent changes in health. Yet, the findings suggest that it is not a unidirectional relationship. A conceptual model suggesting an ongoing reciprocal relationship between perceived control and health and well-being is discussed. Research examining the mechanisms that link perceived control to aging-related outcomes can help to inform and to develop effective interventions that are tailored to the

individual's specific barriers and goals. We consider new directions for research, including more attention to intraindividual variability and reactivity to daily challenges, such as stress, with the goal of advancing our understanding of how perceived control contributes to aging-related outcomes. More work is needed to develop strategies to enhance control beliefs in later life. Although it will not always be possible to modify control beliefs, researchers can take these beliefs into account when developing interventions. A personalized approach is recommended as a way to tailor interventions that are compatible with individuals' beliefs about control to facilitate adaptive behavior change.

CONCLUSIONS focus on selected issues and considerations for future research.

PDF Y Endnote Y

Poor sleep and risk of falls in community-dwelling older adults

Min Y, Slattum PW.

J. Appl. Gerontol. 2016; ePub(ePub): ePub.

Affiliation: Virginia Commonwealth University, Richmond, USA.

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Abstract

Concerns about sleep problems and falls in older adults are significant. This article reviews the association between sleep problems and falls in community-dwelling adults aged 65 years or older. Multiple databases were searched from inception until 2015 using sleep, sleep disorders, and falls as keywords, limiting to studies published in English in peer-reviewed journals. After screening and assessing for eligibility, 18 articles were selected based on the inclusion and exclusion criteria. Findings of an association between sleep problems and risk of falls are conflicting, but some specific sleep problems such as extremely short sleep duration, daytime sleepiness and naps appear to be significantly related to falls in older adults.

Methodological limitations including variability in covariates included in the analyses and measurement of the exposure and outcome variables were identified. The results of this review identified the need to have comparable definitions, validated tools, and rigorous design of future studies.

PDF Y Endnote Y

Predicting risk and outcomes for frail older adults: an umbrella review of frailty screening tools

Citation

Apóstolo J, Cooke R, Bobrowicz-Campos E, Santana S, Marcucci M, Cano A, Vollenbroek-Hutten M, Germini F, Holland C.

JBI Database Syst. Rev Implement. Rep. 2017; 15(4): 1154-1208.

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Abstract

BACKGROUND: A scoping search identified systematic reviews on diagnostic accuracy and predictive ability of frailty measures in older adults. In most cases, research was confined to specific assessment measures related to a specific clinical model.

OBJECTIVES: To summarize the best available evidence from systematic reviews in relation to reliability, validity, diagnostic accuracy and predictive ability of frailty measures in older adults.

INCLUSION CRITERIA POPULATION: Older adults aged 60 years or older recruited from community, primary care, long-term residential care and hospitals.

INDEX TEST: Available frailty measures in older adults.

REFERENCE TEST: Cardiovascular Health Study phenotype model, the Canadian Study of Health and Aging cumulative deficit model, Comprehensive Geriatric Assessment or other reference tests.

DIAGNOSIS OF INTEREST: Frailty defined as an age-related state of decreased physiological reserves characterized by an increased risk of poor clinical outcomes. **TYPES OF STUDIES:** Quantitative systematic reviews. **SEARCH STRATEGY:** A three-step search strategy was utilized to find systematic reviews, available in English, published between January 2001 and October 2015.

METHODOLOGICAL QUALITY: Assessed by two independent reviewers using the Joanna Briggs Institute critical appraisal checklist for systematic reviews and research synthesis. **DATA**

EXTRACTION: Two independent reviewers extracted data using the standardized data extraction tool designed for umbrella reviews. **DATA SYNTHESIS:** Data were only presented in a narrative form due to the heterogeneity of included reviews.

RESULTS: Five reviews with a total of 227,381 participants were included in this umbrella review. Two reviews focused on reliability, validity and diagnostic accuracy; two examined predictive ability for adverse health outcomes; and one investigated validity, diagnostic accuracy and predictive ability. In total, 26 questionnaires and brief assessments and eight frailty indicators were analyzed, most of which were applied to community-dwelling older people. The Frailty Index was examined in almost all these dimensions, with the exception of reliability, and its diagnostic and predictive characteristics were shown to be satisfactory. Gait speed showed high sensitivity, but only moderate specificity, and excellent predictive ability for future disability in activities of daily living. The Tilburg Frailty Indicator was shown to be a reliable and valid measure for frailty screening, but its diagnostic accuracy was not evaluated. Screening Letter, Timed-up-and-go test and PRISMA 7 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) demonstrated high sensitivity and moderate specificity for identifying frailty. In general, low physical activity, variously measured, was one of the most powerful predictors of future decline in activities of daily living.

CONCLUSION: Only a few frailty measures seem to be demonstrably valid, reliable and diagnostically accurate, and have good predictive ability. Among them, the Frailty Index and gait speed emerged as the most useful in routine care and community settings. However, none of the included systematic reviews provided responses that met all of our research questions on their own and there is a need for studies that could fill this gap, covering all these issues within the same study. Nevertheless, it was clear that no suitable tool for assessing frailty appropriately in emergency departments was identified.

PDF Will get ILL Endnote Y

Prognostication of traumatic brain injury outcomes in older trauma patients: a novel risk assessment tool based on initial cranial CT findings

Stawicki SP, Wojda TR, Nuschke JD, Mubang RN, Cipolla J, Hoff WS, Hoey BA, Thomas PG, Sweeney J, Ackerman D, Hosey J, Falowski S.

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DOI 10.4103/IJCIIS.IJCIIS_2_17 **PMID** 28382256 **PMCID** PMC5364765

Abstract

INTRODUCTION: Advanced age has been traditionally associated with worse traumatic brain injury (TBI) outcomes. Although prompt neurosurgical intervention (NSI, craniotomy or craniectomy) may be life-saving in the older trauma patient, it does not guarantee survival and/or return to preinjury functional status. The aim of this study was to determine whether a simple score, based entirely on the initial cranial computed tomography (CCT) is predictive of the need for NSI and key outcome measures (e.g., morbidity and mortality) in the older (age 45+ years) TBI patient subset. We hypothesized that increasing number of categorical CCT findings is independently associated with NSI, morbidity, and mortality in older patients with severe TBI.

METHODS: After IRB approval, a retrospective study of patients 45 years and older was performed using our Regional Level 1 Trauma Center registry data between June 2003 and December 2013. Collected variables included patient demographics, Injury Severity Score (ISS), Abbreviated Injury Scale Head (AISh), brain injury characteristics on CCT, Glasgow Coma Scale (GCS), Intensive Care Unit (ICU) and hospital length of stay (LOS), all-cause morbidity and mortality, functional independence scores, as well as discharge disposition. A novel CCT scoring tool (CCTST, scored from 1 to 8+) was devised, with one point given for each of the following findings: subdural hematoma, epidural hematoma, subarachnoid blood, intraventricular blood, cerebral contusion/intraparenchymal blood, skull fracture, pneumocephalus, brain edema/herniation, midline shift, and external (skin/face) trauma. Descriptive statistics and univariate analyses were conducted with 30-day mortality, in-hospital morbidity, and need for NSI as primary end-points. Secondary end-points included the length of stay in the ICU (ICULOS), step-down unit (SDLOS), and the hospital (HLOS) as well as patient functional outcomes, and postdischarge destination. Factors associated with the need for NSI were determined using matched NSI (n = 310) and non-NSI (n = 310) groups. All other analyses examined the combined patient sample (n = 620). Variables achieving a significance level of $P < 0.20$ were included in the logistic regression. Receiver operating characteristic curves, with corresponding area under the curve (AUC) determinations, were also analyzed. Statistical significance was set at $\alpha = 0.05$. Data are presented as percentages, mean \pm standard deviation, or adjusted odds ratios (AORs) with 95% confidence intervals (95% CIs).

RESULTS: A total of 620 patients were analyzed, including 310 patients who underwent NSI and 310 age- and ISS-matched non-NSI controls. Average patient age was 72.8 ± 13.4 years (64.1% male, 99% blunt trauma, mean ISS 25.1 ± 8.68 , and mean AISh/GCS of 4.63/10.9). CCTST was the only variable independently associated with NSI (AOR 1.23, 95% CI 1.06-1.42) and was inversely proportional to initial GCS and functional outcome scores on discharge. Increasing CCTST was associated with greater mortality, morbidity, HLOS, SDLOS, ICULOS, and ventilator days. On multivariate analysis, factors independently associated with mortality included AISh (AOR 2.70, 95% CI 1.21-6.00), initial GCS (AOR 1.14, 1.07-1.22), and CCTST (AOR 1.31, 1.09-1.58). Variables independently associated

with in-hospital morbidity included CCTST (AOR 1.16, 1.02-1.34), GCS (AOR 1.05, 1.01-1.09), and NSI (AOR 2.62, 1.69-4.06). Multivariate models incorporating factors independently associated with each respective outcome displayed good overall predictive characteristics for mortality (AUC 0.787) and in-hospital morbidity (AUC 0.651). Finally, modified CCTST demonstrated good overall predictive ability for NSI (AUC 0.755).

CONCLUSION: This study found that the number of discrete findings on CCT is independently associated with major TBI outcome measures, including 30-day mortality, in-hospital morbidity, and NSI. Of note, multivariate models with best predictive characteristics incorporate both CCTST and GCS. CCTST is easy to calculate, and this preliminary investigation of its predictive utility in older patients with TBI warrants further validation, focusing on exploring prognostic synergies between CCTST, GCS, and AISh. If independently confirmed to be predictive of clinical outcomes and the need for NSI, the approach described herein could lead to a shift in both operative and nonoperative management of patients with TBI.

PDF N Endnote Y

Psychotropic drug-related fall incidents in nursing home residents living in the eastern part of the Netherlands

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Drugs R D 2017; ePub(ePub): ePub.

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(Copyright © 2017, Adis International)

DOI 10.1007/s40268-017-0181-0 **PMID** 28389998

Abstract

BACKGROUND: Older people are more susceptible to falls than younger people. Therefore, as the Dutch population ages, the total number of falls and costs associated with them will rise. The use of psychotropic drugs is associated with an increased risk of falling. To create tailored fall-prevention programmes, information on the magnitude of the association between fall incidents and specific psychotropic drugs or drug classes is needed.

OBJECTIVE: The goal of this study was to delineate the associations between fall incidents and specific psychotropic drugs or drug classes.

METHODS: In this retrospective cohort study, electronic patient records, medication records and fall incident reports were collected for 1415 residents receiving somatic or psychogeriatric care in 22 nursing homes in the eastern part of the Netherlands from May 2012 until March 2015. Using a Cox proportional hazards model, we analysed the magnitude of the association between psychotropic drugs and the risk of falling for users and non-users of the psychotropic drugs or drug classes.

RESULTS: Antipsychotics (adjusted hazard ratio [aHR] 1.49; 95% confidence interval [CI] 1.12-2.00) and hypnotics and sedatives (aHR 1.51; 95% CI 1.13-2.02) increase the risk of falling. There was no difference between the risk incurred by typical and atypical antipsychotics. However, within these groups, there were differences between the most commonly prescribed drugs: haloperidol and quetiapine were seen to have an association with falls, whereas pipamperone and risperidone were not.

CONCLUSIONS: The results suggest falls may be associated with individual drugs rather than drug classes. Within the drug classes, clear differences are evident between individual drugs. Future fall-

prevention programmes should highlight the differential risks involved with the use of specific psychotropic drugs, and doctors should take the fall risk into account when choosing specific drugs.

PDF Y Endnote Y

Rehabilitation services use and patient reported outcomes among older adults in the United States

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Arch. Phys. Med. Rehabil. 2017; ePub(ePub): ePub.

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(Copyright © 2017, Elsevier Publishing)

DOI 10.1016/j.apmr.2017.02.027 **PMID** 28385481

Abstract

OBJECTIVES: To characterize rehabilitation service use among community-dwelling older adults in the United States by identifying predictors of rehabilitation utilization, patient-reported functional improvement and rehabilitation goal attainment.

DESIGN: Cross-sectional analysis of the 2015 National Health and Aging Trends Study, which used an age-stratified, multistage sampling design and oversampled non-Hispanic Blacks and the oldest old (≥85 years).

SETTING: Standardized, in-person home interviews and physical performance testing. **PARTICIPANTS:** A nationally representative sample of community-dwelling Medicare beneficiaries (N=7487), ages ≥65 years.

INTERVENTIONS: Not applicable.

MAIN OUTCOME MEASURE(S): Rehabilitation services use (physical therapy, occupational therapy, speech therapy) across all settings in the past year, patient-reported functional improvement and patient-reported rehabilitation goal attainment.

RESULTS: Twenty percent of older adults reported rehabilitation use in the past year. In a multivariable model, rehabilitation use was significantly lower among Black non-Hispanics and higher among those with higher education, chronic medical conditions, pain, history of falls, and severe limitations in physical performance. Overall, 72% reported functional improvement during rehabilitation and 75% reported meeting their goals by discharge. Improved function was associated with longer duration of rehabilitation. A significantly lower percentage of older adults with bothersome pain and severe physical limitations reported meeting rehabilitation goals.

CONCLUSIONS: The majority of older adults who received rehabilitation reported functional improvement and meeting rehabilitation goals. However, social disparities were evident with lower rehabilitation utilization among non-Hispanic Blacks and those with less education. Importantly, functional improvement and goal attainment did not vary by demographics or diagnoses. Longer duration of rehabilitation and improved pain management may be necessary for functional improvement and goal attainment.

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PDF Y Endnote Y

Support and Assessment for Fall Emergency Referrals (SAFER) 2: a cluster randomised trial and systematic review of clinical effectiveness and cost-effectiveness of new protocols for emergency ambulance paramedics to assess older people following a fall with referral to community-based care when appropriate

Snooks HA, Anthony R, Chatters R, Dale J, Fothergill R, Gaze S, Halter M, Humphreys I, Koniotou M, Logan P, Lyons R, Mason S, Nicholl J, Peconi J, Phillips C, Phillips J, Porter A, Siriwardena AN, Smith G, Toghill A, Wani M, Watkins A, Whitfield R, Wilson L, Russell IT.

Health Technol. Assess. 2017; 21(13): 1-218.

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(Copyright © 2017, National Co-ordinating Centre for Health Technology Assessment (UK))

DOI 10.3310/hta21130 **PMID** 28397649

Abstract

BACKGROUND: Emergency calls are frequently made to ambulance services for older people who have fallen, but ambulance crews often leave patients at the scene without any ongoing care. We evaluated a new clinical protocol which allowed paramedics to assess older people who had fallen and, if appropriate, refer them to community-based falls services.

OBJECTIVES: To compare outcomes, processes and costs of care between intervention and control groups; and to understand factors which facilitate or hinder use.

DESIGN: Cluster randomised controlled trial.

PARTICIPANTS: Participating paramedics at three ambulance services in England and Wales were based at stations randomised to intervention or control arms. Participants were aged 65 years and over, attended by a study paramedic for a fall-related emergency service call, and resident in the trial catchment areas.

INTERVENTIONS: Intervention paramedics received a clinical protocol with referral pathway, training and support to change practice. Control paramedics continued practice as normal.

OUTCOMES: The primary outcome comprised subsequent emergency health-care contacts (emergency admissions, emergency department attendances, emergency service calls) or death at 1 month and 6 months. Secondary outcomes included pathway of care, ambulance service operational indicators, self-reported outcomes and costs of care. Those assessing outcomes remained blinded to group allocation.

RESULTS: Across sites, 3073 eligible patients attended by 105 paramedics from 14 ambulance stations were randomly allocated to the intervention group, and 2841 eligible patients attended by 110 paramedics from 11 stations were randomly allocated to the control group. After excluding dissenting and unmatched patients, 2391 intervention group patients and 2264 control group patients were included in primary outcome analyses. We did not find an effect on our overall primary outcome at 1 month or 6 months. However, further emergency service calls were reduced at both 1 month and 6 months; a smaller proportion of patients had made further emergency service calls at 1 month (18.5% vs. 21.8%) and the rate per patient-day at risk at 6 months was lower in the intervention group (0.013 vs. 0.017). Rate of conveyance to emergency department at index incident was similar between groups. Eight per cent of trial eligible patients in the intervention arm were referred to falls services by attending paramedics, compared with 1% in the control arm. The proportion of patients left at scene without further care was lower in the intervention group than in the control group (22.6% vs. 30.3%). We found no differences in duration of episode of care or job cycle. No adverse events were reported. Mean cost of the intervention was £17.30 per patient.

There were no significant differences in mean resource utilisation, utilities at 1 month or 6 months or quality-adjusted life-years. In total, 58 patients, 25 paramedics and 31 stakeholders participated in focus groups or interviews. Patients were very satisfied with assessments carried out by paramedics. Paramedics reported that the intervention had increased their confidence to leave patients at home, but barriers to referral included patients' social situations and autonomy. CONCLUSIONS: Findings indicate that this new pathway may be introduced by ambulance services at modest cost, without risk of harm and with some reductions in further emergency calls. However, we did not find evidence of improved health outcomes or reductions in overall NHS emergency workload. Further research is necessary to understand issues in implementation, the costs and benefits of e-trials and the performance of the modified Falls Efficacy Scale. TRIAL REGISTRATION: Current Controlled Trials ISRCTN60481756 and PROSPERO CRD42013006418. FUNDING: This project was funded by the National Institute for Health Research (NIHR) Health PDF Y Endnote Y

The elderly recognizing themselves as vulnerable to falls in the concreteness of the femoral fracture

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Rev. Bras. Enferm. 2017; 70(2): 279-286.

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DOI 10.1590/0034-7167-2016-0392 **PMID** 28403310

Abstract

OBJECTIVES: understand the experience of the elderly with falls followed by femoral fracture and elaborate theoretical model of this process of lived experience.

METHOD: qualitative research with theoretical saturation through analysis of the ninth nondirected interview of elderly who underwent such experience. Interviews were recorded, transcribed, and analyzed according to Grounded Theory.

RESULTS: three categories emerged (sub-processes): evaluating signs and symptoms of fracture after the fall; feeling sad and insecure with the new condition; and finding oneself susceptible to fractures. From realignment of these categories (sub-processes) we could abstract the central category (process), recognizing oneself as vulnerable to falls in the concreteness of the fracture.

CONCLUSION: the theoretical model considering the Symbolic Interactionism signals the implementation of continued program for fall prevention, with teaching strategies that encourage the elderly to reflect on the concreteness of contexts in which there is risk of occurring injury to their health.

PDF Y Endnote Y

The impact of polypharmacy and drug interactions among the elderly population in Western Sicily, Italy

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Ageing Clin. Exp. Res. 2017; ePub(ePub): ePub.

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Abstract

AIM: Primary endpoint was to report polypharmacy distribution in the general population vs ≥65 years old people and to examine the frequency of drug-drug interactions (DDIs) in the Health Local Unit of Palermo, Italy, in relationship with patients' age.

METHODS: Drug prescription data for the year 2014 were extracted from the database of the Local Health Unit of Palermo Province, Italy. Patients were divided into five age groups (0-13, 14-64, 65-69, 70-74, and ≥75 year old). The detection of potential DDIs in polypharmacy profiles was performed with NavFarma software (Infologic srl, Padova, Italia), with DDI classification provided by tool Micromedex Drug Reax (Truven Health Analytics, Michigan, USA).

RESULTS: We analyzed data of 1,324,641 patients, and 15,801,191 medical prescription were recorded; of these, 11,337,796 regarded chronic conditions. The drug prescriptions reached the highest values in the 65-69 and 70-74 age groups ($p = 0.005$ and $p = 0.008$ vs age 14-64 respectively). An overall amount of 6,094,373 DDIs were detected, of which 47,173 were contraindicated. Median number of DDIs was higher in 65-69 and 70-74 age groups ($p = 0.008$ and $p = 0.012$ vs age 14-64, respectively). Regarding contraindicated DDIs a significant difference was detected comparing 14-64 vs ≥65 age groups ($p = 0.010$ vs 65-69 group, $p = 0.005$ vs 70-74 group and ≥75 group).

CONCLUSIONS: Polypharmacy is a phenomenon acquiring increasing dimensions also in our province. It interests particularly the older subjects, and assumes a dramatic accent when it is put in relationship with the frequency of DDIs. A proactive vigilance about potential life threatening drug interactions is mandatory.

PDF Y Endnote Y

The Otago exercise program: innovative delivery models to maximize sustained outcomes for high risk, homebound older adults

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Front. Public Health 2017; 5: e54.

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(Copyright © 2017, Frontiers Editorial Office)

DOI 10.3389/fpubh.2017.00054 PMID 28386536 PMCID PMC5362608

Abstract

BACKGROUND: It is estimated one in two adults age 80 and over fall each year, resulting in substantial morbidity and mortality rates among this oldest-old population. The Otago Exercise program (OEP) is an evidence-based fall prevention program shown to reduce falls by 35% among high-risk older adults. The OEP was designed to be delivered in the home by physical therapists. This model has encountered multiple implementation challenges in the United States health-care system, which has resulted in the development and testing of innovative models to support a broader reach and dissemination of this program.

METHODS: The Northwest Senior and Disability Services is an Area Agency on Aging (AAA) serving a five-county region in Oregon. This AAA developed a model where a Certified Occupational Therapy Assistant (COTA) and exercise physiologist delivered the OEP with a physical therapist available to consult on all cases. Physical function assessments and self-reported perceptions about physical function were collected at baseline and 6 months.

RESULTS: Baseline measures were collected on 239 participants enrolled in the OEP, and 62 participants at 6 months. Those who completed 6 months of the OEP demonstrated significant improvements in all physical function assessments and self-perceived functional improvements. A subset of this group that demonstrated improvements in the ability to rise from a chair also reported significantly fewer falls during the 6-month intervention.

CONCLUSION: Innovative models in which the OEP exercise sessions are delivered by non-physical therapists appear to be effective in improving physical performance measures and decreasing fall risk over a 6-month period. Because these models do not require a physical therapist, they may require fewer resources to implement. These findings have implications to inform implementation and dissemination strategies to bring the OEP to scale.

PDF Y Endnote Y

The validity of the Gait Variability Index for individuals with mild to moderate Parkinson's disease

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Gait Posture 2017; 54: 311-317.

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Abstract

Increased step-to-step variability is a feature of gait in individuals with Parkinson's disease (PD) and is associated with increased disease severity and reductions in balance and mobility. The Gait Variability Index (GVI) quantifies gait variability in spatiotemporal variables where a score ≥ 100 indicates a similar level of gait variability as the control group, and lower scores denote increased gait variability. The study aim was to explore mean GVI score and investigate construct validity of the index for individuals with mild to moderate PD. 100 (57 males) subjects with idiopathic PD, Hoehn & Yahr 2 (n=44) and 3, and ≥ 60 years were included. Data on disease severity, dynamic balance, mobility and spatiotemporal gait parameters at self-selected speed (GAITRite) was collected. The results showed a mean overall GVI: 97.5 (SD 11.7) and mean GVI for the most affected side: 94.5 (SD 10.6). The associations between the GVI and Mini- BESTest and TUG were low ($r=0.33$ and 0.42) and the GVI could not distinguish between Hoehn & Yahr 2 and 3 (AUC=0.529, SE=0.058, $p=0.622$). The mean GVI was similar to previously reported values for older adults, contrary to consistent reports of increased gait variability in PD compared to healthy peers. Therefore, the validity of the GVI could not be confirmed for individuals with mild to moderate PD in its current form due to low associations with validated tests for functional balance and mobility and poor discriminatory ability. Future work should aim to establish which spatiotemporal variables are most informative regarding gait variability in individuals with PD.

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Timed Up and Go predicts functional decline in older patients presenting to the emergency department following minor trauma

Eagles D, Perry JJ, Sirois MJ, Lang E, Daoust R, Lee J, Griffith L, Wilding L, Neveu X, Emond M.
Age Ageing 2017; 46(2): 214-218.

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(Copyright © 2017, Oxford University Press)

DOI 10.1093/ageing/afw184 **PMID** 28399218

Abstract

BACKGROUND: there is no standardised test for assessing mobility in the Emergency Department (ED).

OBJECTIVE: we wished to evaluate the relationship between the Timed Up and Go (TUG) and frailty, functional decline and falls in community dwelling elders that present to the ED following minor trauma.

METHODS: this was a secondary analysis of a prospective cohort study conducted at eight Canadian hospitals. Evaluations included: TUG; Study of Osteoporotic Fractures Frailty Index; Older American Resources and Service Functional Scale; and self-reported falls. Of note, 3- and 6-month follow-up was conducted. Generalised linear model with log-binomial distribution was utilised. Relative risks (RR) and 95% CI were calculated.

RESULTS: TUG scores were available for 911/2918 patients, mean age 76.2 (SD 7.8) and 57.9% female. There was an association between TUG scores and frailty ($P < 0.05$) and functional decline at 3 ($P < 0.05$) and 6 ($P < 0.05$) months but not self-reported falls. For TUG scores 10-19 seconds, 20-29 seconds and ≥ 30 seconds, respectively: (i) frailty RR (95% CI): 1.8 (1.3-2.4), 3.0 (2.2-4.2) and 3.7 (2.6-5.1); (ii) functional decline RR (95% CI): 2.7 (1.1-6.4), 5.5 (2.1-14.3) and 8.9 (3.0-25.8); (iii) falls RR (95% CI): 0.9 (0.5-1.5), 1.3 (0.6-2.5) and 1.1 (0.4-3.5).

CONCLUSION: in community dwelling elders presenting to the ED following minor trauma, TUG scores were associated with frailty and strongly associated with functional decline at 3 and 6 months post injury. TUG scores were not associated with self-reported falls. Use of the TUG in the ED will help identify frail patients at risk of functional decline.

PDF Y Endnote Y

Towards a postponement of activities of daily living dependence and mobility limitations: trends in healthy life years in old age in Sweden

Lagergren M, Johnell K, Schön P, Danielsson M.

Scand. J. Public Health 2017; ePub(ePub): ePub.

Affiliation : Stockholm County Council, Sweden.

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DOI 10.1177/1403494817698287 **PMID** 28381119

Abstract

AIMS: To investigate the development of healthy life expectancy from 65 years (HLE65) in Sweden in the period 1980-2011 using the health indicators activities of daily living (ADL) and mobility limitations within the framework of the postponement, compression and expansion theories.

METHODS: Sources of data for the HLE computations were Swedish national mortality statistics and the nationwide Swedish Surveys of Living Conditions, conducted biennially by Statistics Sweden since 1974. We used the Sullivan method for calculations of HLE and a decomposition into mortality and

disability effects was made.

RESULTS: Life expectancy at age 65 (LE65) increased by 3.1 years for women and 4.0 years for men from 1980-1985 to 2006-2011. HLE65 calculated according to ADL and mobility limitations increased more rapidly than LE65 for both men and women ($p < 0.05$).

CONCLUSIONS: Our results for trends in the Swedish LE65 and HLE65, computed on the basis of ADL and mobility limitations and using the Swedish Surveys of Living Conditions study, are in line with the postponement hypothesis and there is also a tendency for compression. Thus the years with ADL dependence and mobility limitations are postponed to a higher age and the numbers of these years have decreased.

PDF Y Endnote Y

What's new in critical illness and injury science? The role of a cranial computed tomography scoring tool in the care of older trauma patients

Malone B, Firstenberg MS.

Int. J. Crit. Illn. Inj. Sci. 2017; 7(1): 1-2.

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DOI 10.4103/IJCIIS.IJCIIS_21_17 **PMID** 28382250 **PMCID** PMC5364761

Abstract [Abstract unavailable]

PDF Y Endnote Y

Why do seniors leave resistance training programs?

Burton E, Hill AM, Pettigrew S, Lewin G, Bainbridge L, Farrier K, Airey P, Hill KD.

Clin. Interv. Aging 2017; 12: 585-592.

Affiliation: School of Physiotherapy and Exercise Science.

(Copyright © 2017, Dove Medical Press)

DOI 10.2147/CIA.S128324 **PMID** 28392682 **PMCID** PMC5375632

Abstract

PURPOSE: The proportion of the population, that is older, is growing at a faster rate than other age groups. Physical activity is important for older people because it assists in living independently. Participating in resistance training on a regular basis (twice weekly) is recommended for older people; yet, fewer than 15% of people over 60 years achieve this level. The aim of this article was to investigate the factors contributing to older people's decisions to stop participation in a resistance training program.

PARTICIPANTS AND METHODS: Participants were older people who had chosen to participate in a structured resistance training program specifically designed for seniors and then after a period of time discontinued. This population received a questionnaire in the mail focused on factors contributing to their cessation of resistance training exercise. Qualitative results were analyzed using inductive content analysis.

RESULTS: Fifty-six survey responses were received (average age 71.5 years, SD =9.0; 79% females). Injury, illness, and holidaying were the main reasons for ceasing participation. A small but important number of responses (11%) reported that they considered they were not provided with sufficient support during the resistance training programs.

CONCLUSIONS: To attract and retain their senior clients, the results indicate that program organizers need to provide tailored support to return to resistance training after injury and offer flexible and individualized services that accommodate older people's life choices in retirement.

PDF Y Endnote Y

Characteristics and incidence of traumatic brain injury in older adults using home care in Ontario from 2003-2013

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Can. Geriatr. J. 2017; 20(1): 2-9.

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DOI 10.5770/cgj.20.228 **PMID** 28396703 **PMCID** PMC5383403

Abstract

OBJECTIVES: Describe the characteristics and determine the annual cumulative incidence of traumatic brain injury (TBI) in older adults receiving home care in Ontario from 2003 to 2013.

METHODS: A retrospective cohort study of longitudinal data from the Ontario Association of Community Care Access Centers (N = 554,313). TBI, demographic variables, depression, neurological conditions, and recent falls were measured from the Resident Assessment Instrument-Home Care. Comparisons were made between service users with and without TBI using odds ratios. Standardized incidence rates were calculated and the 10-year trend of annual cumulative incidence rates was examined.

RESULTS: Characteristics associated with TBI: male sex (OR: 1.54), aboriginal origin (OR: 1.98), increasing age (low of OR: 1.22, in 70-74 years; high of OR: 2.31, in 90 years and older; comparison 65-69 years), being widowed (OR: 1.59), having one or more falls (OR: 2.31), the use of antidepressants (OR: 1.49) and the presence of depression (OR: 1.57), dementia (OR: 1.65), hemiplegia (OR: 4.34), multiple sclerosis (OR: 3.19) or parkinsonism (OR: 1.22). TBI incidence was significantly higher than rates previously reported in the literature. There was no change in the overall annual cumulative incidence over the 10-year period ($p = .13$).

CONCLUSIONS: Certain demographic characteristics, neurological diseases, antidepressant use, and a recent fall are associated with TBI. Incidence of TBI is higher than previous estimates and the overall incidence is not changing over time. These results can be used to improve care of the elderly and to generate hypotheses for future research regarding TBI in the home care setting.

PDF Y Endnote Y

Short-latency muscle response patterns to multi-directional, unpredictable perturbations to balance applied to the arm are context dependent

Forghani A, Preuss R, Milner TE.

Neuroscience 2017; ePub(ePub): ePub.

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DOI 10.1016/j.neuroscience.2017.03.062 **PMID** 28396008

Abstract

A number of studies have shown that sensory inputs from the hand can have a profound effect in stabilizing upright posture. This suggests that the central nervous system can extract information about body motion and external forces acting on the body from cutaneous sensory signals. We have recently shown that the central nervous system determines the direction of an unpredictable force applied to the hand so rapidly that it is able to activate ankle muscles in advance of the perturbing effect that this force has at the ankles. In this study we investigate whether this rapid change in activation of lower limb muscles is an invariant response determined by the pattern of somatosensory information arising from sensory receptors in the hand or whether it adapts to changes in postural stability. We manipulated lateral stability of upright stance by changing stance width which had no effect on the activation of upper limb muscles or hand kinematics, but produced profound changes in the activation patterns of lower limb muscles when perturbations were in the medial/lateral direction without affecting the activation patterns of muscles when perturbations were in the anterior/posterior direction.

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PDF Y Endnote y

Temporal coordination between ground reaction forces generated by leading and trailing limbs for propulsion during double stance phase in human walking

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Gait Posture 2017; 54: 295-299.

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(Copyright © 2017, Elsevier Publishing)

DOI 10.1016/j.gaitpost.2017.03.026 **PMID** 28391176

Abstract

Although it was reported that ground reaction forces (GRFs) are generated simultaneously by the leading and trailing limbs during the double stance phase, the finding was not examined by temporal analyses. Therefore, the purpose of the present study is to clarify how GRFs can act to propel the body in a forward direction during the double stance phase. GRFs were recorded during the double stance phase in eleven healthy volunteers. We calculated the instantaneous phase of the GRFs for vertical and anterior-posterior (AP) components, and then calculated the relative phase between the leading and trailing limbs for each component. The relative phase of the vertical component was approximately 180° (i.e., anti-phase), indicating that the lower limb transfers weight smoothly from the trailing limb to the leading limb. The relative phase of the AP component ranged from 40 to 55°, indicating that the AP component of the forces do not occur simultaneously, but instead has a lag. This finding suggests that the forces exerted by the leading and trailing limbs would temporally coordinate to propel the body in the forward direction.

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PDF Y Endnote Y

The impact of diabetes on mobility, balance, and recovery after repositioning maneuvers in individuals with benign paroxysmal positional vertigo

D'Silva LJ, Whitney SL, Santos M, Dai H, Kluding PM.

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Abstract

AIM: The prevalence of benign paroxysmal positional vertigo (BPPV) is higher in people with type 2 diabetes (DM). The impact of DM on mobility, balance, and management of BPPV is unknown. This prospective study compared symptom severity, mobility and balance before and after the canalith repositioning maneuver (CRM) in people with posterior canal BPPV canalithiasis, with and without DM.

METHODS: Fifty participants, BPPV (n=34) and BPPV+DM (n=16) were examined for symptom severity (dizziness handicap inventory, DHI), mobility (functional gait assessment, FGA), and postural sway (using an accelerometer in five conditions) before and after the CRM. The number of maneuvers required for symptom resolution was recorded.

RESULTS: At baseline, no differences in DHI or FGA scores were seen between groups, however, people with BPPV+DM had higher sway velocity in the medio-lateral direction in tandem stance ($p<0.01$). After treatment, both groups improved in DHI and FGA scores ($p<0.01$), with no differences between groups. Decrease in sway velocity in the mediolateral direction ($p=0.003$) were seen in tandem stance in persons with BPPV+DM. There were no differences between the groups in the number of CRMs provided.

CONCLUSIONS: This pilot study showed no differences in symptom severity, mobility deficits or efficacy of CRM treatments in people with posterior canal BPPV canalithiasis with and without DM. Future studies examining the impact of the severity and duration of diabetes, as well as the influence of diabetic peripheral neuropathy on functional performance are essential.

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Using visual stimuli to enhance gait control

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Abstract

Gait control challenges commonly coincide with vestibular dysfunction and there is a long history in using balance and gait activities to enhance functional mobility in this population. While much has been learned using traditional rehabilitation exercises, there is a new line of research emerging that is using visual stimuli in a very specific way to enhance gait control. For example, avatars can be created in an individualized manner to incorporate specific gait characteristics. The avatar could then be used as a visual stimulus to which the patient can synchronize their own gait cycle. This line of research builds upon the rich history of sensorimotor control research in which augmented sensory information (visual, haptic, or auditory) is used to probe, and even enhance, human motor control. This review paper focuses on gait control challenges in patients with vestibular dysfunction, provides a brief historical perspective on how various visual displays have been used to probe sensorimotor and gait control, and offers some recommendations for future research.

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