

SafetyLit July 15th 2018

Age-related declines in the ability to modulate common input to bilateral and unilateral plantar flexors during forward postural lean

Watanabe T, Saito K, Ishida K, Tanabe S, Nojima I.

Front. Hum. Neurosci. 2018; 12: e254.

Affiliation: Department of Physical Therapy, Graduate School of Medicine, Nagoya University, Nagoya, Japan.

(Copyright © 2018, Frontiers Research Foundation)

DOI 10.3389/fnhum.2018.00254 **PMID** 29988551 **PMCID** PMC6026674

Abstract

Aging can impair an ability to lean the body forward to the edge of the base of support. Here, we investigated, using a coherence analysis, common inputs to bilateral and unilateral plantar flexor muscles to test a hypothesis that the age-related impairment would be related to strong synchronous bilateral activation and reduced cortical control of these muscles. Healthy young ($n = 14$) and elderly adults ($n = 19$), who were all right-foot dominant, performed quiet standing task and tasks that required the subjects to lean their body forward to 35 and 75% of the maximum lean distance. The electromyogram was recorded from the bilateral medial gastrocnemius (MG) and soleus (SL) muscles. We analyzed delta-band coherence, that reflects comodulation of muscle activity, between the bilateral homologous muscles (MG-MG and SL-SL pairs). The origin of this bilateral comodulation is suggested to be the subcortical system. Also, we examined beta-band coherence, that is related to the corticospinal drive, between the unilateral muscles (MG-SL pair) in the right leg.

RESULTS indicated that the bilateral delta-band coherence for the MG-MG pair was significantly smaller in the 75% forward lean than quiet standing and 35% forward lean tasks for the young adults (quiet: $p = 0.036$; 35%: $p = 0.0011$). The bilateral delta-band coherence for the SL-SL pair was significantly smaller in the 75% forward lean than 35% forward lean task for the young adults ($p = 0.027$). Furthermore, the unilateral beta-band coherence was larger in the forward lean than quiet standing task for the young adults (35%: $p < 0.001$; 75%: $p = 0.029$). Contrarily, the elderly adults did not demonstrate such changes. These findings suggest the importance of decreasing the synchronous bilateral activation and increasing the unilateral cortical control of the plantar flexor muscles for the successful forward postural lean performance, and that aging impairs this modulatory ability.

PDF Y Endnote Y

Automated fall detection technology in inpatient geriatric psychiatry: nurses' perceptions and lessons learned

Coahran M, Hillier LM, Van Bussel L, Black E, Churchyard R, Gutmanis I, Ioannou Y, Michael K, Ross T, Mihailidis A.

Can. J. Aging 2018; ePub(ePub): ePub.

Affiliation: University of Toronto, Dept. of Occupational Science & Occupational Therapy / Toronto Rehabilitation Institute-University Health Network.

(Copyright © 2018, Cambridge Press)

DOI 10.1017/S0714980818000181 **PMID** 29966539



Abstract

Hospitalized older adults are at high risk of falling. The HELPER system is a ceiling-mounted fall detection system that sends an alert to a smartphone when a fall is detected. This article describes the performance of the HELPER system, which was pilot tested in a geriatric mental health hospital. The system's accuracy in detecting falls was measured against the hospital records documenting falls. Following the pilot test, nurses were interviewed regarding their perceptions of this technology. In this study, the HELPER system missed one documented fall but detected four falls that were not documented. Although sensitivity (.80) of the system was high, numerous false alarms brought down positive predictive value (.01). Interviews with nurses provided valuable insights based on the operation of the technology in a real environment; these and other lessons learned will be particularly valuable to engineers developing this and other health and social care technologies.

PDF Y Endnote Y

Concern about falling and complexity of free-living physical activity patterns in well-functioning older adults

Paraschiv-Ionescu A, Büla CJ, Major K, Lenoble-Hoskovec C, Krief H, El-Moufawad C, Aminian K. *Gerontology* 2018; ePub(ePub): ePub.

Affiliation: Institute of Bioengineering, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.

(Copyright © 2018, Karger Publishers)

DOI 10.1159/000490310 **PMID** 29972821

Abstract

BACKGROUND: Fall-related psychological concerns are common among older adults, potentially contributing to functional decline as well as to restriction of activities and social participation. To effectively prevent such negative consequences, it is important to understand how even very low concern about falling could affect physical activity behavior in everyday life. We hypothesized that concern about falling is associated with a reduction in diversity, dynamics, and performance of daily activities, and that these features can be comprehensively quantified in terms of complexity of physical activity patterns.

ETHODS: A sample of 40 community-dwelling older adults were assessed for concern about falling using the Falls Efficacy Scale-International (FES-I). Free-living physical activity was assessed using a set of metrics derived from data recorded with a chest-worn tri-axial accelerometer. The devised metrics characterized physical activity behavior in terms of endurance (total locomotion time, longest locomotion period, usual walking cadence), performance (cadence of longest locomotion period, locomotion periods with at least 30 steps and 100 steps/min), and complexity of physical activity patterns. Complexity was quantified according to variations in type, intensity, and duration of activities, and was considered as an adaptive response to environmental exigencies over the course of the day.

RESULTS: Based on FES-I score, participants were classified into two groups: not concerned at all/fully confident ($n = 25$) and concerned/less confident ($n = 15$). Demographic and health-related variables did not differ significantly between groups. Comparison of physical activity behavior indicated no significant differences for endurance-related metrics. In contrast, performance and complexity metrics were significantly lower in the less confident group compared to the fully

confident group. Among all metrics, complexity of physical activity patterns appeared as the most discriminative feature between fully confident and less confident participants ($p = 0.001$, non-parametric Cliff's delta effect size = 0.63).

CONCLUSIONS: These results extend our understanding of the interplay between low concern about falling and physical activity behavior of community-dwelling older persons in their everyday life context. This information could serve to better design and evaluate personalized intervention programs in future prospective studies.

© 2018 The Author(s) Published by S. Karger AG, Basel.

PDF Y Endnote Y

Concurrent validity and reliability of the Community Balance and Mobility scale in young-older adults

Weber M, Van Ancum J, Bergquist R, Taraldsen K, Gordt K, Mikolaizak AS, Nerz C, Pijnappels M, Jonkman NH, Maier AB, Helbostad JL, Vereijken B, Becker C, Schwenk M.

BMC Geriatr. 2018; 18(1): e156.

Affiliation: Department of Clinical Gerontology, Robert-Bosch Hospital, Stuttgart, Germany. schwenk@nar.uni-heidelberg.de.

(Copyright © 2018, Holtzbrinck Springer Nature Publishing Group)

DOI 10.1186/s12877-018-0845-9 **PMID** 29970010

Abstract

BACKGROUND: With the growing number of young-older adults (baby-boomers), there is an increasing demand for assessment tools specific for this population, which are able to detect subtle balance and mobility deficits. Various balance and mobility tests already exist, but suffer from ceiling effects in higher functioning older adults. A reliable and valid challenging balance and mobility test is critical to determine a young-older adult's balance and mobility performance and to timely initiate preventive interventions. The aim was to evaluate the concurrent validity, inter- and intrarater reliability, internal consistency, and ceiling effects of a challenging balance and mobility scale, the Community Balance and Mobility Scale (CBM), in young-older adults aged 60 to 70 years. **METHODS:** Fifty-one participants aged 66.4 ± 2.7 years (range, 60-70 years) were assessed with the CBM. The Fullerton Advanced Balance scale (FAB), 3-Meter Tandem Walk (3MTW), 8-level balance scale, Timed-Up-and-Go (TUG), and 7-m habitual gait speed were used to estimate concurrent validity, examined by Spearman correlation coefficient (ρ). Inter- and intrarater reliability were calculated as Intra-class-correlations (ICC), and internal consistency by Cronbach alpha and item-total correlations (ρ). Ceiling effects were determined by obtaining the percentage of participants reaching the highest possible score.

RESULTS: The CBM significantly correlated with the FAB ($\rho = 0.75$; $p < .001$), 3MTW errors ($\rho = -0.61$; $p < .001$), 3MTW time ($\rho = -0.35$; $p = .05$), the 8-level balance scale ($\rho = 0.35$; $p < .05$), the TUG ($\rho = -0.42$; $p < .01$), and 7-m habitual gait speed ($\rho = 0.46$, $p < .001$). Inter- ($ICC_{2,k} = 0.97$), intrarater reliability ($ICC_{3,k} = 1.00$) were excellent, and internal consistency ($\alpha = 0.88$; $\rho = 0.28-0.81$) was good to satisfactory. The CBM did not show ceiling effects in contrast to other scales.

CONCLUSIONS: Concurrent validity of the CBM was good when compared to the FAB and moderate to good when compared to other measures of balance and mobility. Based on this study, the CBM can be recommended to measure balance and mobility performance in the specific population of

young-older adults. TRIAL REGISTRATION: Trial number: ISRCTN37750605. (Registered on 21/04/2016).

PDF Y Endnote Y

Correlates of falls among community-dwelling elderly in Thailand

Worapanwisit T, Prabpai S, Rosenberg E.

J. Aging Res. 2018; 2018: e8546085.

Affiliation: Department of Sociology, Appalachian State University, Boone, NC 28608, USA.

(Copyright © 2018, Sage Hindawi)

DOI 10.1155/2018/8546085 **PMID** 29992055 **PMCID** PMC5994309

Abstract

Nearly every nation is experiencing rapid population aging. One area of major concern is health; a major health risk for older adults is falling, and there are multiple negative consequences of falling. This is a global concern yet is underresearched in many nations. This study examines demographic, health, and environmental correlates of falling among community-dwelling Thai elderly. Data were collected from a sample of 406 adults aged 60-69. Significant ($p < 0.05$) fall correlates were urban residence, older age, greater BMI, impaired and uncorrected vision, chronic health conditions, medication use and medication side effects, poor muscle tone, and hazardous indoor and outdoor home environments.

RESULTS lead to recommendations for interventions to reduce fall risk that are both evidence-based and culturally acceptable.

PDF Y Endnote Y

Differences in falls between older adult participants in group exercise and those who exercise alone: a cross-sectional study using Japan Gerontological Evaluation Study (JAGES) data

Hayashi T, Kondo K, Kanamori S, Tsuji T, Saito M, Ochi A, Ota S.

Int. J. Environ. Res. Public Health 2018; 15(7): e15071413.

Affiliation: Department of Rehabilitation and Care, Seijoh University, Tokai, Aichi 476-8588, Japan. ota-s@seijoh-u.ac.jp.

(Copyright © 2018, Multidisciplinary Digital Publishing Institute)

DOI 10.3390/ijerph15071413 **PMID** 29976848

Abstract

This study examined the difference in falls between older adults who participated in group exercise and those who exercised alone. We used cross-sectional data from the Japan Gerontological Evaluation Study. Data were obtained from functionally independent residents aged 65 years or older across 30 municipalities in Japan ($n = 19,257$). Logistic regression analysis was performed with experience of multiple falls over the past year as the dependent variable and type of exercise as the independent variable. Respondents were divided into three groups according to how they performed exercise: (1) non-exercisers (NE, no exercise), (2) those who only exercised alone (IE, individual exercise), and (3) those whose exercise included participation in group exercise (GE, group exercise). In total, 887 (4.6%) respondents reported multiple falls. After adjustment for 10 possible confounders, the GE group had an odds ratio (OR) for falls of 0.75 (95% confidence

intervals 0.60-0.95) compared with the IE group. After adjustment for physiological factors and a psychological factor, the OR for the GE group increased slightly; however, an association between falls and exercise type was indicated. Older adults who participate in group exercise may receive additional benefits related to falls prevention compared with those who exercise alone.

PDF Y Endnote Y

Dose-response effects of years of self-reported physical activity on old females' motor and cognitive function

Dascal JB, Sanders LMJ, Filho EGDC, Hortobagyi T.

Rev. Bras. Fisioter. 2018; ePub(ePub): ePub.

Affiliation: Center for Human Movement Sciences, University of Groningen, University Medical Center Groningen, Groningen, Netherlands.

(Copyright © 2018, Departamento de Fisioterapia da Universidade Federal de São Carlos)

DOI 10.1016/j.bjpt.2018.06.002 **PMID** 29983340

Abstract

BACKGROUND: There is a poor understanding of the dose-response relationship between years of physical activity and motor and cognitive function. We determined the dose-response effects of physical activity duration in years on motor and cognitive function and their relationship in healthy old females.

OBJECTIVES: To determine the dose-effects of physical activity duration in years on motor and cognitive function and their relationship in health aging adults.

METHODS: We conducted a retrospective observational study with 201 old (age 69 years; SD=5.9) and 12 young (mean age 21 years; SD=1.9) females, with sub-groups based on number of years of self-reported physical activity. Aerobic capacity, mobility, functional reach, standing balance, global cognition, episodic memory, executive function, and processing speed were assessed with performance-based tests. We analyzed sub-group differences quantitatively and qualitatively and performed regression and mediation analyses to determine predictors and mediators of physical activity effects.

RESULTS: Based on physical activity of minimal (0.3 y, n=29), short (2.4 y, n=77), moderate (6.2 y, n=36) and long (16.6 y, n=59) duration, physical activity for at least 2.4 years affords old adults benefits in body mass index with peak dose-effects present in aerobic capacity and mobility at 6.2 years without additional benefits after 16.6 years of physical activity. Physical activity for any duration had no effects on functional reach, balance, executive function, episodic memory, and processing speed. Although weakly mobility predicted global cognition and executive function.

CONCLUSION: Performing physical activity up to 6.2 years on average had favorable effects on body mass index, aerobic capacity and mobility. The data strengthen current recommendations for an active lifestyle in adulthood to prevent aging-related motor and cognitive decline.

Copyright © 2018 Associação Brasileira de Pesquisa e Pós-Graduação em Fisioterapia. Publicado por Elsevier Editora Ltda. All rights reserved.

PDF Y Endnote Y

Effects of physical activity governmental programs on health status in independent older adults: a systematic review

Valdés-Badilla P, Gutiérrez-García C, Pérez-Gutiérrez M, Vargas-Vitoria R, López-Fuenzalida A. *J. Aging Phys. Act.* 2018; ePub(ePub): 1-32.

Affiliation: Kinesiology career, Department of Health Sciences, Faculty of Medicine, Pontificia Universidad Católica de Chile, Santiago, Chile.

(Copyright © 2018, Human Kinetics Publishers)

DOI 10.1123/japa.2017-0396 **PMID** 29989461

Abstract

This systematic review analyzes the evidence of the effects of physical activity governmental programs oriented towards the health of independent older adults. Medline, Web of Science, PsycINFO and Psychology and Behavioral Sciences Collection databases were used for data mining and the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) recommendations were followed. Five studies (n=2,545 participants) fulfilled the established inclusion criteria. The physical activity programs had beneficial effects on the older adults' quality of life, fall risk, activities of daily living, physical activity levels, nutritional risk, body mass index, arterial pressure, resting heart rate, blood glucose, triglycerides and/or cholesterol, but did not significantly alter their body fat mass percentage. Programs involving diverse physical capacities seem to be more effective for healthy aging. It is recommended that governments start to disseminate the outcomes of these programs within society and the scientific community.

PDF Y Endnote Y

Factors associated with physical performance measures in a multiethnic cohort of older adults

Granic A, Mossop H, Engström G, Davies K, Dodds R, Galvin J, Ouslander JG, Tappen R, Sayer AA. *Gerontol. Geriatr. Med.* 2018; 4: e2333721418778623.

Affiliation: University of Southampton, UK.

(Copyright © 2018, The Author(s), Publisher SAGE Publications)

DOI 10.1177/2333721418778623 **PMID** 29977978 **PMCID** PMC6024280

Abstract

Objective: To explore the association between ethnicity, sociodemographic, health, and lifestyle factors, and physical performance (PP) in ethnically diverse community-dwelling older adults from one geographic area.

Method: We used multivariable linear regression to identify factors associated with upper (grip strength [GS], arm curls [AC]) and lower (chair stands [CS]) body strength and mobility (gait speed [GSp]) in 577 older adults (mean age 74 ± 8 ; 104 African American, 142 Afro-Caribbean, 123 Hispanic, and 208 European American) from South Florida.

Results: Worse mental health was negatively associated with CS in African Americans and AC in Hispanics. Older age and higher body mass index (BMI) was associated with slower GSp in all except in Hispanics. Higher physical activity was associated with higher upper body strength in Hispanics and better mobility in African Americans and Afro-Caribbeans, but not in European Americans.

Conclusion: Studies with large multiethnic cohorts are needed to further our understanding of ethnic differences in PP, which will help in tailoring interventions and recognizing unmet needs for health and social services.



PDF Y Endnote Y**Family caregivers' reports of hospitalizations and emergency department visits in community-dwelling individuals with dementia**

Benner M, Steiner V, Pierce LL.

Dementia (Sage) 2018; 17(5): 585-595.

Affiliation: College of Nursing, University of Toledo, Toledo, Ohio, USA.

(Copyright © 2018, Sage Publications)

DOI 10.1177/1471301216653537 **PMID** 29968510

Abstract

Individuals with dementia in the United States have higher rates of hospitalizations and emergency department visits compared to those without. This descriptive study examined the frequency of hospitalizations and emergency department visits among community-dwelling individuals with dementia, reasons for hospitalizations and emergency department visits, and caregivers' actions to prevent these events. Family caregivers (n = 63) from education/support groups offered through Alzheimer's Association chapters in western Ohio completed a survey. Twenty-two percent of caregivers reported that their care recipient stayed overnight in the hospital and 30% reported that their care recipient visited the emergency department at least once in the past three months. The most frequent reasons for hospitalization and emergency department visits, such as urinary tract infections and fall-related injuries, were potentially avoidable. Caregivers reported giving medications, seeking healthcare services, and obtaining home care services, as the most frequently used preventive actions. Family caregivers of individuals with dementia should be provided substantive education about preventable hospitalizations and emergency department visits.

PDF Y Endnote Y**Feasibility and effectiveness of home-based exercise programs on physical performance and health-related quality of life of the older people dwelling on an isolated, doctor-less island**

Akihiro S, Taira Y, Maeda K, Natsume K, Sakakima H.

Geriatr. Gerontol. Int. 2018; ePub(ePub): ePub.

Affiliation: Course of Physical Therapy, School of Health Sciences, Faculty of Medicine, Kagoshima University, Kagoshima, Japan.

(Copyright © 2018, Japan Geriatrics Society, Publisher John Wiley and Sons)

DOI 10.1111/ggi.13459 **PMID** 29984893

Abstract

AIM: To promote preventive care among older individuals dwelling on an isolated, doctor-less island, we investigated the feasibility and the efficacy of a home-based exercise program, depending on their functional status and health-related quality of life.

METHODS: A total of 23 older (mean age 72.6 years) participants were assigned to a home-based exercise program (intervention group), and 34 older (mean age 74.2 years) participants were assigned to a group without any intervention (control group). The participants of the intervention group attended the exercise program three times a week for 3 months. The exercise program consisted of various exercises involving stretching, muscle strengthening, balance retraining and walking. The physical performance, Functional Independence Measure and Short-Form 36-item

health survey were used to assess the physical and the mental wellbeing of the participants.
RESULTS: There was no significant difference between the changes in physical performance at baseline and post 3 months in both groups. However, the motor and the cognitive Functional Independence Measure scores significantly improved in the intervention group post 3 months. The domains of the Short-Form 36-item health survey improved post 3 months; particularly, significant improvement was observed in the physical functions, general health, vitality, mental health and mental component summary.

CONCLUSIONS: Although an isolated island has several problems to support preventive care services, such as a lack of medical resources and availability of only a few healthcare workers, the present study provides evidence on the feasibility and efficacy of nurse-led home-based exercise programs for improving the physical and mental health of the older people dwelling on an isolated, doctor-less island.

© 2018 Japan Geriatrics Society.

PDF Y Endnote Y

Hip fractures in the non-elderly-who, why and whither?

Rogmark C, Kristensen MT, Viberg B, Rönquist SS, Overgaard S, Palm H.

Injury 2018; ePub(ePub): ePub.

Affiliation: Department of Orthopedics, Copenhagen University Hospital Bispebjerg, Copenhagen, Denmark.

(Copyright © 2018, Elsevier Publishing)

DOI 10.1016/j.injury.2018.06.028 **PMID** 29983171

Abstract

Nonelderly hip fracture patients have gathered little scientific attention, and our understanding of the group may be biased by patient case-mix and lack of follow-up. Preconceptions may thwart adequate investigation of bone health and other comorbidities. This literature review focusses on who these patients between 20 and 60 years are, how to treat them and how to evaluate the outcome. 2-11% of the hip fractures occur in non-elderly, equally common in men and women. Every second to fourth patient smoke, have chronic diseases, and abuse alcohol. Poor self-rated health, sleep disturbances, low cognitive function and education are associated with increased hip fracture risk in young adults. Bone health is poorly investigated, but literature suggest young patients to have lower bone mineral density regardless of trauma mechanism. Studies contradict on whether surgery within 8-12 h reduce the risk of avascular necrosis in femoral neck fractures (FNF). Based on rationality, surgery ought to be performed promptly, in order to reduce pain and permit rehabilitation. There is no convincing support from the existing literature to use open reduction. Good reduction is mandatory, preferably using a closed reduction technique. The failure rate following internal fixation of displaced FNF in younger patients can be as high as 59%. In some cases a displaced FNF is better treated with a primary arthroplasty; in case of rheumatoid arthritis or osteoarthritis for example. Complications after extracapsular fractures vary from 6 to 23%. The relatively few studies looking at functional outcome in non-elderly use a multitude of outcome measures, precluding comparisons. Many non-elderly patients seem not to fully recover. While some non-elderly hip fracture patients are healthy individuals sustaining high energy trauma, others have low-energy fractures and comorbidities including reduced bone strength (either as a primary

or secondary condition). i.e. non-delaying medical optimization, proper surgical technique, bone health investigation and secondary fracture prevention is necessary. Younger hip fracture patients are at risk of permanent loss of function, and negative socioeconomic and psychological consequences. High-energy trauma does not exclude the presence of osteopenia. A hip fracture in adulthood and middle-age is very seldom caused by bad luck only!

PDF Y Endnote Y

Occupational therapy fall prevention interventions for community-dwelling older adults: a systematic review

Elliott S, Leland NE.

Am. J. Occup. Ther. 2018; 72(4): 7204190040p1-7204190040p11.

Affiliation: Natalie E. Leland, PhD, OTR/L, BCG, FAOTA, is Associate Professor, Department of Occupational Therapy, University of Pittsburgh, Pittsburgh, PA, and Adjunct Faculty, Department of Health Services, Policy, and Practice, Brown University, Providence, RI.

(Copyright © 2018, American Occupational Therapy Association)

DOI 10.5014/ajot.2018.030494 **PMID** 29953828

Abstract

OBJECTIVE: Accidental falls among community-dwelling older adults are preventable and increase the risk of morbidity, hospitalization, and institutionalization. We updated and broadened a 2008 systematic review examining the evidence for the effectiveness of fall prevention interventions in improving fall-related outcomes, occupational performance, quality of life, and health care facility readmissions for community-dwelling older adults.

METHOD: We searched and analyzed literature published from 2008 to 2015 from five electronic databases.

RESULTS: Fifty articles met the inclusion criteria and were critically appraised and synthesized-37 provided Level I; 5, Level II; and 8, Level III evidence. Analysis was organized into four intervention themes: single component, multicomponent, multifactorial, and population based. Mixed evidence was found for single-component and multifactorial interventions, strong evidence was found for multicomponent interventions, and moderate evidence was found for population-based interventions.

CONCLUSION: These findings can inform the delivery and integration of fall prevention interventions from acute care to community discharge.

Copyright © 2018 by the American Occupational Therapy Association, Inc.

PDF Will get ILL Endnote Y

One-year outcome following brain injury: a comparison of younger versus elderly major trauma patients

Gross T, Amsler F.

Arch. Orthop. Trauma Surg. 2018; ePub(ePub): ePub.

(Copyright © 2018, Springer Verlag)

DOI 10.1007/s00402-018-2974-1 **PMID** 29948226

Abstract



INTRODUCTION: The increasing number of older trauma patients has provoked a debate on the need for subsequent rehabilitative therapy for the elderly. Our findings revealed a lack of detailed data on this topic so we became interested in the effective differences in the longer-term outcomes for older and younger major trauma patients with TBI. As validation studies on the recently published specific Quality of Life after Brain Injury (QOLIBRI) have only involved patients under the age of 68 years, we focused on testing this score in comparison to other outcome measures.

MATERIALS AND METHODS: Prospective cohort study of the differences in 1-year functional or health-related quality of life (HRQoL) outcomes, such as the Glasgow Outcome Score (GOS), the Quality of Life after Brain Injury (QOLIBRI) score or the medical outcomes study Short Form-36 (SF-36) between younger (16-64 years) and elderly (> 65 years) adults following major trauma (New Injury Severity Score, NISS \geq 8) with TBI (Abbreviated Injury Scale, AIS head > 0).

RESULTS: Out of 326 TBI patients with a mean NISS of 20.6 ± 9.4 34% (n = 110 (33.7%)) were aged 65 or older versus n = 216 (66.3%) who were younger. Comparison of 1-year outcomes revealed no differences between younger versus elderly patients with regard to functional or HRQoL scores (e.g. total QOLIBRI 77.4 ± 20.0 and 75.6 ± 18.1 , resp.). Univariate analysis showed no correlation of the total QOLIBRI with age (Pearson $r = -0.09$) or trauma severity (AIS) of the head ($r = -0.05$).

Multivariate analysis confirmed an association of age 80 or older ($R^2 = 0.026$, $p = 0.029$), but not of overall age ($R^2 = 0.004$, $p = 0.218$) with 1-year outcome scores on the total QOLIBRI.

CONCLUSIONS: Given the rising rehabilitation demands of the elderly these pilot findings call for the utilisation of specific outcome scores such as the QOLIBRI in this age group as well, at least up to an age of 80 years and independently of the severity of TBI sustained.

PDF Y Endnote Y

Performances on the Timed Up and Go Test and subtasks between fallers and non-fallers in older adults with cognitive impairment

Ansai JH, Andrade LP, Nakagawa TH, Rebelatto JR.

Arq. Neuropsiquiatr. 2018; 76(6): 381-386.

Affiliation: Universidade Federal de São Carlos, Departamento de Fisioterapia, São Carlos SP, Brasil. (Copyright © 2018, Associação Arquivos De Neuro-Psiquiatria)

DOI 10.1590/0004-282X20180055 **PMID** 29972420

Abstract

This work aimed to compare performances on the Timed Up and Go (TUG) test and its subtasks between faller and non-faller older adults with mild cognitive impairment (MCI) and mild Alzheimer's disease (AD). A prospective study was conducted, with 38 older adults with MCI and 37 with mild AD. Participants underwent an assessment at baseline (the TUG and its subtasks using the Qualisys ProReflex system) and the monitoring of falls at the six-month follow up. After six months, 52.6% participants with MCI and 51.3% with AD fell. In accordance with specific subtasks, total performance on the TUG distinguished fallers from non-fallers with AD, fallers from non-fallers with MCI and non-fallers with MCI from non-fallers with AD. Although no other difference was found in total performances, non-fallers with MCI and fallers with AD differed on the walking forward, turn and turn-to-sit subtasks; and fallers with MCI and non-fallers with AD differed on the turn-to-sit subtask.

PDF Y Endnote Y

Post-hospital falls prevention intervention: a mixed-methods study

Renahan E, Meyer C, Elliott RA, Batchelor F, Said C, Haines T, Goeman D.

J. Aging Phys. Act. 2018; ePub(ePub): ePub.

Affiliation: Central Clinical School, Department of Nursing, Health Sciences and Medicine, Monash University, Clayton, Victoria, Australia.

(Copyright © 2018, Human Kinetics Publishers)

DOI 10.1123/japa.2017-0406 **PMID** 29989468

Abstract

OBJECTIVE: Post-hospital discharge shows increased risk for falls in older people. This pilot study was created to determine feasibility and acceptability of a community-delivered post-hospital multi-factorial program.

METHOD: This mixed-method study used randomised controlled design (quantitative component) and interviews (qualitative component). People aged ≥ 65 years, hospitalised for a fall, underwent assessment for quality of life and falls-related outcomes, followed by interviews, randomisation into intervention (exercise, medication review and education) or control group, and follow-up at 6-months.

RESULTS: Thirteen people commenced, with ten people assessed at 6-months. Participants were complex with high degrees of frailty, multi-morbidity, polypharmacy and falls risk. Interview data related to intervention, impacts on quality of life and fall-related outcomes.

CONCLUSION: Preliminary findings suggest suitability of a multi-factorial program for older people post-hospital discharge following a fall. A social component would be a useful addition to falls-prevention strategies, utilising existing community nursing organisations.

PDF Y Endnote Y

Prevalence and risk factors associated with injurious falls among community-dwelling older adults in Indonesia

Pengpid S, Peltzer K.

Curr. Gerontol. Geriatr. Res. 2018; 2018: 5964305.

Affiliation: Faculty of Pharmacy, Ton Duc Thang University, Ho Chi Minh City, Vietnam.

(Copyright © 2018, Hindawi Publishing)

DOI 10.1155/2018/5964305 **PMID** 29971097 **PMCID** PMC6008814

Abstract

OBJECTIVE: To assess the prevalence and health correlates of fall-related injury in a national population-based community-dwelling sample of older Indonesians.

METHODS: Participants were 6698 older adults, 50 years and older (median age 58.0 years, IQR=11.0, and age range of 50-101 years), who took part in the Indonesia Family Life Survey (IFLS-5) in 2014-15. They provided information about sociodemographic, various health variables, including a falling down and received treatment history in the last two years.

RESULTS: Overall, 12.8% had one or more fall-related injuries in the past two years, 14.0% among women and 11.5% among men, 7.6% had a single fall, and 5.2% multiple fall-related injuries in the past two years. In multivariable logistic regression models, having two or more chronic conditions, urinary problems, and functional disability was independently associated with multiple fall-related

injuries in the past two years in both sexes. Sex-specific risk factors were former tobacco use, having or having had a cataract, sleep disturbance, and sleep impairment in men and poorer economic background, depression symptoms, and low cognitive functioning in women.

CONCLUSION: A significant proportion of older adults in Indonesia have fall-related injury. Several homogenous between the sexes and sex-specific risk factors for fall-related injury were identified that can help in designing fall-prevention strategies.

PDF Y Endnote Y

Recent opioid use associated with increased risk of falls in older people

Drug Ther. Bull. 2018; ePub(ePub): ePub.

(Copyright © 2018, BMJ Publishing Group)

DOI 10.1136/dtb.2018.7.0638 **PMID** 29970587

Abstract

A retrospective cohort study based on registry data from older patients admitted to hospital for injury found that recent opioid use was associated with an increased risk of a fall.¹ Patients who had received a recent prescription (in the 2 weeks before the injury) for opioid drugs were more likely to have been admitted for a fall than for any other type of injury.

The study included all patients aged 65 years and older who were admitted to hospital (for more than 2 days) for injury in 57 trauma centres.

PDF Y Endnote Y

Recurrent falls among elderly patients and the impact of anticoagulation therapy

Chiu AS, Jean RA, Fleming M, Pei KY.

World J. Surg. 2018; ePub(ePub): ePub.

Affiliation: Section of General Surgery, Trauma and Surgical Critical Care, Department of Surgery, Yale School of Medicine, 330 Cedar Street, BB310, New Haven, CT, 06519, USA. Kevin.Pei@yale.edu. (Copyright © 2018, Holtzbrinck Springer Nature Publishing Group)

DOI 10.1007/s00268-018-4728-1 **PMID** 29959494

Abstract

BACKGROUND: Falls are the leading source of injury and trauma-related hospital admissions for elderly adults in the USA. Elderly patients with a history of a fall have the highest risk of falling again, and the decision on whether to continue anticoagulation after a fall is difficult. To inform this decision, we evaluated the rate of recurrent falls and the impact of anticoagulation on outcomes. **METHODS:** All patients of age ≥ 65 years and hospitalized for a fall in the first 6 months of 2013 and 2014 were identified in the nationwide readmission database, a nationally representative all-payer database tracking patient readmissions. Readmissions for a recurrent fall within 6 months, and mortality and bleeding injuries (intracranial hemorrhage, solid organ bleed, and hemothorax) during readmission were identified. Logistic regression evaluated factors associated with mortality on repeat falls.

RESULTS: Of the 331,982 patients admitted for a fall, 15,565 (4.7%) were admitted for a recurrent fall within 6 months. The median time to repeat fall was 57 days (IQR 19-111 days), and 9.0% (1406) of repeat fallers were on anticoagulation. The rate of bleeding injury was similar regardless of

anticoagulation status (12.8 vs. 12.7% not on anticoagulation, $p = 0.97$); however, among patients with a bleeding injury, those on anticoagulation had significantly higher mortality (21.5 vs. 6.9% not on anticoagulation, $p < 0.01$).

CONCLUSION: Among patients hospitalized for a fall, 4.7% will be hospitalized for a recurrent fall within 6 months. Patients on anticoagulation with repeat falls do not have increased rates of bleeding injury but do have significantly higher rates of death with a bleeding injury. This information is essential to discuss with patients when deciding to restart their anticoagulation.

PDF Y Endnote Y

Reducing fall risk in older adults

Haddad YK, Bergen G, Luo F.

Am. J. Nurs. 2018; 118(7): 21-22.

Affiliation: Yara K. Haddad is a consultant pharmacist and Gwen Bergen is a behavioral scientist in the Division of Unintentional Injury Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention in Atlanta. Feijun Luo is an economist in the Division of Analysis, Research, and Practice Integration, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention. Contact author: Yara K. Haddad, yhaddad@cdc.gov. The authors have disclosed no potential conflicts of interest, financial or otherwise. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

(Copyright © 2018, American Nurses Association, Publisher Lippincott Williams and Wilkins)

DOI 10.1097/01.NAJ.0000541429.36218.2d **PMID** 29957635

Abstract Evidence supports addressing medication management.

PDF Y Endnote Y

Reliability of postural sway measures of standing balance tasks

Alsubaie SF, Whitney SL, Furman JM, Marchetti GF, Sienko KH, Sparto PJ.

J. Appl. Biomech. 2018; ePub(ePub): ePub.

Affiliation: Department of Physical Therapy, University of Pittsburgh, Pittsburgh, PA, USA.

(Copyright © 2018, Human Kinetics Publishers)

DOI 10.1123/jab.2017-0322 **PMID** 29989455

Abstract

The reliability of balance exercises performance in experimental and clinical studies has typically been confined to a small set of exercises. In order to advance the field of assessing balance exercise intensity, establishing the reliability of performance during a more diverse array of exercises should be undertaken. The purpose of this study was to investigate the test-retest reliability of postural sway produced during performance of 24 different balance tasks, and to evaluate the reliability of different measures of postural sway. Sixty-two healthy subjects between the ages of 18 and 85 years of age (50% female, mean age 55 ± 20 years) participated. Subjects were tested during two visits one week apart and performed two sets of the 24 randomized standing tasks per visit. The tasks consisted of combinations of the following factors: surface (firm and foam), vision (eyes open and eyes closed), stance (feet apart and semi-tandem), and head movement (no movement, yaw, and pitch). Angular position displacement, angular velocity, and linear acceleration postural sway in

the pitch and roll planes was recorded via an inertial measurement unit. The postural sway measures demonstrated at fair to good test-retest reliability with few exceptions, and angular velocity measures demonstrated the greatest reliability. The between-visit reliability of two averaged trials was excellent for most tasks. The study indicates that performance of most balance tasks used as part of balance rehabilitation is reliable, and quantitative assessment could be used to document change.

PDF Y Endnote Y

Rise in fall-related deaths

Kuehn BM.

J. Am. Med. Assoc. JAMA 2018; 319(24): 2471.

Copyright (Copyright © 2018, American Medical Association)

DOI 10.1001/jama.2018.7978 **PMID** 29946737

Abstract

The number of US older adults who die as the result of a fall has increased by 31%, from 18 334 in 2007 to 29 668 in 2016, according to a CDC report.

Overall, deaths attributable to falls increased by 3% annually among individuals aged 65 years or older. The greatest rate of increase, 3.9% per year, was among those aged 85 years or older. A 42% increase in fall-related deaths was documented between 2000 and 2006, suggesting an ongoing trend. Several factors are likely contributing to this trend. As the US population ages, the number of adults aged 85 years or older is expected to reach 8.9 million by 2030. In addition, greater survival rates from chronic diseases such as heart disease, cancer, and stroke may shift the causes of death to other age-related conditions.

PDF Y Endnote Y

Risk factors for falls in terms of attention during gait in community-dwelling older adults

Inoue T, Kamijo K, Haraguchi K, Suzuki A, Noto M, Yamashita Y, Nakamura T.

Geriatr. Gerontol. Int. 2018; ePub(ePub): ePub.

Affiliation: Faculty of Education, University of Teacher Education, Fukuoka, Japan.

(Copyright © 2018, Japan Geriatrics Society, Publisher John Wiley and Sons)

DOI 10.1111/ggi.13462 **PMID** 29947464

Abstract

AIM: We examined factors related to conditions of life function and falls, including eye movements and gait variability, in community-dwelling older adults in Japan.

METHODS: Participants were 82 older adults (21 men, 61 women, mean age 76.1 years). We measured eye movements and gait variability during walking, and cognitive, attentional and life function. We compared two groups according to their fall history, and used a multiple logistic regression analysis to determine its relevance.

RESULTS: Fixation time, which was estimated from eye movements during obstacle crossing, and gait variability (vertical) were significantly associated with falls. There was also a significant correlation between fixation time and gait variability during obstacle crossing. In other words, the higher the gait variability in older adults, the higher the risk of falls, which was due to reduced attention estimated from eye movements during obstacle crossing that required obstacle

avoidance.

CONCLUSIONS: These results show that poor attention during gait is a critical risk factor for falls in community-dwelling older adults. For fall prevention, it is necessary to promote exercises for attention, and to maintain an older adult-friendly pedestrian environment.

© 2018 Japan Geriatrics Society.

PDF Y Endnote Y

Screening for osteoporosis to prevent fractures: US Preventive Services Task Force recommendation statement

Curry SJ, Krist AH, Owens DK, Barry MJ, Caughey AB, Davidson KW, Doubeni CA, Epling JW, Kemper AR, Kubik M, Landefeld CS, Mangione CM, Phipps MG, Pignone M, Silverstein M, Simon MA, Tseng CW, Wong JB.

J. Am. Med. Assoc. JAMA 2018; 319(24): 2521-2531.

Affiliation: Tufts University, Medford, Massachusetts.

Comment In: *JAMA* 2018;319(24):2483-2485.

(Copyright © 2018, American Medical Association)

DOI 10.1001/jama.2018.7498 **PMID** 29946735

Abstract

IMPORTANCE: By 2020, approximately 12.3 million individuals in the United States older than 50 years are expected to have osteoporosis. Osteoporotic fractures, particularly hip fractures, are associated with limitations in ambulation, chronic pain and disability, loss of independence, and decreased quality of life, and 21% to 30% of patients who experience a hip fracture die within 1 year. The prevalence of primary osteoporosis (ie, osteoporosis without underlying disease) increases with age and differs by race/ethnicity. With the aging of the US population, the potential preventable burden is likely to increase in future years.

OBJECTIVE: To update the 2011 US Preventive Services Task Force (USPSTF) recommendation on screening for osteoporosis.

EVIDENCE REVIEW: The USPSTF reviewed the evidence on screening for and treatment of osteoporotic fractures in men and women, as well as risk assessment tools, screening intervals, and efficacy of screening and treatment in subgroups. The screening population was postmenopausal women and older men with no known previous osteoporotic fractures and no known comorbid conditions or medication use associated with secondary osteoporosis.

FINDINGS: The USPSTF found convincing evidence that bone measurement tests are accurate for detecting osteoporosis and predicting osteoporotic fractures in women and men. The USPSTF found adequate evidence that clinical risk assessment tools are moderately accurate in identifying risk of osteoporosis and osteoporotic fractures. The USPSTF found convincing evidence that drug therapies reduce subsequent fracture rates in postmenopausal women. The USPSTF found that the evidence is inadequate to assess the effectiveness of drug therapies in reducing subsequent fracture rates in men without previous fractures.

CONCLUSIONS AND RECOMMENDATION: The USPSTF recommends screening for osteoporosis with bone measurement testing to prevent osteoporotic fractures in women 65 years and older. (B recommendation) The USPSTF recommends screening for osteoporosis with bone measurement testing to prevent osteoporotic fractures in postmenopausal women younger than 65 years at

increased risk of osteoporosis, as determined by a formal clinical risk assessment tool. (B recommendation) The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for osteoporosis to prevent osteoporotic fractures in men. (I statement).

PDF Y Endnote Y

The effect of active physical training interventions on reactive postural responses in older adults: a systematic review

Moore BM, Adams JT, Willcox S, Nicholson J.

J. Aging Phys. Act. 2018; ePub(ePub): ePub.

Affiliation: Health Sciences Library, NYU Langone Health, NYU School of Medicine, New York, NY.

(Copyright © 2018, Human Kinetics Publishers)

DOI 10.1123/japa.2017-0347 **PMID** 29989462

Abstract

BACKGROUND: A variety of physical interventions have been used to improve reactive balance in older adults.

PURPOSE: To summarize the effectiveness of active treatment approaches to improve reactive postural responses in community-dwelling older adults.

DESIGN: Systematic Review, guided by PRISMA guidelines.

STUDY SELECTION: A literature search included databases of PubMed, OVID, CINAHL, Clinicaltrials.gov, OTseeker, and PEDro up to December 2017. RCTs that evaluated quantitative measures of reactive postural responses in healthy adults following participation in an active physical training program were included.

DATA SYNTHESIS: Of 4,481 studies initially identified, 11 RCTs covering 313 participants were selected for analysis. Study designs were heterogeneous, preventing a quantitative analysis. Nine of the eleven studies reported improvements in reactive postural responses.

CONCLUSIONS: Several clinically-feasible training methods have the potential to improve reactive postural responses in older adults; however, conclusions surrounding efficacy of treatment methods are limited due to numerous methodological issues and heterogeneity in outcomes and intervention procedures.

PDF Y Endnote Y

The interactive effect of traumatic brain injury and psychiatric symptoms on cognition among late middle-aged men: findings from the Vietnam Era Twin Study of Aging (VETSA)

Kaup A, Toomey R, Bangen KJ, Delano-Wood L, Yaffe KC, Panizzon MS, Lyons MJ, Franz CE, Kremen WS.

J. Neurotrauma 2018; ePub(ePub): ePub.

Affiliation: University of California San Diego, Center for Behavior Genetics of Aging, La Jolla, California, United States ; wkremen@ucsd.edu.

(Copyright © 2018, Mary Ann Liebert Publishers)

DOI 10.1089/neu.2018.5695 **PMID** 29978738

Abstract

Traumatic brain injury (TBI), post-traumatic stress disorder (PTSD) and depressive symptoms each increase risk for cognitive impairment in older adults. We investigated whether TBI has long-term associations with cognition in late middle-aged men, and examined the role of current PTSD/depressive symptoms. Participants were 953 men (ages 56-66) from the Vietnam Era Twin Study of Aging (VETSA), who were classified by presence or absence of 1) history of TBI and 2) current elevated psychiatric symptoms (defined as PTSD or depressive symptoms above cut-offs). TBIs occurred an average of 35 years prior to assessment. Participants completed cognitive testing examining nine domains. In mixed effects models, we tested the effect of TBI on cognition including for interactions between TBI and elevated psychiatric symptoms. Models adjusted for age, premorbid cognitive ability assessed at average age 20 years, apolipoprotein E genotype, and substance abuse. 33% (n=310) of participants had TBI, mostly mild and remote. 23% (n=72) of those with TBI and 18% (n=117) without TBI had current elevated psychiatric symptoms. TBI and psychiatric symptoms had interactive effects on cognition, particularly executive functioning. Group comparison analyses showed that men with both TBI and psychiatric symptoms demonstrated deficits primarily in executive functioning. Cognition was largely unaffected in men with either risk factor in isolation. Among late middle-aged men, the combination of even mild and very remote TBI with current elevated psychiatric symptoms is associated with deficits in executive function and related abilities. Future longitudinal studies should investigate how TBI and psychiatric factors interact to impact brain aging.

PDF Y Endnote Y

The sensitivity and specificity of the Falls Efficacy Scale and the Activities-specific Balance Confidence Scale for hemiplegic stroke patients

Park EY, Lee YJ, Choi YI.

J. Phys. Ther. Sci. 2018; 30(6): 741-743.

Affiliation: Department of Occupational Therapy, School of Medicine and Institute for Health Improvement, Wonkwang University: 460 Iksandae-ro, Iksan, Jeollabuk-do 570-749, Republic of Korea.

(Copyright © 2018, Society of Physical Therapy Science)

DOI 10.1589/jpts.28.741 **PMID** 29950756 **PMCID** PMC6016304

Abstract

PURPOSE: This study attempted to investigate the sensitivity and specificity of the Falls Efficacy Scale (FES) and the Activities-Specific Balance Confidence Scale (ABC) for community residents with hemiplegic stroke.

SUBJECTS AND METHODS: The FES and the ABC data were collected for a sample of 99 community-dwelling hemiplegic stroke patients in Korea. The Receiver Operating Characteristic (ROC) curve was used to determine the cut-off values, and the area under the curve (AUC) was used to assess the overall accuracy of each balance test. Multivariate logistic regression analysis was employed to identify the predictors of falling.

RESULTS: The cut-off value was 63.75 in the ABC and 66.50 in the FES. The sensitivity and specificity of the ABC was 41.3% and 92.0%, respectively. The sensitivity and specificity of the FES was 69.8% and 63.9%, respectively. The AUC was 0.691 for the ABC and 0.678 for the FES. The ABC explained 28.0% of the variance in the experience of falls.

CONCLUSION: The ABC has the ability to determine non-fallers, and it was a good explanatory factor of experience of falls.

PDF Y Endnote Y

Understanding the implementation and efficacy of a home-based strength and balance fall prevention intervention in people aged 50 years or over with vision impairment: a process evaluation protocol

Dillon L, Clemson L, Coxon K, Keay L.

BMC Health Serv. Res. 2018; 18(1): e512.

Affiliation: Injury Division, The George Institute for Global Health, UNSW Sydney, Sydney, Australia. (Copyright © 2018, Holtzbrinck Springer Nature Publishing Group)

DOI 10.1186/s12913-018-3304-6 **PMID** 29970168

Abstract

BACKGROUND: A nested process evaluation, within a randomised controlled trial, will explore relationships between program outcomes and quality of intervention implementation of the Lifestyle-Integrated Functional Exercise Program in older people with vision impairment. The Lifestyle-Integrated Functional Exercise Program is a home-based strength and balance program that has been shown to reduce falls in high risk populations. A pilot study showed positive trends in improvements in physical function in older people with vision impairment after participation in the program. The program will be delivered by Orientation and Mobility Specialists, who are experienced in working with people with vision impairment.

METHODS: The process evaluation has a mixed methods design. This includes quantitative (fidelity checklist score, number of completed sessions, survey data and a habit formation scale), as well as qualitative (open responses from program staff and semi-structured interviews with study participants) data. Process evaluation measures include program adherence (fidelity), complete delivery (dose delivered), participant receipt (dose received) and participant enactment. Using the Behaviour Change Wheel, a logic model was built to explain the intended inputs, outputs, outcomes and relationships to the behaviour change techniques in the Lifestyle-Integrated Functional Exercise Program in older people with vision impairment.

DISCUSSION: The findings of the process evaluation will inform the provision of fall prevention programs in older people with vision impairment by Orientation and Mobility Specialists. To date, there are no proven falls prevention programs which aim to improve physical function and reduce falls in older people with vision impairment. This process evaluation will contribute new knowledge about the implementation of a strength and balance program in this population. **TRIAL**

REGISTRATION: ACTRN12616001186448. Registered 29 August 2016.

PDF Y Endnote Y

A low-power fall detector balancing sensitivity and false alarm rate

Wang C, Lu W, Redmond SJ, Stevens MC, Lord SR, Lovell NH.

IEEE J. Biomed. Health Inform. 2017; ePub(ePub): ePub.

(Copyright © 2017, Institute of Electrical and Electronics Engineers)

DOI 10.1109/JBHI.2017.2778271 **PMID** 29990072

Abstract



Falls in older people are a major challenge to public health. A wearable fall detector can detect falls automatically based on kinematic information of the human body, allowing help to arrive sooner. To date, most studies have focused on the accuracy of an offline algorithm to distinguish real-world or simulated falls from activities of daily living, while neglecting the false alarm rate and battery life of a real device. To address these two important metrics which significantly influence user compliance, this paper proposes a low-power fall detector using triaxial accelerometry and barometric pressure sensing. This fall detector minimizes power consumption using both hardware- and firmware-based techniques. Additionally, the fall detection algorithm used in this device is optimized to achieve a balance between sensitivity and false alarm rate, while minimizing the power consumption due to algorithm execution. The fall detector achieved a high sensitivity (91%) with a low false alarm rate (0.1149 alarms per hour), and a commercially-viable battery life (1,125 days).

PDF Y Endnote Y

A randomized, double-blind study to assess if vitamin D treatment affects the outcomes of rehabilitation and balance in hemiplegic patients

Sari A, Durmus B, Karaman CA, Ogut E, Aktas İ.

J. Phys. Ther. Sci. 2018; 30(6): 874-878.

Affiliation: Department of Physical medicine and Rehabilitation, Fatih Sultan Mehmet Education and Research Hospital, Turkey.

(Copyright © 2018, Society of Physical Therapy Science)

DOI 10.1589/jpts.30.874 **PMID** 29950783 **PMCID** PMC6016314

Abstract

PURPOSE: To investigate the effect of vitamin D supplementation on rehabilitation outcomes and balance in patients having hemiplegia due to ischemic stroke.

SUBJECTS AND METHODS: Vitamin D levels of 132 patients hospitalized for hemiplegia rehabilitation due to ischemic stroke were tested. Consequently, 86/132 patients had low vitamin D levels, 72 of which met the inclusion criteria and were included in the study. Patients were divided into two groups: Group A (injected with 300,000 IU vitamin D), and Group B (injected intramuscularly with saline). Each patient was tested at the baseline and at the third month using the Brunnstrom recovery staging, functional ambulation scale, modified Barthel index, and Berg balance scale. The findings were compared between the groups.

RESULTS: By the end of the third month, The Berg balance scale results and modified Barthel index scores significantly differed between the two groups, whereas Brunnstrom recovery staging and functional ambulation scale test results did not.

CONCLUSION: This study found that vitamin D administration increased the activity levels and accelerated balance recovery but did not significantly affect ambulation or motor recovery. These results warrant confirmation by longer follow-up studies with a larger number of participants.

PDF Y Endnote Y

Effects of virtual reality high heights exposure during beam-walking on physiological stress and cognitive loading

Peterson SM, Furuichi E, Ferris DP.

PLoS One 2018; 13(7): e0200306.

Affiliation: J. Crayton Pruitt Family Department of Biomedical Engineering, University of Florida, Gainesville, Florida, United States of America.

(Copyright © 2018, Public Library of Science)

DOI 10.1371/journal.pone.0200306 **PMID** 29979750

Abstract

Virtual reality has been increasingly used in research on balance rehabilitation because it provides robust and novel sensory experiences in controlled environments. We studied 19 healthy young subjects performing a balance beam walking task in two virtual reality conditions and with unaltered view (15 minutes each) to determine if virtual reality high heights exposure induced stress. We recorded number of steps off the beam, heart rate, electrodermal activity, response time to an auditory cue, and high-density electroencephalography (EEG). We hypothesized that virtual high heights exposure would increase measures of physiological stress compared to unaltered viewing at low heights. We found that the virtual high height condition increased heart rate variability and heart rate frequency power relative to virtual low heights. Virtual reality use resulted in increased number of step-offs, heart rate, electrodermal activity, and response time compared to the unaltered viewing at low heights condition. Our results indicated that virtual reality decreased dynamic balance performance and increased physical and cognitive loading compared to unaltered viewing at low heights. In virtual reality, we found significant decreases in source-localized EEG peak amplitude relative to unaltered viewing in the anterior cingulate, which is considered important in sensing loss of balance. Our findings indicate that virtual reality provides realistic experiences that can induce physiological stress in humans during dynamic balance tasks, but virtual reality use impairs physical and cognitive performance during balance.

PDF Y Endnote Y

Fear of falling, not falls, impacts leisure-time physical activity in people with multiple sclerosis

Kalron A, Aloni R, Givon U, Menascu S.

Gait Posture 2018; 65: 33-38.

Affiliation: Multiple Sclerosis Center, Sheba Medical Center, Tel Hashomer, Israel; Sackler Faculty of Medicine, Tel Aviv University, Israel. Electronic address: shay.menascu@sheba.health.gov.il.

(Copyright © 2018, Elsevier Publishing)

DOI 10.1016/j.gaitpost.2018.06.174 **PMID** 29975870

Abstract

BACKGROUND: There is a consensus that physical activity is imperative for people with MS (PwMS). However, regardless of the benefits, many PwMS do not participate in any meaningful physical activity.

AIM: To examine the relationship between leisure-time physical activity with clinical characteristics and common symptoms in PwMS.

METHODS: The sample included 190 PwMS (107 women), mean age 40.8 (S.D = 13.1) and mean disease duration of 6.4 (SD = 8.3) years since diagnosis. Outcome measures included the Godin Leisure-Time Exercise Questionnaire (GLTEQ), Four Square Step Test (FSST), 2-Minute Walk test (2 mWT), Timed Up and Go test (TUG), Timed 25-Foot Walk test (T25FW), fall status, Falls Efficacy Scale International (FES-I), Modified Fatigue Impact Scale (MFIS), walking speed and the Multiple Sclerosis Walking Scale self-reported questionnaire (MSWS-12).



RESULTS: Eighty-six PwMS were classified as active (GLTEQ = 31.6 (S.D = 16.7); 104 were insufficiently active (GLTEQ = 3.0 (S.D = 4.3). Insufficiently active PwMS demonstrated a slower walking speed, elevated fatigue, more concerns of falling and additional walking difficulties compared to active PwMS. Non-significant differences between groups were observed in the TUG, 2 mWT, FSST, T25FWT and fall status. According to the linear regression, by utilizing the FES-I we observed a 12.2% variance related to leisure-time physical activity. The independent variables: EDSS, MSWS-12, fatigue and walking speed were non-significant. **SIGNIFICANCE:** The present findings highlight the impact of concern of falling on physical activity in PwMS. This knowledge may represent an opportunity to improve care and enhance physical activity in the MS population. Copyright © 2018 Elsevier B.V. All rights reserved.

PDF Y Endnote Y

NewsCAP: Each year an estimated 600 to 1,600 newborns fall or are dropped while in the hospital

Am. J. Nurs. 2018; 118(7): 16.

(Copyright © 2018, American Nurses Association, Publisher Lippincott Williams and Wilkins)

DOI 10.1097/01.NAJ.0000541422.98099.bf **PMID** 29957628

Abstract [Abstract unavailable]

PDF Y Endnote Y

Percentage of injury deaths that occurred in the decedent's home for the five most common causes of injury death - United States, 2016

MMWR Morb. Mortal. Wkly. Rep. 2018; 67(26): 750.

(Copyright © 2018, (in public domain), Publisher U.S. Centers for Disease Control and Prevention)

DOI 10.15585/mmwr.mm6726a6 **PMID** 29975676

Abstract Poisoning, firearm, suffocation, fall, motor vehicle

PDF Y Endnote Y

Risk factors for falls in adult cancer survivors: an integrative review

Campbell G, Wolfe RA, Klem ML.

Rehabil. Nurs. 2018; 43(4): 201-213.

(Copyright © 2018, Association of Rehabilitation Nursing, Publisher John Wiley and Sons)

DOI 10.1097/rnj.0000000000000173 **PMID** 29957697

Abstract

PURPOSE: The aim of the study was to identify risk factors for falls among cancer survivors.

DESIGN: Integrative literature review.

METHODS: We searched PubMed, Embase, CINAHL, Cochrane Central Register of Controlled Trials, and PEDro for studies investigating fall risk in cancer. Reports of randomized controlled trials, descriptive studies (quantitative and qualitative), and theoretical papers meeting predetermined criteria were included. Quality ratings of included studies were done, and data were extracted and compiled by two independent reviewers.

FINDINGS: Twenty-nine articles met inclusion criteria. Literature quality was moderate (median quality score: 1.67 out of 3 possible points). Heterogeneity of statistics and reporting methods precluded calculation of summary effect sizes, but physical function, cognitive function,

balance/gait, and certain medication types appear to increase fall risk.

CONCLUSIONS AND CLINICAL RELEVANCE: Modifiable risk factors, such as those identified in this review, represent tangible intervention targets for rehabilitation professionals for decreasing the risk of falls among cancer survivors.

PDF Y Endnote Y

Validity of the Nintendo Wii balance board for the assessment of balance measures in the Functional Reach Test

Mengarelli A, Cardarelli S, Strazza A, Di Nardo F, Fioretti S, Verdini F.

IEEE Trans. Neural Syst. Rehabil. Eng. 2018; 26(7): 1400-1406.

(Copyright © 2018, IEEE (Institute of Electrical and Electronics Engineers))

DOI 10.1109/TNSRE.2018.2843884 **PMID** 29985149

Abstract

The functional reach test (FRT) is widely used for assessing dynamic balance stability in elderly and pathological subjects. Force platforms (FPs) represent a fundamental part of the instrumented FRT experimental setup due to the central role of center-of-pressure (COP) displacement in FRT analysis. Recently, the nintendo wii balance board (NBB) has been suggested as a low-cost and reliable device for ground reaction force and COP measurement in poorly dynamic motor tasks. Therefore, this paper aimed to compare NBB-COP data with those obtained from a laboratory-grade platform during FRT. Data from 48 healthy subjects were simultaneously acquired from both devices. FP-COP and NBB-COP trajectories showed a remarkable correlation in both directions () and low root-mean-square error values (1.14 ± 0.88 mm and 0.55 ± 0.28 mm for anterior-posterior and medial-lateral direction). Fixed biases between COP-based parameters did not exceed 2% of the FP outcomes with high consistency throughout the present measurement range (ICC consistency always >0.950). Only the COP mean velocity exhibited a tendency toward proportional errors, which can be adjusted by a calibration of NBB data.

FINDINGS of this paper confirmed the NBB validity for COP measurement in a widely used motor task as the functional reach, supporting the feasibility of NBB in research scenarios.

PDF Y Endnote Y

Where are falls prevention resources allocated by hospitals and what do they cost? A cross sectional survey using semi-structured interviews of key informants at six Australian health services

Mitchell D, Raymond M, Jellett J, Webb-St Mart M, Boyd L, Botti M, Steen K, Hutchinson A, Redley B, Haines T.

Int. J. Nurs. Stud. 2018; 86: 52-59.

Affiliation: Head of School of Primary and Allied Health Care, Monash University, Frankston, Victoria, 3199, Australia.

(Copyright © 2018, Elsevier Publishing)

DOI 10.1016/j.ijnurstu.2018.06.002 **PMID** 29966825

Abstract

BACKGROUND: Falls are a major problem for patients and hospitals, resulting in death, disability and increased costs of healthcare.

OBJECTIVES: This study aimed to estimate the resource allocation across a partnership of large health services, in an attempt to understand the amount and variability of resource allocation to various falls prevention activities.

DESIGN: A cross sectional survey using semi-structured interviews. **SETTING:** Six tertiary health services in Australia.

PARTICIPANTS: A collaboration of six health services, spanning twenty-eight hospitals, was formed to investigate falls prevention resource allocation. We interviewed 186 health service staff who were involved in falls prevention activities, such as projects, audits and risk management, clinical and operational managers responsible for falls prevention resource allocation and clinical staff on targeted acute, subacute and mental health wards.

METHODS: This study used a mixed methods, cross sectional, observational design. To collect data, we used key informant interviews with a purposive and snowball sampled group of people working in the included health services. During interviews, study participants were asked where and how falls prevention resources and equipment were utilised and to estimate the time allocated to performing falls prevention activities. The opportunity cost of each activity was estimated. All costs were reported in Australian dollars.

RESULTS: We estimate the annual opportunity cost of health service attempts to prevent in-hospital falls across the six health services to be AU\$46,478,014. If we extrapolate this to a national level, health services would be consuming AU\$590 million per year in resources trying to prevent falls in hospital. The areas of greatest resource consumption were physiotherapy (18%), continuous patient observers (14%), falls assessments (12%) and screens (8%), and falls prevention alarms (11%). Falls prevention alarms and falls risk assessment screening tools were also used only for falls prevention, and are potentially ineffective falls prevention strategies.

CONCLUSIONS: Health services are investing considerable amounts of resource in attempting to prevent falls. However much of this resource is consumed in activities with weak or little evidence of effectiveness. Health services may be better served by considering tighter targeting, reduction or disinvestment in this area. This may release time and resources which could be used to provide interventions with a stronger evidence base, such as patient education using a structured patient education program or in other areas of practice where evidence of benefit exist.

Copyright © 2018 Elsevier Ltd. All rights reserved.

PDF Y Endnote Y