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A hospital-based fall prevention program in the community: opportunities for frail older adults to participate in ongoing physical activity

Bernick L, McKye A, Brown-Strachan A, Corsianos G. *Healthc. Q.* 2018; 21(3): 64-70.

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[10.12927/hcq.2018.25698](https://doi.org/10.12927/hcq.2018.25698)

PMID

30741158

Abstract

A hospital-based falls prevention program offered in the community enabled older adults to sustain participation in physical activity beyond completion of the six-week program. The participants sustained gains with the support of an interdisciplinary comprehensive falls risk assessment, individualized goal setting, group exercise and education, home visits by health professionals when needed and partnership with community agencies for follow-up exercises. Participants (n = 162) demonstrated improvement at three months in comparison with their baseline Berg Balance Scale and Falls Efficacy Scale - International confidence scores and a 55% reduction in the average number of falls. Participants' self-report validated these findings.

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Endnote Y, PDF N

A regression tree for identifying risk factors for fear of falling: the International Mobility in Aging Study (IMIAS)

Curcio CL, Wu YY, Vafaei A, Barbosa JFS, Guerra R, Guralnik J, Gómez F. *J. Gerontol. A Biol. Sci. Med. Sci.* 2019; ePub.

DOI

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PMID

30753306

Abstract

BACKGROUND: We determine the best combination of factors for predicting the risk of developing fear of falling (FOF) in older people via Classification Regression Tree (CaRT) analysis.

METHODS: Community-dwelling older adults living in Canada, Albania, Brazil, and Colombia were from International Mobility in Aging Study (IMIAS). In 2014, 1,725 participants (aged 65-74) were assessed. With a retention rate of 81%, in 2016, 1,409 individuals were reassessed. Risk factors for FOF were entered into the CaRT: age, sex, education, self-rated health, comorbidity, medication, visual impairment, frailty, cognitive deficit, depression, fall history, Short Physical Performance Battery (SPPB), walking aid use, and mobility disability measured by the Nagi questionnaire.

RESULTS: The classification tree included 12 end groups representing differential risks of FOF with a minimum of two and a maximum of five predictors. The first split in the tree involved impaired physical function (SPPB scores). Respondents with less than 8 in SPPB score and mobility disability had 82% risk of developing FOF at the end of 2-year follow-up. Between 23.2% and 82.3% of the risk of developing FOF in 2 years of follow-up were explained by only five variables: age, sex, self-rated health, functional impairment measured by SPPB, and mobility disability. In those with no functional impairment or mobility disability, levels of education, sex, and self-rated health were important predictors of FOF in the future.

CONCLUSION: This classification tree included different groups based on specific combinations of a maximum of five easily measurable predictors with emphasis on impaired physical functioning risk factors for developing FOF.

Endnote Y, PDF Y

Concurrent validity of the Groningen Meander Walking and Timed Up and Go tests in older adults with dementia

Lee HS, Ko M, Park SW, Braden H. *Physiother. Theory Pract.* 2019; ePub.

DOI

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PMID

30739570

Abstract

BACKGROUND AND PURPOSE: The Groningen Meander Walking time (GMW-sec) test has not been clinically validated as a feasible assessment to test functional mobility skills. The purpose of this study was to determine the concurrent validity of the GMW-sec test with the Timed Up and Go (TUG) test in older adults with dementia.

METHODS: This study included a cross-sectional and between subjects design with one factor, which had three different levels of group. Consecutive sampling was used to recruit 145 elderly participants in dementia and senior care facilities. Participants were divided into three groups based on the result of a Mini-Mental Status Exam for Dementia Screening: 57 older adults with dementia, 25 older adults with mild cognitive impairment, and 63 healthy older adults.

RESULTS: Spearman rank order correlation showed that the TUG test had moderate association with the GMW-sec test not only in older adults with dementia ($r = 0.69$; $p < 0.01$), but also for the mild cognitive group ($r = 0.63$; $p = 0.01$) and healthy group ($r = 0.47$; $p < 0.01$). Older adults with dementia had a significant functional reduction for both GMW-sec and TUG tests compared to other two groups ($p < 0.01$).

DISCUSSION AND CONCLUSION: Turning motions with the TUG test may cause similar challenges that relate to a curved walking path for the GMW-sec test in older adults with dementia. Both the TUG and GMW-sec tests could be effective approaches for screening the severity of cognitive impairment on functional mobility in people with dementia.

Keywords

Concurrent validity; Groningen Meander Walking; Timed Up and Go; dementia; functional mobility; gait

Endnote Y, PDF Y

EuGMS Task and Finish group on Fall-Risk-Increasing Drugs (FRIDs): position on knowledge dissemination, management, and future research

Seppala LJ, van der Velde N, Masud T, Blain H, Petrovic M, van der Cammen TJ, Szczerbińska K, Hartikainen S, Kenny RA, Ryg J, Eklund P, Topinková E, Mair A, Laflamme L, Thaler H, Bahat G, Gutiérrez-Valencia M, Caballero-Mora MA, Landi F, Emmelot-Vonk MH, Cherubini A, Baeyens JP, Correa-Pérez A, Gudmundsson A, Marengoni A, O'Mahony D, Parekh N, Pisa FE, Rajkumar C, Wehling M, Ziere G. *Drugs Aging* 2019; ePub(ePub): ePub.

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30741371

Abstract

Falls are a major public health concern in the older population, and certain medication classes are a significant risk factor for falls. However, knowledge is lacking among both physicians and older people, including caregivers, concerning the role of medication as a risk factor. In the present statement, the European Geriatric Medicine Society (EuGMS) Task and Finish group on fall-risk-increasing drugs (FRIDs), in collaboration with the EuGMS Special Interest group on Pharmacology and the European Union of Medical Specialists (UEMS) Geriatric Medicine Section, outlines its position regarding knowledge dissemination on medication-related falls in older people across Europe. The EuGMS Task and Finish group is developing educational materials to facilitate knowledge dissemination for healthcare professionals and older people. In addition, steps in primary prevention through judicious prescribing, deprescribing of FRIDs (withdrawal and dose reduction), and gaps in current research are outlined in this position paper.

Endnote Y, PDF Y

Gait stability and its influencing factors in older adults

Hamacher D, Liebl D, Hödl C, Heßler V, Kniewasser CK, Thönnessen T, Zech A. *Front. Physiol.* 2018; 9: e1955.

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Abstract

A stable gait pattern is a prerequisite to successfully master various activities of daily living. Furthermore, reduced gait stability is associated with a higher risk of falling. To provide specific intervention strategies to improve gait stability, gaining detailed knowledge of the underlying mechanism and influencing factors is of utmost importance. The effects of relevant influencing factors on gait stability are poorly examined, yet. Therefore, the aim of the current study was to quantify the effects of various influencing factors on gait stability. In a cross-sectional study, we assessed dynamic gait stability and relevant influencing factors in 102 older adults (age >65 years). In addition to dynamic gait stability (largest Lyapunov exponent [LLE] and gait variability measures) during normal over-ground (single-task: ST) and dual-task (DT) walking, we registered the following influencing factors: health status (SF12), pain status (painDETECT, SES), fear of falling (falls efficacy scale), depression (CES-D), cognition performance (Stroop test), physical activity (Freiburger Fragebogen zur körperlichen Aktivität), proprioception (joint position sense), peripheral sensation (mechanical and vibration detection threshold), balance performance (static balance on force plate) and muscular fitness (instrumented sit-to-stand test). We used a principal components regression to link the identified principal components with the gait stability and gait variability responses. The four principal components "strength and gender" (e.g., $p = 0.001$ for LLE during ST), "physical activity" (e.g., $p = 0.006$ for LLE during ST), "pain" (e.g., $p = 0.030$ for LLE during DT) and "peripheral sensation" (e.g., $p = 0.002$ for LLE during ST) were each significantly associated with at least two of the analyzed gait stability/variability measures. The dimension "balance" was a significant predictor in only one gait measure. While "proprioception" tends to correlate with a gait variability measure, we did not find a dependency of mental health on any gait measure. In conclusion, the participants' ability to recover from small perturbations (as measured with the largest Lyapunov exponent) seems to be related to gender and strength, the amount of physical activity the participants spent every week, peripheral sensation and pain status. Since the explained variance is still rather low, there could be more relevant factors that were not addressed, yet.

Keywords

balance; gait variability; gender; muscular fitness; pain; peripheral sensation; physical activity; proprioception

Endnote Y, PDF Y

Geriatric consultation reduces high-risk medication usage at discharge in elderly trauma patients

Sharma J, Parulekar M, Stewart P, Blatt M, Zielonka T, Nyirenda T, Rogers C, Tank L. *Cureus* 2018; 10(11): e3649.

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Abstract

Background Traumatic injury in a growing geriatric population is associated with higher mortality and complication rates. Geriatric consultation (GC) is vital in reducing risk factors that contribute to adverse outcomes. This study aims to determine if receiving a GC had an impact on high-risk medication usage.

METHODS Patients eligible for a GC, age ≥ 65 , and length of stay $>$ two days, were identified via a chart review from July 2013 to July 2014 at a Level II trauma center. This population was divided into those with and without a GC. Data collected included demographics, injury severity, medications, delirium, mortality, and readmissions. High-risk medications were defined using the Beers Criteria. Statistical analysis involved using appropriate standard tests to compare groups, including multivariate logistic regression.

RESULTS Forty-nine of a total of 104 patients received a GC. Groups were comparable on injury severity score, co-morbidities, and high-risk medication use upon admissions. The GC group was 74% less likely to be discharged on high-risk medications than the non-GC group.

CONCLUSION GC in elderly trauma patients reduces high-risk medication use upon discharge. Further studies are needed to explore how GC impacts readmission rates and mortality. A multidisciplinary trauma team, including a geriatrician, must exist to address the unique medical, psychological, functional, and social issues of a growing, aged trauma population.

Keywords

delirium; geriatric consultation; geriatric trauma; high risk medications

Endnote Y, PDF Y

Inclusive decision-making for falls prevention: a discussion tool for use with people with dementia and their caregivers

Meyer C, Hill S, Hill KD, Dow B. *J. Aging Phys. Act.* 2019; ePub(ePub): 1-25.

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30747556

Abstract

Provision of choice and participation in falls prevention strategies is challenging for people with dementia. This paper outlines development of a discussion tool, to aid engagement of people with dementia and their caregivers in falls prevention strategies. The tool is based on a literature review of falls prevention and dementia care (1990 - 2016) and decision aid principles, and was trialled over 6-months. Twenty-five community-dwelling people with dementia (mean age 80 years, SD 7.7, 52% male), and their caregivers (mean age 73 years, SD 12.3, 36% male) underwent falls risk assessment, and evaluation of their preparedness to change falls risk behaviours. Most commonly rated, and prioritised for intervention, high falls risk factors were impaired balance/mobility (92%), poly-pharmacy (60%) and incontinence (56%). This discussion tool facilitated collaboration between people with dementia, their caregivers and health professionals, to increase uptake of acceptable and feasible evidence-based falls prevention strategies.

Keywords

Falls; balance; caregivers; dementia; knowledge translation

Endnote Y, PDF Y

Kaumātua Mana Motuhake: a study protocol for a peer education intervention to help Māori elders work through later-stage life transitions

Oetzel JG, Hokowhitu B, Simpson M, Reddy R, Nock S, Greensill H, Cameron MP, Meha P, Johnston K, Harding T, Shelford P, Smith LT. *BMC Geriatr.* 2019; 19(1): e36.

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Abstract

BACKGROUND: The Aotearoa/New Zealand population is ageing and numerous studies demonstrate with this phenomenon comes increases in non-communicable diseases, injuries and healthcare costs among other issues. Further, significant inequities exist between Māori (Indigenous peoples of Aotearoa/New Zealand) and non-Māori around poor ageing and health. Most research addressing these issues is deficit oriented; however, the current research project takes a strengths-based approach that highlights the potential of kaumātua (elders) by asserting mana motuhake (autonomy, identity and self-actualisation). We believe that the esteem of elders in Māori culture signals transformative potential. Specifically, this project utilises a 'tuakana-teina' (older sibling/younger sibling) peer-educator model, where kaumātua work with other kaumātua in relation to health and wellbeing. The objectives of the project are (a) to develop the capacity of kaumātua as peer educators, whilst having positive impacts on their sense of purpose, health and wellbeing; and (b) to enhance the social and health outcomes for kaumātua receiving the intervention.

METHODS: The research is grounded in principles of Kaupapa Māori and community-based participatory research, and brings together an Indigenous community of kaumātua, community health researchers, and academic researchers working with two advisory boards. The project intervention involves an orientation programme for tuakana peer educators for other kaumātua (teina). The research design is a pre- and post-test, clustered staggered design. All participants will complete a baseline assessment of health and wellbeing consistent with Māori worldviews (i.e., holistic model). The tuakana and teina participants will be divided into two groups with the first group completing the intervention during the first half of the project and the second group during the second half of the project. All participants will complete post-test assessments following both interventions allowing comparison of the two groups along with repeated measures over time.

DISCUSSION: The findings will provide an evidence base for the importance and relevancy of kaumātua knowledge to create contextually based and culturally safe age-friendly environments that facilitate engagement and participation by kaumātua for kaumātua. If the model is effective, we will seek to facilitate the dissemination and scalability of the intervention. **TRIAL REGISTRATION:** Australia New Zealand Clinical Trial Registry (ACTRN12617001396314); Date Registered: 3 October 2017 (retrospectively registered).

Keywords

Community-based participatory research; Mana motuhake; Peer education; Positive ageing; Tuakana-teina

Endnote Y, PDF Y



Maximum walking speed can improve the diagnostic value of frailty among community-dwelling older adults a cross-sectional study

do Carmo Correia de Lima M, Loffredo Bilton T, Jefferson de Sousa Soares W, Paccini Lustosa L, Ferriolli E, Rodrigues Perracini M. *J. Frailty Aging* 2019; 8(1): 39-41.

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PMID

30734830

Abstract

This study investigates the diagnostic accuracy of the combination of usual walking speed (UWS) and maximum walking speed (MWS) to identify frailty in community-dwelling older adults. A population-based study with 758 participants aged 65 and older was conducted. Frailty syndrome was determined using the Fried phenotype. UWS and MWS were evaluated in a 4.6-meter path. Both measures were categorized using the 1.0 m/s cut points, and participants were categorized into three groups: those with "very good", "good" and "insufficient" walking reserve capacity (WRC). Of all participants, 9% were identified as frail and 47% as prefrail. The "insufficient" WRC presented a low sensitivity of 0.55, high specificity of 0.91 and moderately useful likelihood ratios (LR+ 6.57, LR- 0.48) to identify frailty. Based on Fagan's nomogram, an elder's corresponding post-test probability of being frail with an "insufficient" WRC would be around 40%, which substantially increased the diagnostic accuracy of frailty.

Keywords

Usual gait speed; fast gait speed; likelihood ratios; sensitivity; specificity

Endnote Y, PDF N

Novel Frailty Screening Questionnaire (FSQ) predicts 8-year mortality in older adults in China

Ma L, Tang Z, Chan P, Walston JD. *J. Frailty Aging* 2019; 8(1): 33-38.

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PMID

30734829

Abstract

BACKGROUND: Although frailty status greatly impacts health care in countries with rapidly aging populations, little is known about the frailty status in Chinese older adults.

OBJECTIVES: Given the increased health care needs associated with frailty, we sought to develop an easily applied self-report screening tool based on four of the syndromic frailty components and sought to validate it in a population of older adults in China.

DESIGN: Prospective epidemiological cohort study. **SETTING:** Community-dwelling residents living in Beijing, China. **PARTICIPANTS:** 1724 community-dwelling adults aged ≥ 60 years in 2004 with an 8-year follow up. **MEASUREMENTS:** We developed a simple self-report frailty screening tool-the Frailty Screening Questionnaire (FSQ)-based on the modified Fried frailty components. The predictive ability for outcome was assessed by age and sex adjusted Cox proportional hazards model.

RESULTS: According to FSQ criteria, 7.1% of the participants were frail. Frailty was associated with poor physical function, fractures, falls, and mortality. Both frailty and pre-frailty were associated with a higher mortality rate: frailty-hazards ratio (HR), 3.94, 95% confidence interval (CI), 3.16-4.92, $P < 0.001$; pre-frailty-HR, 1.89; 95% CI, 1.57-2.27, $P < 0.001$; adjusted models for this variable did not affect the estimates of the association. Among the four frailty components, slowness was the strongest predictor of mortality. The combination of the four components provided the best risk prediction.

CONCLUSIONS: FSQ is a self-report frailty measurement tool that can be rapidly performed to identify older adults with higher risk of adverse health outcomes.

Keywords

Frailty; mortality; physical function

Endnote Y, PDF N

Physical activity trajectories and subsequent fall risk: ARIC Study

Gabriel KP, Griswold ME, Wang W, Conway SH, Windham BG, Palta P, Kucharska-Newton A, Pompeii LA. *Prev. Med.* 2019; ePub(ePub): ePub.

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PMID

30742870

Abstract

To examine the impact of moderate to vigorous intensity physical activity (MVPA) trajectories during midlife and older adulthood with subsequent fall risk in later life. Cross-temporal analyses were conducted in 15,792 participants (27% black, 55% women) aged 45 to 64 years enrolled in the Atherosclerosis Risk in Communities (ARIC) Study. MVPA was collected at Exams 1 (1987-89), 3 (1993-95) and 5 (2011-13) using the ARIC/Baecke questionnaire. Latent class growth analysis was used to identify the MVPA trajectory groups. Reported falls outcomes were collected in 2013-14, 2015-16, and 2016-17. Generalized Linear Models were used to estimate associations of baseline predictors with trajectory class membership, as well as associations of trajectory classes with any falling (adjusted incident relative risks, aIRR) and with number of falls (adjusted relative rates, aRR). Four primary trajectory classes emerged, reflecting longitudinal patterns of maintained high (48%), maintained low (22%), increasing (14%) and decreasing (15%) MVPA. After adjustment for covariates, the decreasing MVPA trajectory group had a 14% higher risk of reporting any falling compared to the maintained high MVPA group [aIRR = 1.14 (1.01, 1.28)]. When compared to the maintained high MVPA group, the maintained low and decreasing group had a 28% [aRR = 1.28 (1.14, 1.44)] and 27% [aRR = 1.27 (1.17, 1.38)] higher rate in the reported number of falls, respectively.

FINDINGS support public health campaigns targeting habitual MVPA or exercise for fall prevention and suggest that interventions should be initiated in midlife; a time when individuals may be more able and willing to change behavior.

Keywords

Cohort study; Exercise; Falls; Midlife

Endnote Y, PDF Y

Preliminary evaluation of a self-guided fall risk assessment tool for older adults

Sun R, Aldunate RG, Paramathayalan VR, Ratnam R, Jain S, Morrow DG, Sosnoff JJ. [Arch. Gerontol. Geriatr.](#) 2019; 82: 94-99.

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30735851

Abstract

Falls are a major health problem for older adults with significant physical and psychological consequences. The first step of successful fall prevention is to identify those at risk of falling. Recent technology advancement offers the possibility of objective, lowcost and self-guided fall risk assessment. The present work evaluated the preliminary validity and usability of a Kinect camera-based selfinitiated fall risk assessment system in a hospital setting. A convenience sample of 29 female participants (77.5 ± 7.9 years old) enrolled in this study. This low-cost self-guided system included a Kinect depth-sensing camera, a PC-based computer, and custom-built software. An onscreen Fall Risk Assessment Avatar (FRAAn) utilizing visual and verbal instructions led participants through a fall risk assessment consisting of self-report measures and clinically validated balance and mobility tests. Participants also completed clinical fall risk evaluation (Timed-Up and Go, and Berg Balance Scale) led by a researcher. User experience was evaluated by the System Usability Scale (SUS).

RESULTS indicate that FRAAn-based outcome measures (postural sway metrics, and sit-to-stand speed) were highly correlated with clinical fall risk measures, and were able to differentiate individuals with increased fall risk. Additionally, 83% participants reported high usability ($SUS > 80$), indicating the system is well received among older users. Overall, our results indicate that the FRAAn system has promise for providing a self-guided fall risk assessment, and is well received by older users. This affordable, portable and self-guided system has potential to facilitate objective fall risk assessment in older adults in various settings.

Keywords

Balance; Fall risk; Mobility; Older adults; Technology

Endnote Y, PDF Y

Risk factors for poor functional recovery, mortality, recurrent fractures, and falls among patients participating in a fracture liaison service program

Chao CT, Yang RS, Huang WJ, Tsai KS, Chan DD. [J. Am. Med. Dir. Assoc.](#) 2019; ePub(ePub): ePub.

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PMID

30723057

Abstract

OBJECTIVE: A fracture liaison service (FLS) for patients with fractures is a promising approach for improving outcomes, but barriers to the successful implementation of an FLS remain. The factors influencing the outcomes of patients already receiving FLS care are unclear.

DESIGN: A prospective multicenter cohort study. **SETTINGS AND PARTICIPANTS:** Patients with incident hip and clinical vertebral fractures treated at 2 institutions between January 2014 and June 2016 were prospectively enrolled. Demographic profiles, comorbidities, prior fracture experiences, T scores, Fracture Risk Assessment Tool (FRAX) scores, and serum markers were examined.

MEASURES: Self-reported functional status (at the 4th month), mortality, recurrent fractures, and falls (at the 2-year follow-up).

RESULTS: Of 712 patients screened for eligibility, 600 (84%) participants (age 78 ± 10 years) were enrolled in the FLS program. At 4 months, 58%, 53%, and 60% of the participants reported improved mobility, self-care, and daily activities after FLS care, respectively. After 2 years, 85 (14%) died, 36 (6%) developed recurrent fractures, and 199 (33%) had 1 or more fall episodes. Multivariate logistic regression showed that neurologic disorders, heart disease, and diabetes were associated with a decreased probability of functional recovery. Cox regression showed that older age and chronic kidney disease (CKD) were predictive of increased mortality, whereas heart disease was correlated with an increased refracture risk. Older age and cancer or osteoarthritis were associated with a higher risk of falls. Importantly, a higher body mass index predicted a lower risk of mortality and a higher probability of improved self-care but a higher risk of fall at follow-up.

CONCLUSIONS/IMPLICATIONS: We discovered that comorbidities including CKD, heart disease, cancer, and osteoarthritis could influence short-term functional changes, survival, and the risk of refractures or falls among patients participating in FLSs. These factors are expected to aid in prognosis estimation and management planning for those with fractures.

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Keywords

Body mass index; chronic kidney disease; fall; fracture liaison service; osteoporosis

Endnote Y, PDF Y



The effects of balance and gait function on quality of life of stroke patients

Park J, Kim TH. [NeuroRehabilitation](#) 2019; ePub(ePub): ePub.

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30741699

Abstract

BACKGROUND: Stroke patients have a lower quality of life than other people.

OBJECTIVE: The purpose of this study was to examine the effect of balance and gait function of stroke patients on their quality of life.

METHODS: Twenty-seven subjects participated in the experiment. Balance ability was assessed using a SpaceBalance 3D and a Berg Balance Scale (BBS). Gait function was measured with a Biodex Gait Trainer 2 treadmill system. The quality of life of the subjects was assessed through the Stroke specific Quality of Life Scale (SS-QOL).

RESULTS: Correlation analysis between balance and quality of life showed that weight bearing distribution and BBS are positive correlated with quality of life. In addition, gait speed, step length of the paretic limb, and step length of the non-paretic limb were also found to be correlated with quality of life.

CONCLUSION: Balance and gait function must all be considered in order to improve the quality of life of stroke patients.

Keywords

Balance; gait; quality of life; stroke

Endnote Y, PDF N

The inflammatory potential of diet is related to incident frailty and slow walking in older adults

Laclaustra M, Rodriguez-Artalejo F, Guallar-Castillón P, Banegas JR, Graciani A, García-Esquinas E, López-García E. [Clin. Nutr.](#) 2019; ePub(ePub): ePub.

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PMID

30737049

Abstract

BACKGROUND: Certain foods and dietary patterns have been associated with both inflammation and frailty. As chronic inflammation may play a role in frailty and disability, we examined the association of the inflammatory potential of diet with these outcomes.

METHODS: Data were taken from 1948 community-dwelling individuals ≥ 60 years old from the Seniors-ENRICA cohort, who were recruited in 2008-2010 and followed-up through 2012. Baseline diet data, obtained with a validated diet history, was used to calculate Shivappa's Dietary Inflammatory Index (DII), an "a priori" pattern score which is based on known associations of foods and nutrients with inflammation, and Tabung's Empirical Dietary Inflammatory Index (EDII), an "a posteriori" pattern score which was statistically derived from an epidemiological study. At follow-up, incident frailty was assessed with Fried's criteria, and incident limitation in instrumental activities of daily living (IADL) with the Lawton-Brody index. Statistical analyses were performed with logistic regression, and adjusted for the main confounders.

RESULTS: Compared with individuals in the lowest tertile of DII, those in the highest tertile showed higher risk of frailty (odds ratio [OR] 2.48; 95% confidence interval [CI]: 1.42, 4.44, p-trend = 0.001) and IADL disability (OR: 1.96; 95% CI: 1.03, 3.86, p-trend = 0.035). By contrast, EDII did not show an association with these outcomes. The DII score was associated with slow gait speed, both as a low score in the Short Physical Performance Battery test (OR: 1.82; 95% CI: 1.27, 2.62, p-trend = 0.001) and as a positive Fried's criterion (OR: 1.64; 95% CI: 1.08, 2.51, p-trend = 0.021), which use different thresholds.

CONCLUSIONS: DII predicted frailty and IADL while EDII did not. DII is able to measure diet healthiness in terms of physical decline in addition to avoidance of inflammation. REGISTERED ON: ClinicalTrials.gov number, NCT01133093.

Keywords

Cohort; Dietary patterns; Disability; Frailty; Inflammation

Endnote Y, PDF Y

The promise of stochastic resonance in falls prevention

White O, Babič J, Trenado C, Johannsen L, Goswami N. [Front. Physiol.](#) 2018; 9: e1865.

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Abstract

Multisensory integration is essential for maintenance of motor and cognitive abilities, thereby ensuring normal function and personal autonomy. Balance control is challenged during senescence or in motor disorders, leading to potential falls. Increased uncertainty in sensory signals is caused by a number of factors including noise, defined as a random and persistent disturbance that reduces the clarity of information. Counter-intuitively, noise can be beneficial in some conditions. Stochastic resonance is a mechanism whereby a particular level of noise actually enhances the response of non-linear systems to weak sensory signals. Here we review the effects of stochastic resonance on sensory modalities and systems directly involved in balance control. We highlight its potential for improving sensorimotor performance as well as cognitive and autonomic functions. These promising results demonstrate that stochastic resonance represents a flexible and non-invasive technique that can be applied to different modalities simultaneously. Finally we point out its benefits for a variety of scenarios including in ambulant elderly, skilled movements, sports and to patients with sensorimotor or autonomic dysfunctions.

Keywords

aging; balance disorder; falls; orthostatic intolerance; stochastic resonance

Endnote Y, PDF Y

Validation of the Casa Colina Fall Risk Assessment Scale in predicting falls in inpatient rehabilitation facilities

Kaplan SE, Cournan M, Gates J, Thorne M, Jones A, Ponce T, Rosario ER. [Rehabil. Nurs.](#) 2019; ePub(ePub): ePub.

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Abstract

OBJECTIVE: The aim of this study was to assess the validity, efficacy, and generalizability of a fall risk assessment tool created specifically for inpatient rehabilitation facilities (IRFs).

DESIGN: The Casa Colina Falls Risk Assessment Scale (CCFRAS) was assessed both retrospectively and prospectively on consecutive patients at three IRFs to determine the sensitivity and specificity of this tool in predicting fall risk. **SETTING:** The setting was in three IRFs. **PARTICIPANTS:** Individuals admitted to three IRFs participated in the study. **MAIN OUTCOMES MEASURES:** Each IRF quantified the number of falls detected for the patient population under evaluation and determined the site-specific sensitivity and specificity of the CCFRAS.

RESULTS: The sensitivity and specificity of the CCFRAS ranged from 75% to 80% and from 47% to 70%, respectively, for the different IRFs. Using a logistic regression analysis, we identified the optimal CCFRAS cutoff score for identifying high-risk patients at each individual facility, thus improving the specificity to 70%-79%.

CONCLUSION: Multisite evaluation of this assessment tool indicates that the CCFRAS is effective and broadly generalizable for predicting patients at high risk for falling.

Endnote Y, PDF Y

Assessing gait stability before and after cochlear implantation

Kaczmarczyk K, Błażkiewicz M, Wiszomirska I, Pietrasik K, Zdrodowska A, Wit A, Barton G, Skarżyński H. [Biomed. Res. Int.](#) 2019; 2019: e2474273.

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Abstract

BACKGROUND: It is known that cochlear implantation may alter the inner ear and induce vestibular disorders. **RESEARCH QUESTION:** How does cochlear implantation influence gait stability? *Material and Methods.* An experimental group of twenty-one subjects scheduled for cochlear implantation underwent gait testing twice, on the day before cochlear implantation (BCI) and three months after cochlear implantation (ACI), using a motion capture system. A control group of 30 age-matched healthy individuals were also tested.

RESULTS: In the experimental group, the gait stability ratio (GSR) was found to improve in 17 subjects after implantation, by an average of 6%. Certain other parameters also showed statistically significant improvement between the two experimental group tests: step time ($p < 0.001$), single-support phase walking speed ($p < 0.05$), and center of mass (CoM) ($p < 0.05$). Using the CoM results of the control group, we devised a stability classification system and applied it to the pre- and postimplantation subjects. After implantation, increases were seen in the number of subjects classified in interval II (strong stability) and III (weak stability). The number of subjects in interval I (perfect stability) decreased by 1 and in interval IV (no stability) by 4. **SIGNIFICANCE:** (1) Although cochlear implantation intervenes in the vestibular area, we found evidence that gait stability improves in most subjects after the surgery, reducing the risk of falls. (2) We found statistically significant improvements in individual parameters (such as single-support phase time), in GSR, and in CoM. (3) Based on CoM results, we proposed a new rule-of-thumb way of classifying patients into gait stability intervals, for use in rehabilitation planning and monitoring.

Endnote Y, PDF Y