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Complications and mortality among correctly triaged and undertriaged severely injured older adults with traumatic brain injuries

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J. Trauma Nurs. 2018; 25(6): 341-347.

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(Copyright © 2018, Society of Trauma Nurses)

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Abstract

Determining differences in clinical outcomes of older adults treated at trauma centers (TCs) and nontrauma centers (NTCs) is imperative considering their persistent undertriage and the projected costs of fixing the problem. This study compared the incidence and predictors of complications and mortality among brain-injured older adults treated at TCs and NTCs. This secondary analysis of New York inpatient data included patients aged 55+ years, primary brain injury diagnosis, and acute care hospital admission. Interfacility transfers and nontraumatic brain injuries were excluded.

International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes identified complications and mortality. Injury severity was determined by mapping ICD-9-CM diagnoses to Abbreviated Injury Scale 2005 Revision 2008 dictionary scores. A subgroup analysis of 1,594 patients with New Injury Severity Scores greater than 15 was performed to examine complications and mortality. This study included 7,138 patients who met inclusion criteria. Predictors of subgroup complications included chronic renal failure, odds ratio (OR) = 2.251 (confidence interval [CI] = 1.470-3.447), $p < .001$; major operating room procedure, OR = 2.349 (CI = 1.679-3.285), $p < .001$; number of diagnoses, OR = 1.201 (CI = 1.158-1.245), $p < .001$; and number of procedures, OR = 1.119 (CI = 1.077-1.162), $p < .001$. Mortality predictors included age, OR = 1.031 (CI = 1.017-1.045), $p < .001$; preexisting coagulopathy, OR = 1.753 (CI = 1.130-2.719), $p = .012$; number of procedures, OR = 1.122 (CI = 1.081-1.166), $p < .001$; acute renal failure, OR = 3.114 (CI = 1.672-5.797), $p < .001$; systemic inflammatory response syndrome, OR = 4.058 (CI = 1.463-11.258), $p = .007$; adult respiratory distress syndrome, OR = 3.179 (CI = 1.673-6.041), $p < .001$; and subarachnoid bleed, OR = 2.667 (CI = 1.415-5.029), $p = .002$. Nearly 23% of the severely/critically injured patients experienced 1 or more complications. Incidence of complications was low and comparable for TCs and NTCs. The proportion of deaths was slightly higher at TCs but not significant. The most prevalent complications carry a high mortality risk.

PDF Y Endnote Y

Delirium and antipsychotic medications at hospital intake: screening to decrease likelihood of aggression in inpatient settings among unknown patients with dementia

Wharton T, Paulson D, Burcher K, Lesch H.

Am. J. Alzheimers Dis. Other Demen. 2018; ePub(ePub): ePub.

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Abstract

For individuals with dementia, disorientation and both external and internal stimuli may trigger behaviors that are difficult to manage or dangerous to health-care providers. Identification of correlational risk factors to aggressive behavior in patients who are unknown to the hospital can allow providers to adapt patient care quickly. Records for patients aged 60+ who spent at least 24 hours at the hospital other than in the psychiatric unit were used (N = 14 080). The first 4000 records and every 10th person who met criteria (N = 5008) were searched for documentation of dementia (n = 505). Logistic regressions and χ^2 tests were used to examine relationships between variables. Recognition of delirium (P = .014, Exp(B) = 2.53), coupled with an existing prescription for antipsychotic medication at intake (P < .001, Exp(B) < 4.37), may be a reliable means of screening for risk and intervening at the earliest possible contact, improving quality of care and safety in acute care for individuals with dementia.

PDF Y Endnote Y**Does nursing home compare reflect patient safety in nursing homes?**

Brauner D, Werner RM, Shippee TP, Cursio J, Sharma H, Konetzka RT.

Health Aff. (Hope) 2018; 37(11): 1770-1778.

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Abstract

The past several decades have seen significant policy efforts to improve the quality of care in nursing homes, but the patient safety movement has largely ignored this setting. In this study we compared nursing homes' performance on several composite quality measures from Nursing Home Compare, the most prominent recent example of a national policy aimed at improving the quality of nursing home care, to their performance on measures of patient safety in nursing homes such as pressure sores, infections, falls, and medication errors. Although Nursing Home Compare captures some aspects of patient safety, we found the relationship to be weak and somewhat inconsistent, leaving consumers who care about patient safety with little guidance. We recommend that Nursing Home Compare be refined to provide a clearer picture of patient safety and quality of life, allowing consumers to weight these domains according to their preferences and priorities.

PDF N Endnote Y**Fall risk and utilization of balance training for adults with symptomatic knee osteoarthritis: secondary analysis from a randomized clinical trial**

Anderson ML, Allen KD, Golightly YM, Arbeeve LS, Goode A, Huffman KM, Schwartz TA, Hill CH. *J. Geriatr. Phys. Ther.* 2018; ePub(ePub): ePub.

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Abstract

BACKGROUND AND PURPOSE: Knee osteoarthritis (KOA) is a common disease that hinders activity participation in older adults. Associated symptoms and physiological changes can increase risk of falling in individuals with KOA. Balance training can decrease fall risks in older adults. Limited evidence exists regarding utilization of balance training in physical therapy (PT) for this population. This secondary data analysis investigated the proportion of participants at high risk for falling in the Physical Therapy vs. Internet-based Exercise Training for Patients with Osteoarthritis (PATH-IN) study and the frequency with which balance training was utilized as an intervention in PT.

METHODS: PATH-IN study participants (N = 344) performed the Four-Stage Balance Test and the Timed Up and Go (TUG) test during baseline assessment. Participants were randomly allocated to PT, an Internet-based exercise program, or a control group. Participants were classified as being at high risk for falling if they did not progress to the single-leg stance (SLS) during the Four-Stage Balance Test, were unable to maintain SLS for 5 seconds, or took longer than 13.5 seconds to complete the TUG test. The proportion of participants at high risk for falling was calculated for all participants and separately for those allocated to PT. In addition, PT notes were coded for balance training and the frequency of balance training utilization was calculated.

RESULTS AND DISCUSSION: Upon enrollment, 35.5% (N = 122) of all participants and 36.2% (N = 50) of those allocated to PT were at high risk for falling. Of participants allocated to PT with documentation available for coding (N = 118), 35.5% (N = 42) were at high risk for falling. Balance training was provided to 62.7% (N = 74) during at least one PT session. Of those classified as being at high risk for falling, 33.3% (N = 14) did not receive balance training.

CONCLUSIONS: The finding of high fall risks in more than one-third of all participants with KOA is consistent with previous reports of a higher risk of falling in this population. Many PT participants did receive some balance training; however, one-third of participants at high risk for falling did not. Balance training for individuals with KOA at high risk for falling may be underutilized.

PDF Y Endnote Y

Falls resulting in health care among older people with intellectual disability in comparison with the general population

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J. Intellect. Disabil. Res. 2018; ePub(ePub): ePub.

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(Copyright © 2018, John Wiley and Sons)

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Abstract

BACKGROUND: Falls are common among older people with intellectual disability (ID) and are also a major contributor to injuries in this population. Yet, fall characteristics have only been sparsely studied, and the results are inconsistent. The aim of the present study was to investigate type of falls, places where they occurred and activities that caused them, as well as health outcomes and health utilisation patterns after falls, among older people with ID in comparison with their age peers in the general population.



METHODS: We established an administrative cohort of people with ID aged 55 years, or more, and alive at the end of 2012 (ID cohort; n = 7936). A cohort from the general population, one-to-one matched by sex and year of birth, was used as referents. Data regarding fall-induced health care episodes in inpatient and outpatient specialist care were collected from the National Patient Register for the period 2002-2012.

RESULTS: With the exception of falls from one level to another (i.e. fall on and from stairs and steps, ladder and scaffolding; fall from, out of or through building or structure; fall from tree or cliff and diving or jumping into water; or other fall from one level to another), people in the ID cohort were more likely to fall and fall more often than those in the general population cohort. Falls during a vital activity (e.g. attending to personal hygiene or eating) were twice as common among people with ID compared with the general population. When falling, people with ID were more likely to injure their head and legs but less likely to sustain injuries to the thorax and elbow/forearm. They were more likely to have superficial injuries, open wounds and fractures but less likely to have dislocations, sprain and strains. Fall-related health care visits among people with ID were more likely to be in inpatient care and be unplanned. People with ID were also more likely than those in the general population to have a readmission within 30 days.

CONCLUSIONS: People with ID are more likely to require specialist care after a fall and also more likely to obtain injuries to the head, compared with the general population. This is important to consider when taking preventive measures to reduce falls and fall-related injuries.

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PDF Y Endnote Y

Feasibility and outcome of an individualized Tai Chi program for improving balance and strength in the elderly: a pilot study

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NeuroRehabilitation 2018; ePub(ePub): ePub.

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Abstract

BACKGROUND: Traditional Tai Chi is too complex for most elderly individuals. There have been few reports regarding the development of simplified Tai Chi programs to suit the physical needs of elderly adults. However, these programs were not individualized according to the participants' balance control abilities.

OBJECTIVE: Purpose of this study is to develop an individualized Tai Chi program and report the feasibility of the program.

METHODS: Phase 1: Five Tai Chi masters performed the Tai Chi movements on a force platform. Based on the results of center of pressure displacement and the individual's balance abilities, an individualized program was developed. Phase 2: Ten community-dwelling older adults received 24 half-hour-sessions, using the individualized Tai Chi exercise program. The Berg Balance Scale (BBS)



score, Timed Up & Go (TUG) test, forward reach, and strength of the knee extensor were determined before and after intervention.

RESULTS: Participants achieved improved performance on balance control as measured with BBS ($p \leq 0.001$), TUG ($p = 0.004$) and forward reach ($p = 0.035$) as well as knee extensor strength ($p = 0.002$) after the program.

CONCLUSIONS: This preliminary result suggests that the individualized Tai Chi program is potentially effective to improve balance function and knee extensor strength of the elderly.

PDF N Endnote Y

Osteoporosis and dry eye syndrome: a previously unappreciated association that may alert active prevention of fall

Jeng YT, Lin SY, Hu HY, Lee OK, Kuo LL. PLoS One 2018; 13(11): e0207008.

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(Copyright © 2018, Public Library of Science)

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Abstract

OBJECTIVE: Osteoporosis is a multifactorial disease associated with inflammation and hormone imbalance. It is noteworthy that dry eye syndrome shares a similar pathophysiology with osteoporosis. Both diseases are more prevalent among the elderly and females. Dry eye syndrome can result in impaired vision, which increases the risk of fall and fracture when osteoporosis exists. In this study, we investigated whether osteoporosis is associated with an increased risk of developing dry eye syndrome.

METHODS: Claims data from the National Health Insurance Research Database (NHIRD) of Taiwan were used to conduct a retrospective population-based cohort study covering the period from January 1, 2000, to December 31, 2011. Multiple logistic regression was used to determine whether osteoporosis is an independent factor in the risk of developing dry eye syndrome, with risk estimates presented in the form of odds ratios (ORs).

RESULTS: The exclusion of patients with specific autoimmune diseases and those younger than 50 years old resulted in 42,365 patients in the osteoporosis group and 147,460 patients in the comparison group during the study period. The number of patients newly diagnosed with dry eye syndrome was 6,478 (15.29%) in the osteoporosis group and 15,396 (10.44%) in the comparison group. The crude OR of patients with osteoporosis developing dry eye syndrome was 1.55 and the 95% confidence interval (95% CI) was 1.50-1.60. After adjusting for patients' age, sex, and underlying comorbidities, the adjusted OR was 1.26 and the 95% CI was 1.22-1.30. Subgroup analysis revealed this association in each age group and among females but not among males.

CONCLUSIONS: Our results demonstrate that osteoporosis is a risk factor for the subsequent development of dry eye syndrome. Clinicians should be aware of the early symptoms of dry eye syndrome in osteoporotic patients in order to prevent further complications.

PDF Y Endnote Y

Paramedic assessment of frailty: an exploratory study of perceptions of frailty assessment tools

Harris W, Lucas PV, Eyles H, Parker L.

Ir. J. Paramedicine 2018; 3(1): e80.

(Copyright © 2018, Irish College of Paramedics)

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Abstract

INTRODUCTION: Frailty is recognised as a significant variable in the health of older adults. Early identification by paramedics of those at risk of frailty may assist in timely entry to an appropriate clinical care pathway. Early referral to such pathways has been shown to improve patient outcomes and quality of life, as well as deliver economic benefits. To date, little research has been completed regarding assessment of frailty by paramedic professionals using validated assessment tools. The objective of this study was to determine paramedicine students' perceptions of screening tools to facilitate assessment and knowledge of frailty of older adults. The Edmonton Frail Scale (EFS) and the Groningen Frailty Index (GFI) were determined suitable for this purpose.

METHODS: The research adopted a mixed methods approach using a survey tool developed to gather both qualitative and quantitative data from students at the completion of a structured aged care clinical placement. Thematic analysis of the qualitative data identified key features of the tools, while a Likert-type scale was used to measure perspectives about the suitability of the tools for use in paramedic practice.

RESULTS: Thirty-seven paramedicine students were invited to participate in the study. Thirteen were able to use both tools to conduct frailty assessments and submitted survey responses. Student perspectives indicated both the EFS and GFI are potentially suitable for paramedicine and as clinical learning tools regarding geriatric assessments. Median time to administer the tools was eight minutes for the EFS and ten minutes for the GFI.

CONCLUSION: Paramedicine students support a frailty assessment tool to assist clinical decision making regarding older adults. Further appraisal of validated frailty assessment tools by operational paramedics in a pre-hospital environment is warranted to determine absolute utility for Australian paramedics.

PDF Y Endnote Y

Physical frailty and cognitive functioning in Korea rural community-dwelling older adults

Yoon DH, Hwang SS, Lee DW, Lee CG, Song W.

J. Clin. Med. 2018; 7(11): e7110405.

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DOI 10.3390/jcm7110405 **PMID** 30384463

Abstract

Cognitive frailty is a heterogeneous clinical manifestation characterized by the simultaneous presence of physical frailty and cognitive impairment. The objective of this study was to investigate the association between physical frailty and cognitive function in rural community-dwelling older Korean adults, taking four cognitive domains into account. We carried out a cross-sectional population-based study which enrolled 104 community-dwelling elderly. Physical frailty phenotype,



as well as its individual criteria, were used. Cognitive functioning was examined in the four domains of memory, processing speed, cognitive flexibility, and working memory. Demographic data, lipid profile, muscle strength, physical function, and 25-hydroxyvitamin D (25[OH]D) concentration collected from questionnaire interviews and assessments were included. Of the 104 older adults (77% female), 24.3% were classified as robust, 49.6% as prefrail, and 16.5% as frail. Linear regression analyses showed that the severity of frailty index was associated with four cognitive domains Muscle strength (i.e., Grip strength, Knee extensor and flexor), physical function (i.e., SPPB and Gait speed), and 25[OH]D were associated with poorer cognitive function. Within our population of Korean rural community-dwelling older adults, physical frailty status, muscle strength, physical functions, and biochemical measurements were associated with poorer cognitive function. Synchronicity of physical frailty and cognitive dysfunction may contribute to the negative health-related effects associated with aging.

PDF Y Endnote Y

Senior fitness test; a useful tool to measure physical fitness in persons with acquired brain injury

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Brain Inj. 2018; ePub(ePub): ePub.

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DOI 10.1080/02699052.2018.1540796 **PMID** 30403880

Abstract

OBJECTIVES: To evaluate the feasibility and usability of the senior fitness test (SFT) in persons with acquired brain injury (ABI).

METHODS: A pilot cohort design with a convenience sample of persons with ABI was used.

RESULTS: Persons with ABIs (n = 47) were younger than their healthy counterparts (n = 172) were but performed significantly worse on sit to stand, 6-min walk test (6MWT) and 2.45-m up and go. This difference was accentuated in the age groups >60 years of age. Persons with ABIs, divided into subgroups traumatic brain injury (TBI; n = 12) and cerebral insult (CI; n = 35), showed significant differences in leg strength, upper extremity flexibility and walking capacity. Persons with CI were weaker, less flexible in upper and lower extremities, walked shorter distance and were less mobile. CI but not TBI performed significantly worse when compared to healthy elderly persons.

CONCLUSION: This study indicates that SFT is feasible, safe and useful tool for persons with ABI, to evaluate physical capacity, endurance, strength and flexibility. The submaximal test was well tolerated and could be performed by all participants irrespective of age or diagnosis. The distribution of test scores indicates responsiveness to change and no ceiling or floor effects.

PDF Y Endnote Y

Study protocol for investigating the impact of community home modification services on hospital utilisation for fall injuries: a controlled longitudinal study using data linkage

Hollinghurst J, Akbari A, Fry R, Watkins A, Berridge D, Clegg A, Hillcoat-Nalletamby S, Williams N, Lyons R, Mizen A, Walters A, Johnson R, Rodgers S.



BMJ Open 2018; 8(10): e026290.

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(Copyright © 2018, BMJ Publishing Group)

DOI 10.1136/bmjopen-2018-026290 **PMID** 30381314

Abstract

INTRODUCTION: This study will evaluate the effectiveness of home adaptations, both in preventing hospital admissions due to falls for older people, and improving timely discharge.

RESULTS will provide evidence for services at the interface between health and social care, informing policies seeking to promote healthy ageing through prudent healthcare and fall prevention.

METHODS AND ANALYSIS: All individuals living in Wales, UK, aged 60 years and over, will be included in the study using anonymised linked data from the Secure Anonymised Information Linkage Databank. We will use a national database of home modifications implemented by the charity organisation Care & Repair Cymru (C&R) from 2009 to 2017 to define an intervention cohort. We will use the electronic Frailty Index to assign individual levels of frailty (fit, mild, moderate or severe) and use these to create a comparator group (non-C&R) of people who have not received a C&R intervention. Coprimary outcomes will be quarterly numbers of emergency hospital admissions attributed to falls at home, and the associated length of stay. Secondary outcomes include the time in moving to a care home following a fall, and the indicative financial costs of care for individuals who had a fall. We will use appropriate multilevel generalised linear models to analyse the number of hospital admissions related to falls. We will use Cox proportional hazard models to compare the length of stay for fall-related hospital admissions and the time in moving to a care home between the C&R and non-C&R cohorts. We will assess the impact per frailty group, correct for population migration and adjust for confounding variables. Indicative costs will be calculated using financial codes for individual-level hospital stays.

RESULTS will provide evidence for services at the interface between health and social care, informing policies seeking to promote healthy ageing through prudent healthcare and prevention.

ETHICS AND DISSEMINATION: Information governance requirements for the use of record-linked data have been approved and only anonymised data will be used in our analysis. Our results will be submitted for publication in peer-reviewed journals. We will also work with lay members and the knowledge transfer team at Swansea University to create communication and dissemination materials on key findings.

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PDF Y Enndote Y

The effect of polypharmacy on prefrontal cortex activation during single and dual task walking in community dwelling older adults

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Pharmacol. Res. 2018; ePub(ePub): ePub.



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DOI 10.1016/j.phrs.2018.11.007 **PMID** 30408573

Abstract

INTRODUCTION: Polypharmacy, defined as the use of 5 or more medications is associated with multiple adverse outcomes in older adults, including falls and slow gait velocity. However, the relationship between polypharmacy and cortical control of locomotion has not been reported. The purpose of this study was to examine the relationship between polypharmacy and activation patterns in the prefrontal cortex (PFC), a brain region involved in higher order control of locomotion during attention-demanding conditions.

METHODS: Using Functional Near Infrared Spectroscopy (fNIRS) to quantify PFC oxygenated hemoglobin (HbO₂) levels, we performed a cross sectional analysis of 325 community dwelling adults age ≥65 years, and examined HbO₂ levels during single tasks (Single-Task-Walk (STW), (talking, cognitive interference (Alpha)) and Dual-Task Walk (DTW)).

RESULTS: The prevalence of polypharmacy was 33% (n = 104) amongst the 325 participants (mean age 76.4 ± 6.7 years, 56% women). Among the 221 participants with no polypharmacy there was an increase in HbO₂ levels from STW to DTW (estimate=-0.625; p<0.001) and from Alpha to DTW (estimate=-0.079; p = 0.031). Polypharmacy status, however, moderated the change in HbO₂ levels comparing the two single tasks to the dual-task walking condition. Specifically, the presence of polypharmacy was associated with an attenuated increase in HbO₂ levels from STW to DTW (estimate = 0.149; p = 0.027) and with a decline in HbO₂ levels from Alpha to DTW (estimate = 0.169; p = 0.009) after adjustments for potential confounders including medical comorbidities and the use of high-risk medications.

CONCLUSION: The results of this study further support the need for clinicians to reduce polypharmacy in older adults, given its significant association with the PFC hemodynamic response during attention-demanding locomotion.

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PDF Y Endnote Y

The relationships between physical performance, activity levels and falls in older men

Orwoll ES, Fino NF, Gill TM, Cauley JA, Strotmeyer ES, Ensrud KE, Kado DM, Barrett-Connor E, Bauer DC, Cawthon PM, Lapidus J.

J. Gerontol. A Biol. Sci. Med. Sci. 2018; ePub(ePub): ePub.

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DOI 10.1093/gerona/gly248 **PMID** 30383210

Abstract

BACKGROUND: Physical performance and activity have both been linked to fall risk, but the way they are jointly associated with falls is unclear. We investigated how these two factors are related to



incident falls in older men.

METHODS: In 2741 men (78.8±5 years) we evaluated the associations between activity and physical performance and how they jointly contributed to incident falls. Activity was assessed by accelerometry. Physical performance was measured by gait speed, dynamic balance (narrow walk), chair stand time, grip strength and leg power. Falls were ascertained by tri-annual questionnaires.

RESULTS: Men were grouped into four categories based on activity and performance levels. The greatest number of falls (36-43%) and the highest fall rate (4.7-5.4/year among those who fell) (depending on the performance test) occurred in men with low activity/low performance, but most falls (57-64%) and relatively high fall rates (3.0-4.35/year) occurred in the other groups (low activity/high performance, high activity/high performance and high activity/low performance; 70% of men were in these groups). There were interactions between activity, performance (gait speed, narrow walk) and incident falls ($p=0.001-0.02$); predicted falls/yr. were highest in men with low activity/low performance, but there was also a peak of predicted falls in those with high activity.

CONCLUSIONS: In community-dwelling older men, many falls occur in those with the lowest activity/worst physical performance but fall risk is also substantial with better activity and performance. Activity/physical performance assessments may improve identification of older men at risk of falls, and allow individualized approaches to prevention.

PDF Y Endnote Y

Usefulness of an unstable board balance test to accurately identify community-dwelling elderly individuals with a history of falls

Akizuki K, Echizenya Y, Kaneno T, Ohashi Y.

J. Rehabil. Med. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Foundation for Rehabilitation Information)

DOI 10.2340/16501977-2504 **PMID** 30406266

Abstract

OBJECTIVE: To determine the usefulness of an un-stable board balance test in identifying a fall history among high-functioning community-dwelling elderly individuals.

DESIGN: Case-control study.

SUBJECTS: Sixty-one community-dwelling elderly aged ≥ 65 years and having the capacity to walk independently without an assistive device.

METHODS: Subjects completed 3 balance performance tests: the Unstable Board Balance Test, Functional Reach Test, and Timed Up and Go. For analysis, subjects were classified as fallers or non-fallers based on the history of falls over the previous year, and performance outcomes were compared between the 2 groups. Subjects classified as fallers were then matched 1:1 with non-fallers (for sex, age, body weight and height), and the optimal cut-off score and area under the receiver operating characteristic curve (AUC) for each test were calculated.

RESULTS: Functional reach test and Timed Up and Go did not reliably discriminate between fallers and non-fallers. In contrast, the score on the unstable board balance test was significantly different between the 2 groups ($p = 0.040$). Among all 3 tests, AUC was largest for the unstable board balance

test (0.78), with superior sensitivity (0.67) and specificity (0.87).

CONCLUSION: For high-functioning elderly subjects, the unstable board balance test was useful in discriminating between fallers and non-fallers.

PDF Y Endnote Y

Walking and balance outcomes for stroke survivors: a randomized clinical trial comparing body-weight-supported treadmill training with versus without challenging mobility skills

Graham SA, Roth EJ, Brown DA.

J. Neuroengineering Rehabil. 2018; 15(1): e92.

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(Copyright © 2018, Holtzbrinck Springer Nature Publishing Group)

DOI 10.1186/s12984-018-0442-3 **PMID** 30382860

Abstract

BACKGROUND: Treadmill training, with or without body-weight support (BWSTT), typically involves high step count, faster walking speed, and higher heart-rate intensity than overground walking training. The addition of challenging mobility skill practice may offer increased opportunities to improve walking and balance skills. Here we compare walking and balance outcomes of chronic stroke survivors performing BWSTT with BWSTT including challenging mobility skills.

METHODS: Single-blind randomized clinical trial comparing two BWSTT interventions performed in a rehabilitation research laboratory facility over 6 weeks. Participants were 18+ years of age with chronic (≥ 5 months) poststroke hemiparesis due to a cortical or subcortical ischemic or hemorrhagic stroke and walking speeds < 1.1 m/s at baseline. A hands-free group (HF; $n = 15$) performed BWSTT without assistance from handrails or assistive devices, and a hands-free plus challenge group (HF + C; $n = 14$) performed the same protocol while additionally practicing challenging mobility skills. The primary outcome was change in comfortable walking speed (CWS), with secondary outcomes of fast walk speed (FWS), six-minute walk distance, Berg Balance Scale (BBS) scores, and Activities Specific Balance Confidence (ABC) scores.

RESULTS: Significant pre-post improvement of CWS ($Z = -4.2$, $p \leq 0.0001$) from a median of 0.35 m/s (range 0.10 to 1.09) to a median of 0.54 m/s (range 0.1 to 1.17), but no difference observed between groups ($U = 96.0$, $p = 0.69$). Pre-post improvements across all participants resulted in reclassified baseline ambulation status from sixteen to ten household ambulators, three to seven limited community ambulators, and ten to twelve community ambulators. Secondary outcomes showed similar pre-post improvements with no between-group differences.

CONCLUSIONS: The addition of challenging mobility skills to a hands-free BWSTT protocol did not lead to greater improvements in CWS following 6 weeks of training. One reason for lack of group differences may be that both groups were adequately challenged by walking in an active, self-driven treadmill environment without use of handrails or assistive devices. **TRIAL REGISTRATION:**

NCT02787759 Falls-based Training for Walking Post-Stroke (FBT); retrospectively registered June 1st, 2016.

PDF Y Endnote Y

Distress in informal carers of the elderly in New Zealand

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N. Zeal. Med. J. 2018; 131(1485): 60-66.

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DOI unavailable **PMID** 30408819

Abstract

AIMS: Informal care, which is unpaid and often provided by family and friends, is the primary source of aged care in New Zealand. In addition to financial costs there are known psychological costs of being a carer, including poor mental health.

METHODS: This research aimed to interview a group of New Zealand carers and describe their rates of depression and anxiety, their motivations for providing care, costs of care and their experience of aggression. Interviews used standardised questions and were conducted over the phone.

RESULTS: Results are reported from interviews of 48 carers and suggest this group have elevated symptoms of depression and anxiety. Most of the carers are partners or children of the carees and likely do the caring out of love. Unpaid family carers experience low levels of aggression. Carers reported personal and social restriction, and physical and emotional health the most burdensome aspect of being a carer.

CONCLUSIONS: Carers of the elderly in New Zealand show elevated levels of distress. Higher levels of emotional support are needed for New Zealand carers. If the health system continues to rely on unpaid carers more should be done to support them.

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Adjustable method for real-time gait pattern detection based on ground reaction forces using force sensitive resistors and statistical analysis of constant false alarm rate

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Abstract

A new approach is proposed to detect the real-time gait patterns adaptively through measuring the ground contact forces (GCFs) by force sensitive resistors (FSRs). Published threshold-based methods detect the gait patterns by means of setting a fixed threshold to divide the GCFs into on-ground and off-ground statuses. However, the threshold-based methods in the literature are neither an adaptive nor a real-time approach. To overcome these drawbacks, this study utilized the constant false alarm rate (CFAR) to analyze the characteristics of GCF signals. Specifically, a sliding window detector is built to record the lasting time of the curvature of the GCF signals and one complete gait cycle could be divided into three areas, such as continuous ascending area, continuous descending area and unstable area. Then, the GCF values in the unstable area are used to compute a threshold through the CFAR. Finally, the new gait pattern detection rules are proposed which include the results of the

sliding window detector and the division results through the computed threshold. To verify this idea, a data acquisition board is designed to collect the GCF data from able-bodied subjects. Meanwhile, in order to test the reliability of the proposed method, five threshold-based methods in the literature are introduced as reference methods and the reliability is validated by comparing the detection results of the proposed method with those of the reference methods. Experimental results indicated that the proposed method could be used for real-time gait pattern detection, detect the gait patterns adaptively and obtain high reliabilities compared with the reference methods.

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Effects of loss of consciousness on maxillofacial fractures in simple falls

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Dent. Traumatol. 2018; ePub(ePub): ePub.

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(Copyright © 2018, John Wiley and Sons)

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Abstract

BACKGROUND/AIMS: Loss of consciousness while falling is reported to increase the risk of more severe injury. However, few studies of maxillofacial injuries have been reported. The aim of this study was to investigate the effects of loss of consciousness on maxillofacial fractures in falls on a level surface (simple falls). **MATERIAL AND METHODS:** Patients with maxillofacial fractures caused by simple falls were subdivided into two categories: patients who fell without loss of consciousness, and patients who fell with loss of consciousness, according to the Guidelines for the Diagnosis and Management of Syncope (version 2009). The severity of the injuries was compared between these two groups.

RESULTS: In 413 patients with maxillofacial fractures, 58 cases were falls without loss of consciousness, and 44 cases were falls with loss of consciousness. In falls with loss of consciousness, 54.5% were reflex syncope, followed by syncope due to orthostatic hypotension (15.9%), epilepsy (15.9%), and cardiac syncope (9.1%). The average number of fracture lines in the mandible was significantly lower in falls without loss of consciousness (1.53 ± 0.7) than in falls with loss of consciousness (2.00 ± 1.00) ($P=0.045$). The average Facial Injury Severity Scale score was lower in falls without loss of consciousness (2.24 ± 1.20) than in falls with loss of consciousness (2.68 ± 1.39). Fractures of other parts of the body were significantly more common in falls without loss of consciousness (22.2%) than in falls with loss of consciousness (9.1%) ($P=0.0135$).

CONCLUSIONS: Patients with loss of consciousness and maxillofacial fractures due to simple falls showed a tendency to sustain more severe maxillofacial injuries than those without loss of consciousness. This article is protected by copyright. All rights reserved.

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Epidemiology of spinal fractures in a level one trauma center in the Netherlands; a 10 years review

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Spine 2018; ePub(ePub): ePub.

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Abstract

STUDY DESIGN: Retrospective epidemiological study

OBJECTIVE.: To describe the epidemiology of spinal fractures over a ten years period in a Level 1 Trauma center in the Netherlands.

SUMMARY OF BACKGROUND DATA: Spinal fractures may have large socioeconomic consequences. The prevalence and outcomes likely change over the years due to improved traffic safety, increasing population age and improved medical treatment. This is the first study to address the epidemiology of spinal fractures over a large time period in the Netherlands.

METHODS: All patients with a cervical, thoracic or lumbar spine fracture admitted to a level 1 trauma center from 2007 to 2016 were prospectively registered and retrospectively analyzed. In addition to patient-, accident- and associated injury characteristics, radiological and surgery data were obtained from the hospital's Electronic Patient File system.

RESULTS: Between 2007 and 2016, 1479 patients with a total of 3029 spinal fractures were admitted. 40,8% were female and 59,2% were male, with a mean age of 52,0 years. 4,9% of fractures occurred at a juvenile age (0-18) and 63,6% at the age of 19-64 years. Most fractures occurred in the thoracic spine, followed by the lumbar- and cervical spine. The most common cause of injury was a fall from height, followed by traffic accidents. Spinal cord injury occurred in 8,5% and associated injuries were reported in 73% of the patients. Sixteen percent of the admitted patients were treated operatively. Over time, there was a larger increase in amount of spine fractures in elderly (>65 years) compared to younger people.

CONCLUSION: The total amount of spine fractures per year increased over time. Additionally, there was a larger increase in amount of spine fractures in patients over 65 years of age compared to younger patients. Despite this increase, a considerable amount of spine fractures still occur in the age-group 19-64 years. Most fractures were located in the thoracic spine. This study might stimulate development of policy on precautionary actions to prevent spine fractures. **LEVEL OF EVIDENCE:** level 4.

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Modeling the kinematics of human locomotion over continuously varying speeds and inclines

Embry KR, Villarreal DJ, Macaluso RL, Gregg RD.

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Abstract



Powered knee and ankle prostheses can perform a limited number of discrete ambulation tasks. This is largely due to their control architecture, which uses a finite-state machine to select among a set of task-specific controllers. A non-switching controller that supports a continuum of tasks is expected to better facilitate normative biomechanics. This paper introduces a predictive model that represents gait kinematics as a continuous function of gait cycle percentage, speed, and incline. The basis model consists of two parts: basis functions that produce kinematic trajectories over the gait cycle, and task functions that smoothly alter the weight of basis functions in response to task. Kinematic data from ten able-bodied subjects walking at twenty-seven combinations of speed and incline generate training and validation data for this data-driven model. Convex optimization accurately fits the model to experimental data. Automated model order reduction improves predictive abilities by capturing only the most important kinematic changes due to walking tasks. Constraints on range of motion and jerk ensure the safety and comfort of the user. This model produces a smooth continuum of trajectories over task, an impossibility for finite-state control algorithms. Random sub-sampling validation indicates basis modeling predicts untrained kinematics more accurately than linear interpolation.

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The architecture of safety: an emerging priority for improving patient safety

Joseph A, Henriksen K, Malone E.

Health Aff. (Hope) 2018; 37(11): 1884-1891.

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Abstract

There is a lack of awareness regarding the pervasive influence of the built environment on caregiving activities, and how its design could reduce risks for patients and providers. This article presents a narrative review summarizing key findings that link health care facility design to key targeted safety outcomes: health care-associated infections, falls, and medication errors. It describes how facility design should be considered in conjunction with quality improvement legislation; projects under way in health systems; and the work of guideline-setting organizations, funding agencies, industry, and educational institutions. The article also charts a path forward that consolidates existing challenges and suggests what can be done about them to create safe and high-quality health care environments.

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The beginning of the end: a qualitative study of falls among HIV+ individuals

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PLoS One 2018; 13(11): e0207006.

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Abstract

Falls are an important concern for individuals living with HIV (HIV+). The purpose of this study was to understand perceptions of HIV+ individuals who had fallen regarding what caused their falls, prevention strategies that they used, and the impact of falls on their lives. Qualitative Description was the approach best suited to our study. We conducted in-depth interviews with 21 HIV+ individuals aged 47 to 71 years who had fallen within the past two years and who received care in a primary care/HIV clinic. Participants identified causes of falls as intrinsic (HIV, opportunistic infections, antiretroviral therapy, substance use, polypharmacy) or extrinsic (icy sidewalks, wet floors). Among those who felt that their falls could be prevented, prevention strategies included physical therapy and avoiding extrinsic fall risk factors. Some participants, however, felt that their falls could not be prevented. While some participants responded adaptively to falls, for many, the experience of falling was connected with deep feelings of loss and suffering. For these individuals, falls were understood to be "the beginning of the end" and a source of social isolation, changing family roles, diminished sense of self, and stigma.

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