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A comprehensive fracture prevention strategy in older adults: the European Union Geriatric Medicine Society (EUGMS) statement

Blain H, Masud T, Dargent-Molina P, Martin FC, Rosendahl E, van der Velde N, Bousquet J, Benetos A, Cooper C, Kanis JA, Reginster JY, Rizzoli R, Cortet B, Barbagallo M, Dreinhöfer KE, Vellas B, Maggi S, Strandberg T.

J. Nutr. Health Aging 2016; 20(6): 647-652.

Affiliation: H. Blain, Pôle de Gériatrie, Centre Antonin-Balmes, CHU de Montpellier, 39, avenue Charles-Flahault, 34395 Montpellier Cedex 5, France. Tel: +33 4 67 33 99 57. E-mail address: h-blain@chu-montpellier.fr.

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DOI 10.1007/s12603-016-0741-y **PMID** 27273355

Abstract

Prevention of fragility fractures in older people has become a public health priority, although the most appropriate and cost-effective strategy remains unclear. In the present statement, the Interest Group on Falls and Fracture Prevention of the European Union Geriatric Medicine Society (EUGMS), in collaboration with the International Association of Gerontology and Geriatrics for the European Region (IAGG-ER), the European Union of Medical Specialists (EUMS), the International Osteoporosis Foundation - European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis, outlines its views on the main points in the current debate in relation to the primary and secondary prevention of falls, the diagnosis and treatment of bone fragility, and the place of combined falls and fracture liaison services for fracture prevention in older people.

PDF Y Endnote Y

Applying different mathematical variability methods to identify older fallers and non-fallers using gait variability data

Marques NR, Hallal CZ, Spinoso DH, Morcelli MH, Crozara LF, Gonçalves M.

Aging Clin. Exp. Res. 2016; ePub(ePub): ePub.

(Copyright © 2016, Editrice Kurtis)

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Abstract

Background The clinical assessment of gait variability may be a particularly powerful tool in the screening of older adults at risk of falling. Measurement of gait variability is important in the assessment of fall risk, but the variability metrics used to evaluate gait timing have not yet been adequately studied.

OBJECTIVES: The aims of this study were (1) to identify the best mathematical method of gait variability analysis to discriminate older fallers and non-fallers and (2) to identify the best temporal, kinematic parameter of gait to discriminate between older fallers and non-fallers.

METHODS: Thirty-five physically active volunteers participated in this study including 16 older women fallers (69.6 ± 8.1 years) and 19 older women non-fallers (66.1 ± 6.2 years). Volunteers were instructed to walk for 3 min on the treadmill to record the temporal kinematic gait parameters including stance time, swing time and stride time by four footswitches sensors placed under the volunteers' feet. Data analysis used 40 consecutive gait cycles. Six statistical methods were used to determine the variability of the stance time, swing time and stride time. These included: (1) standard deviation of all the time intervals; (2) standard deviation of the means of these intervals taken every

five strides; (3) mean of the standard deviations of the intervals determined every five strides; (4) root-mean-square of the differences between intervals; (5) coefficient of variation calculated as the standard deviation of the intervals divided by the mean of the intervals; and (6) a geometric method calculated based on the construction of a histogram of the intervals.

RESULTS: The standard deviation of 40 consecutive gait cycles was the most sensitive (100 %) and specificity (100 %) parameter to discriminate older fallers and non-fallers.

CONCLUSION: The standard deviation of stance time is the kinematic gait variability parameter that demonstrated the best ability to discriminate older fallers from non-fallers. Protocol number of Brazilian Registry of Clinical Trials: RBR-6rytw2.

PDF Y Endnote Y

Association of fast visual field loss with risk of falling in patients with glaucoma

Baig S, Diniz-Filho A, Wu Z, Abe RY, Gracitelli CP, Cabezas E, Medeiros FA.

JAMA Ophthalmol. 2016; ePub(ePub): ePub.

Affiliation: Visual Performance Laboratory, Department of Ophthalmology, University of California, San Diego, La Jolla.

(Copyright © 2016, American Medical Association)

DOI 10.1001/jamaophthalmol.2016.1659 **PMID** 27280703

Abstract

IMPORTANCE: Patients with glaucoma and a history of fast visual field loss might be at an increased risk for falls compared with those with a history of slow visual field loss, but, to date, this association has not been previously investigated in the literature.

OBJECTIVE: To evaluate the association between self-reported falls and past rate of visual field loss in a cohort of patients with glaucoma followed up over time. **DESIGN, SETTING, AND PARTICIPANTS:** This observational cohort study included patients diagnosed as having glaucoma who had been followed up at the Visual Performance Laboratory, University of California, San Diego, at 6-month intervals for a mean (SD) of 7.5

DESIGN, SETTING, AND PARTICIPANTS: (2.6) years from January 1, 2005, through December 31, 2015. Self-reported number of falls during the past year was obtained at the last follow-up visit. Integrated binocular fields were estimated from the monocular fields. Linear mixed models were used to calculate rates of change in binocular mean sensitivity over time. Poisson models were used to evaluate the association between the self-reported number of falls and rates of visual field loss. The models adjusted for the current level of visual field damage and other confounding variables. **MAIN OUTCOMES AND MEASURES:** Association between rates of binocular visual field loss and self-reported number of falls.

RESULTS: The study included 116 patients with glaucoma with a mean (SD) age of 73.1 (10.7) years (55 women [47.4%], 84 white individuals [72.4%], and 32 black individuals [27.6%]). Of the 116 patients, 29 (25.0%) reported at least 1 fall in the previous year. The mean rate of change in binocular mean sensitivity was faster for patients who reported a history of falls vs those who did not (-0.36 vs -0.17 dB/y; mean difference, 0.20 dB/y; 95% CI, 0.09-0.31 dB/y; $P < .001$). History of fast visual field loss was significantly associated with falls (rate ratio, 2.28 per 0.5 dB/y faster; 95% CI, 1.15-4.52 db/y; $P = .02$), even after adjusting for confounding factors.

CONCLUSIONS AND RELEVANCE: The rate of visual field loss was associated with a self-reported history of falls in the past year even after taking into account the magnitude of visual field defect.

However, although a positive association was found, further studies are necessary to establish whether a cause-and-effect relationship exists between rate of visual field loss and self-reported history of falls.

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Attentional control of gait and falls: is cholinergic dysfunction a common substrate in the elderly and Parkinson's disease?

Pelosin E, Ogliastrò C, Lagravinese G, Bonassi G, Mirelman A, Hausdorff JM, Abbruzzese G, Avanzino L.

Front. Aging Neurosci. 2016; 8: e104.

Affiliation: Department of Experimental Medicine, Section of Human Physiology and Centro Polifunzionale di Scienze Motorie, University of Genoa Genoa, Italy.

(Copyright © 2016, Frontiers Research Foundation)

DOI 10.3389/fnagi.2016.00104 **PMID** 27242515

Abstract

The aim of this study was to address whether deficits in the central cholinergic activity may contribute to the increased difficulty to allocate attention during gait in the elderly with heightened risk of falls. We recruited 50 participants with a history of two or more falls (33 patients with Parkinson's Disease and 17 older adults) and 14 non-fallers age-matched adults. Cholinergic activity was estimated by means of short latency afferent inhibition (SAI), a transcranial magnetic stimulation (TMS) technique that assesses an inhibitory circuit in the sensorimotor cortex and is regarded as a global marker of cholinergic function in the brain. Increased difficulty to allocate attention during gait was evaluated by measuring gait performance under single and dual-task conditions. Global cognition was also assessed.

RESULTS showed that SAI was reduced in patients with PD than in the older adults (fallers and non-fallers) and in older adults fallers with respect to non-fallers. Reduction in SAI indicates less inhibition i.e., less cholinergic activity. Gait speed was reduced in the dual task gait compared to normal gait only in our faller population and changes in gait speed under dual task significantly correlated with the mean value of SAI. This association remained significant after adjusting for cognitive status. These findings suggest that central cholinergic activity may be a predictor of change in gait characteristics under dual tasking in older adults and PD fallers independently of cognitive status.

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Challenging the motor control of walking: gait variability during slower and faster pace walking conditions in younger and older adults

Almarwani M, Vanswearingen JM, Perera S, Sparto PJ, Brach JS.

Arch. Gerontol. Geriatr. 2016; 66: 54-61.

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

(Copyright © 2016, Elsevier Publishing)

DOI 10.1016/j.archger.2016.05.001 **PMID** 27255348

Abstract

BACKGROUND: Gait variability is a measure of motor control of gait. Little is known about age-related changes in the motor control of gait (gait variability) during challenging walking conditions, such as slower and faster pace walking.

OBJECTIVE: The purpose of this study was to examine the impact of challenging walking conditions (slower and faster speeds) on gait variability in younger and older adults.

DESIGN: This study was a cross-sectional, observational design.

METHODS: Forty younger (mean age=26.6±6.0years) and 111 community-dwelling older adults (mean age=77.3±6.0years), independent in ambulation, were studied. Gait characteristics were collected using a computerized walkway (GaitMat II™). Step length, step width, step time, swing time, stance time and double support time variability were derived as the standard deviation of all steps across the 4 passes.

RESULTS: Compared to younger, older adults had a significant change in their gait variability from usual to slower in step width (-0.006±0.003), step time (0.028±0.006), swing time (0.023±0.004), stance time (0.042±0.008), and double support time (0.024±0.005). Changes in gait variability from usual to faster were not significantly different between younger and older adults. **LIMITATION:** Gait variability was examined during self-selected over-ground walking, where subjects directed to walk "slower", "usual" and "faster".

CONCLUSIONS: Walking slowly is more challenging to the motor control of gait and may be more sensitive to age-related declines in gait than usual and faster speed walks.

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Co-morbidities, complications and causes of death among people with femoral neck fracture - a three-year follow-up study

Berggren M, Stenvall M, Englund U, Olofsson B, Gustafson Y.

BMC Geriatr. 2016; 16(1): e120.

Affiliation: Department of Community Medicine and Rehabilitation, Geriatric Medicine, Umeå University, SE-901 87, Umeå, Sweden.

(Copyright © 2016, BioMed Central)

DOI 10.1186/s12877-016-0291-5 **PMID** 27260196

Abstract

BACKGROUND: The poor outcome after a hip fracture is not fully understood. The aim of the study was to describe the prevalence of co-morbidities, complications and causes of death and to investigate factors that are able to predict mortality in old people with femoral neck fracture.

METHODS: Data was obtained from a randomized, controlled trial with a 3-year follow-up at Umeå University Hospital, Sweden, which included 199 consecutive patients with femoral neck fracture, aged ≥70 years. The participants were assessed during hospitalization and in their homes 4, 12 and 36 months after surgery. Medical records and death certificates were analysed.

RESULTS: Multivariate analysis revealed that cancer, dependence in P-ADL (Personal Activities of Daily Living), cardiovascular disease, dementia at baseline or pulmonary emboli or cardiac failure during hospitalization were all independent predictors of 3-year mortality. Seventy-nine out of 199 participants (40 %) died within 3 years. Cardiovascular events (24 %), dementia (23 %), hip-fracture (19 %) and cancer (13 %) were the most common primary causes of death. In total, 136 participants suffered at least one urinary tract infection; 114 suffered 542 falls and 37 sustained 56 new fractures, including 13 hip fractures, during follow-up.

CONCLUSION: Old people with femoral neck fracture have multiple co-morbidities and suffer numerous complications. Thus randomized intervention studies should focus on prevention of complications that might be avoidable such as infections, heart diseases, falls and fractures.

PDF Y Endnote Y

Construct validity of the Modified Gait Efficacy Scale in older females

Goldberg A, Talley SA, Adamo DE.

Physiother Theory Pract. 2016; 32(4): 307-314.

Affiliation: Institute of Gerontology , Wayne State University , Detroit , MI , USA.

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Abstract

There are few well-validated tools that focus on the assessment of walking confidence in older adults. The main objective of this study was to assess construct validity of the 10-item Modified Gait Efficacy Scale (mGES) as a measure of walking confidence in older adults. Twenty-four older females completed the mGES, the 16-item Activities-specific Balance Confidence (ABC-16) scale, and the Senior Fitness Test (SFT). Construct validity of the mGES was evaluated by quantifying relationships between the mGES and the ABC-16 and the SFT, and by examining the ability of the mGES to discriminate between known groups (no/lower fear of falling versus higher fear of falling). There was a strong correlation between mGES and the ABC-16 scale ($r_s = 0.85$; $p < 0.001$). The mGES was significantly associated with SFT components that required lower extremity strength, stepping aerobic endurance, and walking agility and dynamic balance ($r_s = 0.45$ to 0.61 ; $p < 0.05$). Relationships between the mGES and number of arm curls in 30 s, chair sit and reach test, and back scratch test were weak ($r_s = 0.13$ - 0.25 ; $p > 0.05$). Mean mGES score was 91.5% in a no/lower fear of falling group, while it was 81.4% in a higher fear group ($p = 0.22$). There was a trend toward a significant difference in the unstandardized residuals derived from regression of ranked mGES scores on ranked covariate (age and 8 foot up and go) scores, between the no/lower versus higher fear of falling group ($p = 0.095$). These results support construct validity of the mGES as a measure of gait self-efficacy in community-dwelling older females.

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Development of predictive models for the estimation of the probability of suffering fear of falling and other fall risk factors based on posturography parameters in community-dwelling older adults

Dueñas L, Balasch i Bernat M, Mena del Horno S, Aguilar-Rodriguez M, Alcántara E.

Int. J. Ind. Ergonomics 2016; 54: 131-138.

(Copyright © 2016, Elsevier Publishing)

DOI 10.1016/j.ergon.2016.05.009 **PMID** unavailable

Abstract

Falls pose an important problem for older adults. Balance training is one of the main prevention strategies, but there is a lack of objective measurement methods that would allow the effectiveness of the treatments employed to be assessed. This study aimed to analyse the relationship between posturographic parameters and risk factors associated with falling, including the fear of falling (FoF). Forty-one healthy community-dwelling older adults were surveyed on their perception of problems considered to be fall risk factors. Balance measurement with posturography was performed. The relationships between risk factors and falls and risk factors and posturography were analysed by means of cross-tabulation and logistic regression, respectively. Experimental results showed a significant relationship between some of the posturographic parameters and various fall risk factors. Stability limits were related to FoF, and results from the Romberg test with eyes closed with and without foam correlated with problems in kneeling/crouching. The results from the Romberg test with eyes closed and foam correlated with osteoarthritis. Equations were developed to estimate the

probability of having such problems. In conclusion, posturography is useful for the estimation of fall risk conditions in relation to three important fall risk factors (FoF, osteoarthritis and problems in kneeling/crouching), and it could be used for targeting, training and studying progress after the use of different treatments.

Relevance to industry: Posturography can be used as an assessment tool to analyse the effects of those treatments aimed at preventing falls. Furthermore, the equations derived from our results can be used along with posturographic variables to assess patient progress.

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Effects of a chair-yoga exercises on stress hormone levels, daily life activities, falls and physical fitness in institutionalized older adults

Furtado GE, Uba-Chupel M, Carvalho HM, Souza NR, Ferreira JP, Teixeira AM.

Complement. Ther. Clin. Pract. 2016; ePub(ePub): ePub.

(Copyright © 2016, Elsevier Publishing)

DOI 10.1016/j.ctcp.2016.05.012 **PMID** unavailable

Abstract

The aim of this study was to assess the changes mediated by exercise on activities of daily life and falls (autonomy), physical fitness, salivary cortisol and alpha amylase in older adults living in social care givers centers.

METHODS: 35 women (83.81 ± 6.6 years old) were divided into two groups: chair-yoga exercises (CY, $n = 20$) and control group (CG, $n = 15$). All subjects were evaluated before and after 14-weeks of intervention. CY was involved in classes two times per week, while the GC did not participate in any exercise.

RESULTS: Fear of falling decreased in both groups, cortisol increased and alpha-amylase decreased in the CG. No significant changes occurred in physical fitness outcomes.

CONCLUSION: Chair-yoga practice was able to maintain the PF scores and stress hormone levels, but was not able to improve the subject's perception on the ability to perform the instrumental activities of daily life.

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Fall recovery intervention and its effect on fear of falling in older adults

Cox TB, Williams K.

Activ. Adapt. Aging 2016; 40(2): 93-106.

(Copyright © 2016, Informa - Taylor and Francis Group)

DOI 10.1080/01924788.2016.1158594 **PMID** unavailable

Abstract

The purpose of this study was to measure effects of a fall education program and a floor-rise intervention on fear of falling. FOF was established in 63 independent older adults (range = 73-102 years). Educational materials (Centers for Disease Control and Prevention [CDC], 2013) were presented to participants who were subdivided into education-only and fall-recovery floor-rise training groups. FOF was measured after the educational materials were discussed and again post-floor-rise training. RMANOVA detected no change in FOF across groups or administrations; FOF trended downward post-intervention.

Participants had low levels of FOF at baseline, making additional change difficult. Interviews suggested increased confidence following the training intervention. Further study with groups exhibiting higher initial FOF is recommended.

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Falls in the elderly

Sritharan N.

InnovAiT 2016; 9(2): 78-83.

(Copyright © 2016, Royal College of General Practitioners, Publisher Sage Publications)

DOI 10.1177/1755738015612824 PMID unavailable

Abstract

Falls are a common problem associated with old age. The UK has an increasingly ageing population, and the care of older people forms a high proportion of a GP's workload. Early identification of risk factors and prompt intervention are crucial in minimising the long-term morbidity and mortality associated with falls. This article aims to provide a structured approach to the assessment, management and prevention of falls in the community.

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Fatigued, but not frail: perceived fatigability as a marker of impending decline in mobility-intact older adults

Simonsick EM, Glynn NW, Jerome GJ, Shardell M, Schrack JA, Ferrucci L.

J. Am. Geriatr. Soc. 2016; ePub(ePub): ePub.

Affiliation: Intramural Research Program, National Institute on Aging, Baltimore, Maryland.

(Copyright © 2016, John Wiley and Sons)

DOI 10.1111/jgs.14138 PMID 27253228

Abstract

OBJECTIVES: To evaluate perceived fatigability as a predictor of meaningful functional decline in non-mobility-limited older adults.

DESIGN: Longitudinal analysis of data from the Baltimore Longitudinal Study of Aging (BLSA).

SETTING: National Institute on Aging, Clinical Research Unit, Baltimore, Maryland.

PARTICIPANTS: Men and women aged 60 to 89 participating in the BLSA with concurrent perceived fatigability and functional assessments and follow-up functional assessment within 1 to 3 years (N = 540).

MEASUREMENTS: Perceived fatigability was ascertained using the Borg rating of perceived exertion (RPE) after 5 minutes of treadmill walking at 1.5 miles per hour. Functional assessments included usual and fast gait speed, the Health, Aging and Body Composition physical performance battery (HABC PPB) and reported walking ability. Reported tiredness and energy level were examined as complementary predictors. Covariates included age, age squared, race, follow-up time, and baseline function. Meaningful decline was defined as 0.05 m/s per year for usual gait speed, 0.07 m/s per year for fast gait speed, 0.12 points/year for HABC PPB, and 1 point for walking ability index.

RESULTS: Over a mean 2.1 years, 20-31% of participants declined across functional assessments. Fatigability was associated with a 13-19% greater likelihood of meaningful decline in all measures (P = .002-.02) per 1-unit RPE increase. After considering tiredness and energy level separately, findings were essentially unchanged, and neither was associated with gait speed or physical performance decline. In contrast, each separately predicted decline in reported walking ability

independent of fatigability ($P = .03$ and $P < .001$, respectively).

CONCLUSION: Routine assessment of fatigability may help identify older persons vulnerable to greater-than-expected functional decline.

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Fidget blankets: a sensory stimulation outreach program

Kroustos KR, Trautwein H, Kerns R, Sobota KF.

Consult. Pharm. 2016; 31(6): 320-324.

Affiliation: Ohio Northern University Raabe College of Pharmacy, Ada, Ohio, USA.

(Copyright © 2016, American Society of Consultant Pharmacists)

DOI 10.4140/TCP.n.2016.320 **PMID** 27250073

Abstract

Behavioral and Psychological Symptoms of Dementia (BPSD) include behaviors such as aberrant motor behavior, agitation, anxiety, apathy, delusions, depression, disinhibition, elation, hallucinations, irritability, and sleep or appetite changes. A student-led project to provide sensory stimulation in the form of "fidget blankets" developed into a community outreach program. The goal was to decrease the use of antipsychotics used for BPSD.

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Foot rollover temporal parameters during straight-ahead and side-cut walking in obese and nonobese postmenopausal women

Silva D, Gabriel R, Moreira M, Abrantes J, Faria A.

J. Mot. Behav. 2016; ePub(ePub): ePub.

Affiliation: Department of Sport Science , CIDESD, University of Beira Interior , Covilhã , Portugal.

(Copyright © 2016, Informa - Taylor and Francis Group)

DOI 10.1080/00222895.2015.1123139 **PMID** 27254836

Abstract

The purpose of this study was to compare the temporal foot rollover data between straight-ahead and side-cut walking and to establish a reference dataset for obese and nonobese postmenopausal women. Pressure data were collected using the two-step protocol. The initial, final, and duration of contact of 10 foot areas were measured, as 5 instants and 4 phases. Significant temporal foot rollover differences were found during walking with and without directional changes; however, most of these differences were common for obese and nonobese subjects. The trailing limb during the side-cut task anticipated the initial and final contact of the lateral forefoot and increased midfoot and toes duration, suggesting a greater role of these areas in the initial break and in foot stability. The leading limb throughout the side-cut task exhibited longer duration of the heel, midfoot, and stance phase probably due to an increase in the stride length of the trailing limb and leaning of the trunk toward the inner side of the turn. Additionally, obese women revealed a later final contact and longer contact duration of some metatarsal areas suggesting that the greater inertia of these subjects demands more time to stabilize and prepare the foot for the next step. Please provide 3 to 5 keywords for the article.

PDF Y Endnote Y

Functional recovery after treatment of extra-articular distal radius fractures in the elderly using the IlluminOss® System (IO-Wrist); a multicenter prospective observational study

Hagenaars T, Van Oijen GW, Roerdink WH, Vegt PA, Vroemen JP, Verhofstad MH, van Lieshout EM. *BMC Musculoskelet. Disord.* 2016; 17(1): e235.

Affiliation: Trauma Research Unit Department of Surgery, Erasmus MC, University Medical Center Rotterdam, P.O. Box 2040, Rotterdam, CA, 3000, The Netherlands. e.vanlieshout@erasmusmc.nl. (Copyright © 2016, BioMed Central)

DOI 10.1186/s12891-016-1077-9 **PMID** 27233355 **PMCID** PMC4882870

Abstract

BACKGROUND: Approximately 17 % of all fractures involve the distal radius. Two-thirds require reduction due to displacement. High redislocation rates and functional disability remain a significant problem after non-operative treatment, with up to 30 % of patients suffering long-term functional restrictions. Whether operative correction is superior to non-operative treatment with respect to functional outcome has not unequivocally been confirmed. The IlluminOss® System was introduced in 2009 as a novel, patient-specific, and minimally invasive intramedullary fracture fixation. This minimally invasive technique has a much lower risk of iatrogenic soft tissue complications. Because IlluminOss® allows for early mobilization, it may theoretically lead to earlier functional recovery and ADL independence than non-operative immobilization. The main aim of this study is to examine outcome in elderly patients who sustained a unilateral, displaced, extra-articular distal radius fracture that was treated with IlluminOss®.

METHODS/DESIGN: The design of the study will be a multicenter, prospective, observational study (case series). The study population comprises elderly (60 years or older; independent in activities of daily living) with a unilateral, displaced, extra-articular distal radius fracture (AO/OTA type 23-A2 and A3) that after successful closed reduction was fixed within 2 weeks after the injury with IlluminOss®. Critical elements of treatment will be registered, and outcome will be monitored until 1 year after surgery. The Disabilities of the Arm, Shoulder, and Hand score will serve as primary outcome measure. The Patient-Rated Wrist Evaluation score, level of pain, health-related quality of life (Short Form-36 and EuroQoL-5D), time to ADL independence, time to activities/work resumption, range of motion of the wrist, radiological outcome, and complications are secondary outcome measures. Health care consumption and lost productivity will be used for a cost analysis. The cost analysis will be performed from a societal perspective. Descriptive data will be reported.

DISCUSSION: The results of this study will provide evidence on the effectiveness of operative treatment of patients who sustained an extra-articular distal radius fracture with the IlluminOss® System, using clinical, patient-reported, and societal outcomes.

TRIAL REGISTRATION: The study is registered at the Netherlands Trial Register (NTR5457 ; 29-sep-2015).

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Polytherapy and the risk of potentially inappropriate prescriptions (PIPs) among elderly and very elderly patients in three different settings (hospital, community, long-term care facilities) of the Friuli Venezia Giulia region, Italy: are the very elderly at higher risk of PIPs?

Cojutti P, Arnoldo L, Cattani G, Brusaferrero S, Pea F. *Pharmacoepidemiol. Drug Saf.* 2016; ePub(ePub): ePub.

Affiliation: Department of Experimental and Clinical Medical Sciences, University of Udine, Udine, Italy.

(Copyright © 2016, John Wiley and Sons)

DOI 10.1002/pds.4026 PMID 27184012

Abstract

PURPOSE: The aim of this point-prevalence study was to assess the occurrence of polypharmacy and hyperpolypharmacy and the risk of potentially inappropriate prescriptions (PIPs) among elderly and very elderly patients in different health-care settings of the Friuli-Venezia Giulia region in the North-East of Italy.

METHODS: Prescription pattern of elderly (65-79 years) and very elderly (>79 years) patients in three different health-care settings [hospitals, general practitioners, and long-term care facilities (LTCFs)] was assessed in March 2014, and PIPs were assessed according to the Beers criteria. Other situations at potentially high risk were checked.

RESULTS: A total of 1582 patients (hospital, n = 528; outpatients, n = 527; nursing homes, n = 527) were included. Very elderly were more represented in hospitals (60.4%) and LTCFs (77.1%) than among general practitioners (37.6%). Polypharmacy and hyperpolypharmacy rates ranged 57.7-73.7% and 9.7-15.6%, respectively. The most frequently prescribed drugs were the proton pump inhibitors, whereas the most common PIPs resulted the benzodiazepines. Multinomial regression analysis showed that female sex, age > 79 years, hyperpolypharmacy, and chronic kidney disease were associated with the risk of having ≥ 2 PIPs. Two situations at high risk of PIPs not contemplated by the Beers criteria were recurrent in the study population and concerned the statins and metformin.

CONCLUSIONS: Polypharmacy and hyperpolypharmacy among elderly and very elderly are strictly associated with the risk of multiple PIPs. The findings offer the opportunity to remark that improvement of the knowledge of safe drug use is generally needed in aging societies and may become of utmost relevance among health-care workers operating in LTCFs. Copyright © 2016 John Wiley & Sons, Ltd.

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Potential implications of mail delivery conversion on older adults' risk of falls in the winter

Sibaliija J, Ciminsky M, Fuchigami K, He MH, Chen Y, Trevithick J, Bickerton G, Zecevic A.

WURJ Health Nat. Sci. 2016; 6(1): e8.

(Copyright © 2016, University of Western Ontario)

DOI 10.5206/wurjhns.2015-16.8 PMID unavailable

Abstract

In December 2013, Canada Post announced they would be converting approximately five million households from door-to-door mail delivery to community mailboxes (CMB). The decision was made to address decreasing letter mail volume and operating losses experienced by the crown corporation. The CMBs will be phased in over the five years mainly in urban areas across the country. The decision to convert to CMBs makes Canada the only among the G8 countries to end home delivery of mail. As a result, no research exists on the implications of the change.

Particular concern has been raised over how the conversion will affect older adults. One area that needs examination is the consequences of the CMBs delivery model on fall rates among older adults in the winter. Falls are common among seniors, with 20-30% community dwelling older adults falling each year. The risk of falling is increased in the winter when there is snow and ice on the ground. Injuries due to falls consume a great deal of healthcare resources. The purpose of this scoping literature review was to determine: What are the implications for the elderly population of Canada

Post's decision to convert home delivery of mail to community mailbox delivery? Specifically, the review focused on how the conversion may impact fall rates among older adults in the winter.

PDF Y Endnote Y

Potentially unsafe activities and living conditions of older adults with dementia

Amjad H, Roth DL, Samus QM, Yasar S, Wolff JL.

J. Am. Geriatr. Soc. 2016; ePub(ePub): ePub.

Affiliation: Center on Aging and Health, Johns Hopkins University, Baltimore, Maryland.

(Copyright © 2016, John Wiley and Sons)

DOI 10.1111/jgs.14164 **PMID** 27253366

Abstract

OBJECTIVES: To examine the prevalence of dementia in the absence of a reported dementia diagnosis and whether potentially unsafe activities and living conditions vary as a function of dementia diagnosis status in a nationally representative sample of older adults.

DESIGN: Observational cohort study.

SETTING: Community.

PARTICIPANTS: Medicare beneficiaries aged 65 and older enrolled in the National Health and Aging Trends Study (N = 7,609).

MEASUREMENTS: Participants were classified into four groups based on self-report of dementia diagnosis, proxy screening interview, and cognitive testing: probable dementia with reported dementia diagnosis (n = 457), probable dementia without reported dementia diagnosis (n = 581), possible dementia (n = 996), or no dementia (n = 5,575). Potentially unsafe activities (driving, preparing hot meals, managing finances or medications, attending doctor visits alone) and living conditions (falls, living alone, and unmet needs) were examined according to dementia status subgroups in stratified analyses and multivariate models, adjusting for sociodemographic factors, medical comorbidities, and physical capacity.

RESULTS: The prevalence of driving (22.9%), preparing hot meals (31.0%), managing finances (21.9%), managing medications (36.6%), and attending doctor visits alone (20.6%) was lowest in persons with probable dementia; however, but in persons with probable dementia, the covariate-adjusted rates of driving, preparing hot meals, managing finances, managing medications, and attending doctor visits alone were significantly higher in those without reported dementia diagnosis than in those with reported diagnosis (all odds ratios ≥ 2.00 , all $P < .01$).

CONCLUSION: Older adults with probable dementia who are not aware of a dementia diagnosis are more likely to report engaging in potentially unsafe behaviors. Understanding the prevalence of potentially unsafe activities and living conditions can help clinicians focus safety screening and counseling in older adults with diagnosed or suspected dementia.

PDF Y Endnote Y

Sex differences in mortality following isolated traumatic brain injury among older adults

Albrecht JS, McCunn M, Stein DM, Simoni-Wastila L, Smith GS.

J. Trauma Acute Care Surg. 2016; ePub(ePub): ePub.

Affiliation: Department of Epidemiology and Public Health, University of Maryland School of Medicine

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DOI 10.1097/TA.0000000000001118 **PMID** 27280939

Abstract

BACKGROUND: Older adults have the highest rates of hospitalization and mortality from traumatic brain injury (TBI), yet outcomes in this population are not well studied. In particular, contradictory reports on the protective effect of female sex on mortality following TBI may have been related to age differences in TBI and other injury severity and mechanism. The objective of this study was to determine if there are sex differences in mortality following isolated TBI among older adults and compare to findings using all TBI. A secondary objective was to characterize TBI severity and mechanism by sex in this population.

METHODS: This was a retrospective cohort study conducted among adults aged 65 and older treated for TBI at a single large level I trauma center 1996-2012 (n=4,854). Individuals treated for TBI were identified using International Classification of Disease (ICD-9-CM) codes. Isolated TBI was defined as an Abbreviated Injury Scale score = 0 for other body regions. Our primary outcome was mortality at discharge.

RESULTS: Among those with isolated TBI (n=1,320), women (45% of sample) were older (78.9 (standard deviation 7.7) years) than men (76.8 (7.5) years)($p<0.001$). Women were more likely to have been injured in a fall (91% vs. 84%, $p<0.001$). Adjusting for multiple injury severity measures, female sex was not significantly associated with decreased odds of mortality following isolated TBI (OR 1.01; 95% CI 0.66, 1.54). Using all TBI cases, adjusted analysis found that female sex was significantly associated with decreased odd of mortality (OR 0.73; 95% CI 0.59, 0.89).

CONCLUSIONS: We found no sex differences in mortality following isolated TBI among older adults, in contrast with other studies and our own analyses using all TBI cases. Researchers should consider isolated TBI in outcome studies to prevent residual confounding by severity of other injuries. **LEVEL OF EVIDENCE:** Epidemiologic study, level III.

PDF Y Endnote Y

Smart homes and home health monitoring technologies for older adults: a systematic review

Liu L, Stroulia E, Nikolaidis I, Miguel-Cruz A, Rios Rincon A.

Int. J. Med. Inform. 2016; 91: 44-59.

Affiliation: Department of Occupational Therapy, Faculty of Rehabilitation Medicine, University of Alberta, 2-64 Corbett Hall, Edmonton, T6G 2G4 AB, Canada; School of Medicine and Health Sciences, Universidad del Rosario, Calle 63D # 24-31, 7 de Agosto, Bogotá D.C, Colombia. Electronic address: aros@ualberta.ca.

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DOI 10.1016/j.ijmedinf.2016.04.007 **PMID** 27185508

Abstract

BACKGROUND: Around the world, populations are aging and there is a growing concern about ways that older adults can maintain their health and well-being while living in their homes.

OBJECTIVES: The aim of this paper was to conduct a systematic literature review to determine: (1) the levels of technology readiness among older adults and, (2) evidence for smart homes and home-based health-monitoring technologies that support aging in place for older adults who have complex needs.

RESULTS: We identified and analyzed 48 of 1863 relevant papers. Our analyses found that: (1) technology-readiness level for smart homes and home health monitoring technologies is low; (2) the highest level of evidence is 1b (i.e., one randomized controlled trial with a PEDro score ≥ 6); smart homes and home health monitoring technologies are used to monitor activities of daily living,

cognitive decline and mental health, and heart conditions in older adults with complex needs; (3) there is no evidence that smart homes and home health monitoring technologies help address disability prediction and health-related quality of life, or fall prevention; and (4) there is conflicting evidence that smart homes and home health monitoring technologies help address chronic obstructive pulmonary disease.

CONCLUSIONS: The level of technology readiness for smart homes and home health monitoring technologies is still low. The highest level of evidence found was in a study that supported home health technologies for use in monitoring activities of daily living, cognitive decline, mental health, and heart conditions in older adults with complex needs.

PDF Y Endnote Y

Surgical prevention of femoral neck fractures in elderly osteoporotic patients. A literature review

Chiarello E, Tedesco G, Cadossi M, Capra P, Terrando S, Miti A, Giannini S.

Clin. Cases Miner. Bone Metab. 2016; 13(1): 42-45.

Affiliation: Orthopaedic and Trauma Clinic, Rizzoli Orthopaedic Institute, University of Bologna, Bologna, Italy.

(Copyright © 2016, CIC edizioni internazionali)

DOI 10.11138/ccmbm/2016.13.1.042 **PMID** 27252744

Abstract

Fragility fractures of the femur are one of the major causes of morbidity and mortality worldwide. The incidence of new contralateral hip fractures in elderly osteoporotic patients ranges from 7 to 12% within 2 years after the first fracture. Secondary prevention can be divided in: pharmacological therapy based on the prescription of anti-osteoporotic drugs with different mechanism of action and non-pharmacological therapy which is based on modification of environmental risk factors, on a healthy diet with daily supplements of calcium and vitamin D and calcium and on the use of hip protectors. Recently a new form of prevention is becoming achievable: surgical prevention; the rationale of surgical reinforcement is the need to increase the resistance of the femoral neck to the compression and distraction forces acting on it. In this paper we analyse all the experimental and "on the market" device available for the surgical prevention of femoral neck fracture.

PDF Y Endnote Y

The psychometric properties of a modified sit-to-stand test with use of the upper extremities in institutionalized older adults

Le Berre M, Apap D, Babcock J, Bray S, Gareau E, Chassé K, Lévesque N, Robbins SM.

Percept. Mot. Skills 2016; ePub(ePub): ePub.

Affiliation: School of Physical and Occupational Therapy, McGill University, Montreal, QC, Canada; Centre for Interdisciplinary Research in Rehabilitation, Constance Lethbridge Rehabilitation Centre, Montreal, QC, Canada shawn.robbsins@mcgill.ca.

(Copyright © 2016, Ammons Scientific)

DOI 10.1177/0031512516653388 **PMID** 27280453

Abstract

Current sit-to-stand protocols do not permit use of upper extremities, limiting the protocols' utility for institutionalized older adults with diminished physical function. The objective of this study was to modify a 30-s sit-to-stand protocol to allow for arm use and to examine test-retest reliability and convergent validity; 54 institutionalized older adult men (age = 91 ± 3 year) performed the 30-s sit-

to-stand twice within a span of 3 to 7 days.

RESULTS suggest good test-retest reliability (intraclass correlation coefficient = .84) and convergent validity with the Timed Up and Go Test ($r = -.62$). This modified 30-s sit-to-stand can be used to assess physical function performance in institutionalized older adults and will ensure that individuals with lower physical function capacity can complete the test, thus eliminating the floor effect demonstrated with other sit-to-stand protocols.

PDF Y Endnote Y

Establishing the effectiveness, cost-effectiveness and student experience of a Simulation-based education Training program On the Prevention of Falls (STOP-Falls) among hospitalised inpatients: a protocol for a randomised controlled trial

Williams C, Bowles KA, Kiegaldie D, Maloney S, Nestel D, Kaplonyi J, Haines T.

BMJ Open 2016; 6(6): e010192.

Affiliation: Department of Physiotherapy, Monash University, Frankston, Victoria, Australia Allied Health Research Unit, Monash Health, Cheltenham, Victoria, Australia.

(Copyright © 2016, BMJ Publishing Group)

DOI 10.1136/bmjopen-2015-010192 **PMID** 27256087

Abstract

INTRODUCTION: Simulation-based education (SBE) is now commonly used across health professional disciplines to teach a range of skills. The evidence base supporting the effectiveness of this approach for improving patient health outcomes is relatively narrow, focused mainly on the development of procedural skills. However, there are other simulation approaches used to support non-procedure specific skills that are in need of further investigation. This cluster, cross-over randomised controlled trial with a concurrent economic evaluation (cost per fall prevented) trial will evaluate the effectiveness, cost-effectiveness and student experience of health professional students undertaking simulation training for the prevention of falls among hospitalised inpatients. This research will target the students within the established undergraduate student placements of Monash University medicine, nursing and allied health across Peninsula Health acute and subacute inpatient wards.

METHODS AND ANALYSIS: The intervention will train the students in how to provide the Safe Recovery program, the only single intervention approach demonstrated to reduce falls in hospitals. This will involve redevelopment of the Safe Recovery program into a one-to-many participant SBE program, so that groups of students learn the communication skills and falls prevention knowledge necessary for delivery of the program. The primary outcome of this research will be patient falls across participating inpatient wards, with secondary outcomes including student satisfaction with the SBE and knowledge gain, ward-level practice change and cost of acute/rehabilitation care for each patient measured using clinical costing data. **ETHICS AND DISSEMINATION:** The Human Research Ethics Committees of Peninsula Health (LRR/15/PH/11) and Monash University (CF15/3523-2015001384) have approved this research. The participant information and consent forms provide information on privacy, storage of results and dissemination. Registration of this trial has been completed with the Australian and New Zealand Clinical Trials Registry:

ACTRN12615000817549. This study protocol has been prepared according to the Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT) checklist. **TRIAL REGISTRATION NUMBER:** ACTRN12615000817549; Pre-results.

PDF Y Endnote Y

Factors associated with recurrent falls in individuals with traumatic spinal cord injury - a multi-center study

Jørgensen V, Forslund EB, Franzén E, Opheim A, Seiger Å, Ståhle A, Hultling C, Stanghelle JK, Wahman K, Roaldsen KS.

Arch. Phys. Med. Rehabil. 2016; ePub(ePub): ePub.

Affiliation: Karolinska Institutet, Department of Neurobiology, Care Sciences and Society, Division of Physiotherapy, Stockholm, Sweden; Rehab Station Stockholm/Spinalis R&D unit, Stockholm, Sweden. (Copyright © 2016, Elsevier Publishing)

DOI 10.1016/j.apmr.2016.04.024 **PMID** 27240433

Abstract

OBJECTIVE: To identify factors associated with recurrent falls in individuals with traumatic SCI.

DESIGN: Cross-sectional multi-center study.

SETTING: Two specialized Rehabilitation Centers in Europe

PARTICIPANTS: Included: individuals with traumatic SCI ≥ 1 year post-injury, ≥ 18 years of age.

Excluded: individuals with motor complete injuries above C5 or below L5. Participants were consecutively recruited at regular follow-up. Totally 224 individuals (151 wheelchair users, 73 ambulatory), 77% men, mean age 50 (SD 15) years, median 15 (range 1-56) years since injury were included.

INTERVENTIONS: Not applicable.

MAIN OUTCOME MEASURE: Primary outcome was factors associated with recurrent falls (defined as low frequent [0-2] or recurrent [>2]), the previous year. Independent variables were demographic data, wheelchair user or ambulatory, work, health-related quality of life, risk willingness, alcohol consumption, ability to get up from the ground, and exercise habits.

RESULTS: Fifty percent reported recurrent falls. In the final multiple logistic regression model, ambulation (odds ratio [OR] = 2.67, 95% confidence interval [CI] = 1.33-5.37), ability to get up from the ground (OR= 2.22, 95% CI= 1.21-4.10), and regular exercise (OR= 1.86, 95% CI= 1.05-3.31), were associated with recurrent falls ($p \leq 0.05$), and with increasing age the OR decreased (OR= 0.97, 95% CI= 0.95-0.99).

CONCLUSION: Individuals with SCI should be considered at risk of recurrent falls, and thereby at risk of fall-related injuries. Fall prevention programs should be focused on ambulatory, younger and more active individuals who had the highest risks for recurrent falls.

PDF Y Endnote Y

Fall-related activity avoidance in relation to a history of falls or near falls, fear of falling and disease severity in people with Parkinson's disease

Kader M, Iwarsson S, Odin P, Nilsson MH.

BMC Neurol. 2016; 16(1): e84.

Affiliation: Memory Clinic, Skåne University Hospital, Malmö, Sweden.

(Copyright © 2016, BioMed Central)

DOI 10.1186/s12883-016-0612-5 **PMID** 27250988

Abstract

BACKGROUND: There is limited knowledge concerning fall-related activity avoidance in people with Parkinson's disease (PD); such knowledge would be of importance for the development of more efficient PD-care and rehabilitation. This study aimed to examine how fall-related activity avoidance relates to a history of self-reported falls/near falls and fear of falling (FOF) as well as to disease

severity in people with PD.

METHODS: Data were collected from 251 (61 % men) participants with PD; their median (min-max) age and PD duration were 70 (45-93) and 8 (1-43) years, respectively. A self-administered postal survey preceded a home visit which included observations, clinical tests and interview-administered questionnaires. Fall-related activity avoidance was assessed using the modified Survey of Activities and Fear of Falling in the Elderly (mSAFFE) as well as by using a dichotomous (Yes/No) question. Further dichotomous questions concerned: the presence of FOF and the history (past 6 months) of falls or near falls, followed by stating the number of incidents. Disease severity was assessed according to the Hoehn and Yahr (HY) stages.

RESULTS: In the total sample ($n = 251$), 41 % of the participants reported fall-related activity avoidance; the median mSAFFE score was 22. In relation to a history of fall, the proportions of participants ($p < 0.001$) that reported fall-related activity avoidance were: non-fallers (30 %), single fallers (50 %) and recurrent fallers, i.e. ≥ 2 falls (57 %). Among those that reported near falls (but no falls), 51 % (26 out of 51) reported fall-related activity avoidance. Of those that reported FOF, 70 % reported fall-related activity avoidance. Fall-related activity avoidance ranged from 24 % in the early PD-stage (HY I) to 74 % in the most severe stages (HY IV-V).

CONCLUSIONS: Results indicate that fall-related activity avoidance may be related to a history of self-reported falls/near falls, FOF and disease severity in people with PD. Importantly, fall-related activity avoidance is reported among those that do not fall and already in mild PD-stages (HY I-II). Although further studies are needed, our findings indicate that fall-related activity avoidance needs to be addressed early in order to prevent sedentary behavior and participation restrictions.

PDF Y Endnote Y

How accurately can your wrist device recognize daily activities and detect falls?

Gjoreski M, Gjoreski H, Luštrek M, Gams M.

Sensors (Basel) 2016; 16(6): s16060800.

Affiliation: Department of Intelligent Systems, Jožef Stefan International Postgraduate School, Jožef Stefan Institute, Ljubljana 1000, Slovenia. matjaz.gams@ijs.si.

(Copyright © 2016, Multidisciplinary Digital Publishing Institute)

DOI 10.3390/s16060800 **PMID** 27258282

Abstract

Although wearable accelerometers can successfully recognize activities and detect falls, their adoption in real life is low because users do not want to wear additional devices. A possible solution is an accelerometer inside a wrist device/smartwatch. However, wrist placement might perform poorly in terms of accuracy due to frequent random movements of the hand. In this paper we perform a thorough, large-scale evaluation of methods for activity recognition and fall detection on four datasets. On the first two we showed that the left wrist performs better compared to the dominant right one, and also better compared to the elbow and the chest, but worse compared to the ankle, knee and belt. On the third (Opportunity) dataset, our method outperformed the related work, indicating that our feature-preprocessing creates better input data. And finally, on a real-life unlabeled dataset the recognized activities captured the subject's daily rhythm and activities. Our fall-detection method detected all of the fast falls and minimized the false positives, achieving 85% accuracy on the first dataset.

Because the other datasets did not contain fall events, only false positives were evaluated, resulting in 9 for the second, 1 for the third and 15 for the real-life dataset (57 days data).

PDF Y Endnote Y

Pre-impact fall detection

Hu X, Qu X.

Biomed. Eng. Online 2016; 15(1): 61.

Affiliation: Institute of Human Factors and Ergonomics, College of Mechatronics and Control Engineering, Shenzhen University, 3688 Nanhai Avenue, Shenzhen City, Guangdong Province, China. quxd@szu.edu.cn.

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DOI 10.1186/s12938-016-0194-x **PMID** 27251528

Abstract

Pre-impact fall detection has been proposed to be an effective fall prevention strategy. In particular, it can help activate on-demand fall injury prevention systems (e.g. inflatable hip protectors) prior to fall impacts, and thus directly prevent the fall-related physical injuries. This paper gave a systematical review on pre-impact fall detection, and focused on the following aspects of the existing pre-impact fall detection research: fall detection apparatus, fall detection indicators, fall detection algorithms, and types of falls for fall detection evaluation. In addition, the performance of the existing pre-impact fall detection solutions were also reviewed and reported in terms of their sensitivity, specificity, and detection/lead time. This review also summarized the limitations in the existing pre-impact fall detection research, and proposed future research directions in this field.

PDF Y Endnote Y

Responsiveness of the Berg Balance Scale in patients early after stroke

Saso A, Moe-Nilssen R, Gunnes M, Askim T.

Physiother Theory Pract. 2016; 32(4): 251-261.

Affiliation: Department of Physiotherapy, Faculty of Health and Social Science, Norwegian University of Science and Technology, Trondheim, Norway.

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DOI 10.3109/09593985.2016.1138347 **PMID** 27253334

Abstract

The Berg Balance Scale (BBS) has previously shown good measurement properties. However, its ability to detect important change in patients early after stroke is still unknown. The purpose of the present study was to determine the minimal important change (MIC) and its relation to the minimal detectable change (MDC) for BBS in patients early after stroke. This prospective follow-up study included patients within the first 2 weeks after onset of stroke. The BBS, Barthel Index, and Scandinavian Stroke Scale were obtained at inclusion and 1 month later. At the follow-up assessment, the Patient Global Impression of Change was obtained. A receiver operating characteristic (ROC) curve was used to calculate the cut-off value for the MIC. Fifty-two patients (mean age of 78.7, SD 8.5 years) were included. All measures showed a significant improvement from baseline to follow-up. The ROC analysis identified a MIC of ≥ 6 BBS points, while the MDC was 5.97 BBS points at the 80% confidence level. This study shows that a change of 6 BBS point or more can be considered an important change for patients in the sub-acute phase after stroke, which also represents an 80% probability of exceeding the measurement error. A total of 80% of unchanged

patients would display random fluctuations within the bounds of MDC80, while 20% of unchanged patients would exceed MDC80.

PDF Y Endnote Y

The contribution of hearing and hearing loss to balance control

Vitkovic J, Le C, Lee SL, Clark RA.

Audiol. Neurootol. 2016; 21(4): 195-202.

Affiliation: Department of Audiology and Speech Pathology, The University of Melbourne, Melbourne, Vic., Australia.

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Abstract

This study investigated the hypothesis that a hearing 'map' of our surroundings is used to maintain balance control. We investigated the effects of sound on postural sway using centre of pressure analysis in 50 subjects with normal hearing, 28 with hearing loss and 19 with vestibular dysfunction. The acoustic environments utilized sound cues that were either present or absent. It was found that auditory cues are utilized by subjects with normal hearing to improve postural sway. The ability to utilize sound for postural control is diminished when there is a hearing loss, but this appears to be overcome by the use of a hearing aid. Patients with additional vestibular deficits exploit auditory cues to a greater degree, suggesting that sensory weighting to enhance the use of auditory cues may be applied when there is diminished sensory redundancy.

PDF N Endnote Y

Trends in older adult nonmedical prescription drug use prevalence: results from the 2002-2003 and 2012-2013 National Survey on Drug Use and Health

Schepis TS, McCabe SE.

Addict. Behav. 2016; 60: 219-222.

(Copyright © 2016, Elsevier Publishing)

DOI 10.1016/j.addbeh.2016.04.020 **PMID** unavailable

Abstract

BACKGROUND: Based on projections of increasing older adult nonmedical prescription drug use (NMPDU) prevalence, we investigated whether increases had occurred in opioid, tranquilizer and stimulant NMPDU in older adults from 2002-2003 to 2012-2013, using the National Survey on Drug Use and Health (NSDUH).

METHODS: The NSDUH is a nationally representative survey of the US population, with assessments of lifetime, past-year and past 30-day NMPDU from opioids, tranquilizers and stimulants. Weighted cross-tabulations were used to compute prevalence rates, and design-based logistic regressions were used to examine change in NMPDU. Regressions controlled for gender, race/ethnicity and population density of respondent residence.

RESULTS: Across medication classes, lifetime NMPDU rates increased in all older adults and two sub-groups: those aged 50 to 64 and those 65 years and older. Rates of past year opioid NMPDU also increased from 2002-2003 to 2012-2013 in all examined age ranges. Trend-level results were also found for the past-30 day opioid NMPDU and past-year tranquilizer NMPDU in adults aged 50 years and older.

CONCLUSIONS: The results support projections of increasing older adult NMPDU rates. As NMPDU in



older adults may impart greater risk for adverse events, public health efforts are needed to reverse the increases in older adult NMPDU.

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