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Association of bioimpedance phase angle and prospective falls in older adults

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PMID

30957354

Abstract

AIM: Bioelectrical impedance analysis-derived phase angle has been shown to reflect multiple health conditions, including sarcopenia and malnutrition. We aimed to investigate the prospective association between phase angle and incident falls in older adults.

METHODS: Community-dwelling adults aged ≥ 65 years ($n = 205$) participated in this study. Phase angle was examined using a multifrequency bioelectrical impedance analysis at baseline. Participants in the first tertile (T1), which had the lowest phase angle, were compared with those in the second and third tertiles (T2/3). Potential confounding factors, such as demographics, sarcopenia status and medications, were also assessed. Falls were recorded prospectively using falls diaries.

RESULTS: Over a median follow-up period of 181 days, a total of 11.7% of the sample ($n = 24$) experienced falls, with an overall incidence rate of 250.4 per 1000 person-years. Univariate Cox regression analysis showed that T1 had a significant relationship to incident falls compared with T2/3 (hazard ratio 2.51, 95% confidence interval 1.13-5.60). Multivariate Cox regression analysis with stepwise selection identified the phase angle (hazard ratio 2.32, 95% CI 1.03-5.21) and the number of medications (hazard ratio 1.21, 95% CI 1.003-1.45) as significant risk factors for incident falls.

CONCLUSIONS: Older adults with lower phase angles are more likely to experience prospective falls compared with those with normal-high phase angles. Bioelectrical impedance analysis-derived phase angle can be used as a valuable prognostic tool to predict future falls and the resulting negative consequences in older adults.

Language: en

Keywords

body composition; cellular health; frailty; nutrition; sarcopenia

Falls self-management interventions for people with Parkinson's disease: a systematic review

Owen CL, Ibrahim K, Dennison L, Roberts HC. *J. Parkinsons Dis.* 2019; ePub(ePub): ePub.

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Abstract

BACKGROUND: Falls are common in Parkinson's disease (PD). Increased involvement of people with Parkinson's (PwP) in their care has been associated with enhanced satisfaction. Self-management programmes in other long-term conditions (LTCs) have led to improvements in physical and psychological outcomes. These have been more effective when targeted toward a specific behavior.

OBJECTIVE: This paper aimed to identify and review falls self-management interventions for PwP.

METHODS: A systematic review was conducted. Electronic databases were searched in June 2018. Primary research studies (any design) reporting the delivery of falls self-management interventions to PwP were included. Data was extracted from each article and synthesised narratively.

RESULTS: Six articles were identified, relating to five different self-management interventions. All described a self-management intervention delivered alongside physiotherapy. Intervention delivery was through either group discussion (n=3) or falls booklets (n=3). Interventions were often incompletely described; the most common components were information about the condition, training/ rehearsal for psychological strategies and lifestyle advice and support. Arising from the design of articles included the effects of self-management and physiotherapy could not be separated. Three articles measured falls, only one led to a reduction. Four articles measured quality of life, only one led to improvement. No articles assessed skill acquisition or adherence to the self-management intervention.

CONCLUSIONS: Few falls self-management interventions for PwP have been evaluated and reported. The components of an effective intervention remain unclear. Given the benefits of self-management interventions in other LTCs, it is important that falls self-management interventions are developed and evaluated to support PwP.

Language: en

Keywords

Accidental falls; parkinson's disease; patient education as topic; review; self care

Gait characteristics and cognitive decline: a longitudinal population-based study

Jayakody O, Breslin M, Srikanth V, Callisaya M. *J. Alzheimers Dis.* 2019; ePub(ePub): ePub.

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Abstract

BACKGROUND: Gait impairments are emerging predictors of dementia. However, few studies have examined whether gait predicts decline in specific cognitive domains.

OBJECTIVE: This study aimed to determine whether gait speed or other gait characteristics were associated with decline in specific cognitive domains and the role of the ApoE4 genotype in modifying these associations.

METHODS: Participants (n=410; mean age 72.0±7.0 years) were randomly selected from the electoral roll. At baseline, gait speed was assessed using the GAITRite walkway. Gait variability in step time, step length, step width, and double support time (DST) was calculated as the standard deviation of each measure across all steps. In a subsample (n=177), speed was measured under fast pace. The difference between usual and fast pace was calculated. At baseline, 2.6 and 4.6 years processing speed, memory, executive and visuospatial function were measured using neuropsychological tests. Multivariable mixed models were used to examine 1) associations between gait and the different cognitive domains over time and 2) whether the presence of ApoE4 genotype modified these associations.

RESULTS: Higher DST variability was associated with greater decline in memory (p for interaction 0.03). Slow gait speed predicted decline in processing speed (p=0.02) and visuospatial function (p=0.03). In ApoE4 carriers, gait speed also predicted decline in memory (p=0.02). Other gait characteristics did not predict decline in any of the cognitive domains (p>0.05).

CONCLUSIONS: These findings add to the evidence that gait is an early indicator of cognitive decline, but that specific gait measures may provide diagnostic insights into specific cognitive domains.

Keywords

Apolipoprotein E4; cognitive dysfunction; gait variability; specific cognitive domains; walking speed; walking speed reserve

Multifactorial exercise and dance-based interventions are effective in reducing falls risk in community-dwelling older adults: a comparison study

Pope J, Helwig K, Morrison S, Estep A, Caswell S, Ambegaonkar J, Cortes N. *Gait Posture* 2019; 70: 370-375.

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Abstract

BACKGROUND: Falls and injuries related to falls in older adults are a significant health care issue that affects the elderly population. Research suggests that exercise interventions can be effective in improving falls risk factors. **RESEARCH QUESTION:** Are there differences in falls risk reduction between two exercise interventions (The Lebed Method - TLM and Stay Active and Independent for Life - SAIL) for community-dwelling older adults? **METHODS:** A quasi-experimental pre- and post-test design was used for this study. One hundred and sixty-three older individuals aged between 60-79 years of age participated in the study. Assessments of falls risk (using the physiological profile assessment), simple reaction time, bilateral knee extension strength, proprioception, balance, visual acuity, and mobility (using timed-up-and-go, TUG) were performed. Analysis of covariance was conducted to compare the differences between the two interventions. Pre-intervention assessments were used as the covariate.

RESULTS: SAIL participants' falls risk were reduced more than TLM. Reaction and TUG times were faster for SAIL participants. However, those individuals who participated in TLM had greater knee extension strength for both legs compared to SAIL participants.

SIGNIFICANCE: Overall, both interventions were effective in reducing falls risk for older adults. The greater number of improved falls risk factors attained with the SAIL program suggests that multifactorial interventions may be more effective at reducing falls risk. However, since TLM also showed better improved strength, both dance-based and multifactorial interventions can be effective at reducing falls risk factors for older adults.

Language: en

Keywords

Exercise; Falls; Reaction time; Strength

Pre-existing disability and its risk of fragility hip fracture in older adults

Kim J, Jang SN, Lim JY. *Int. J. Environ. Res. Public Health* 2019; 16(7): e16071237.

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30959977

Abstract

Background: Hip fracture is one of the significant public concerns in terms of long-term care in aging society. We aimed to investigate the risk for the incidence of hip fracture focusing on disability among older adults. *Methods:* This was a population-based retrospective cohort study, focusing on adults aged 65 years or over who were included in the Korean National Health Insurance Service-National Sample from 2004 to 2013 ($N = 90,802$). Hazard ratios with 95% confidence interval (CIs) were calculated using the Cox proportional hazards model according to disability adjusted for age, household income, underlying chronic diseases, and comorbidity index. *Results:* The incidence of hip fracture was higher among older adults with brain disability (6.3%) and mental disability (7.5%) than among those with other types of disability, as observed during the follow-up period. Risk of hip fracture was higher among those who were mildly to severely disabled (hazard ratio for severe disability = 1.59; 95% CI, 1.33–1.89; mild = 1.68; 95% CI, 1.49–1.88) compared to those who were not disabled. Older men with mental disabilities experienced an incidence of hip fracture that was almost five times higher (hazard ratio, 4.98; 95% CI, 1.86–13.31) versus those that were not disabled. *Conclusions:* Older adults with mental disabilities and brain disability should be closely monitored and assessed for risk of hip fracture.

Language: en

Keywords

comorbidity; disability; gender; hip fracture; severity

Predicting first-time injurious falls in older men and women living in the community: development of the first injurious fall screening tool

Ek S, Rizzuto D, Calderón-Larrañaga A, Franzén E, Xu W, Welmer AK. *J. Am. Med. Dir. Assoc.* 2019; ePub(ePub): ePub.

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PMID

30954420

Abstract

OBJECTIVES: The aim of this study was to create a screening tool to predict first-time injurious falls in community-living older men and women.

DESIGN: Longitudinal cohort study between 2001 and 2009. **SETTING:** The Swedish National Study on Aging and Care in Kungsholmen (SNAC-K), Sweden. **PARTICIPANTS:** Community-living older adults (n = 2808; 1750 women and 1058 men) aged ≥ 60 years (mean age 73, standard deviation 10.3). **MEASUREMENTS:** The outcome was injurious falls within 5 years from baseline survey. Data on the risk factors for falls were collected through interviews, clinical examinations, and tests at baseline. Several previously established fall risk factors were identified for the development of the screening tool. The tool was formulated based on the β coefficients from sex-specific multivariate Cox proportional hazards models. The discriminative power was assessed using Harrell C statistic.

RESULTS: Old age, living alone, being dependent in instrumental activities of daily living, and impaired balance were the factors included in the final score of the First Injurious Fall (FIF) screening tool. The predictive values (Harrell C statistic) for the scores were 0.75 for women and 0.77 for men. The sensitivity and specificity at the Youden cut-off points were 0.69 and 0.70 for women, and 0.72 and 0.71 for men.

CONCLUSIONS AND IMPLICATIONS: The FIF screening tool for first injurious fall in older persons consists of 3 questions and a physical test (5-second 1-leg standing balance with eyes open). Quick and easy to administer, it could be ideal for use in primary care or public health to identify older men and women at high fall risk, who may benefit from primary preventive interventions.

Keywords

Falls; injury; prediction

Racial differences in discharge location following a traumatic brain injury among older adults

Vadlamani A, Perry JA, McCunn M, Stein DM, Albrecht JS. *Arch. Phys. Med. Rehabil.* 2019; ePub(ePub): ePub.

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PMID

30954440

Abstract

OBJECTIVE: To determine if there were racial differences in discharge location among older adults treated for TBI at a level 1 trauma center.

DESIGN: Retrospective cohort study. **SETTING:** R Adams Cowley Shock Trauma Center
PARTICIPANTS: Black and white adults aged ≥ 65 years treated for TBI between 1998-2012 and discharged to home without services or inpatient rehabilitation (n=2,902). **MAIN OUTCOME MEASURES:** We assessed the association between race and discharge location via logistic regression. Covariates included age, gender, Abbreviated Injury Scale (AIS)-Head score, insurance type, Glasgow Coma Scale (GCS) score, and comorbidities.

RESULTS: There were 2,487 (86%) whites and 415 blacks (14%) in the sample. A total of 1,513 (52%) were discharged to inpatient rehabilitation and 1,389 (48%) were discharged home without services. In adjusted logistic regression, blacks were more likely to be discharged to inpatient rehabilitation than to home without services compared to whites (odds ratio 1.34, 95% confidence interval 1.06-1.70).

CONCLUSIONS: In this group of Medicare-eligible older adults, blacks were more likely to be discharged to inpatient rehabilitation compared to whites.

Language: en

Keywords

TBI; discharge disposition; older adults; race; rehabilitation

Risk of falls in hospitalized elderly people

Falcão RMM, Costa KNFM, Fernandes MDGM, Pontes MLF, Vasconcelos JMB, Oliveira JDS. *Rev. Gaucha Enferm.* 2019; 40(Suppl): e20180266.

Vernacular Title

Risco de quedas em pessoas idosas hospitalizadas.

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PMID

30970105

Abstract

OBJECTIVE: To assess the risk of falls in hospitalized elderly people.

METHOD: Cross-sectional study with a quantitative approach, carried out at University Hospital of the State of Paraíba. The sample consisted of 284 elderly subjects interviewed from April to October 2016. The Morse Fall Scale was used to evaluate the risk of falls.

RESULTS: Elderly males (52.5%) aged between 60 and 69 years old (58.1%) and who were not literate (38.7%), prevailed. It was verified that 45% of the sample presented a high risk of falls. The secondary diagnosis and the use of intravenous therapy were the criteria that obtained a higher percentage of elderly at risk. Diuretics ($p \leq 0.032$), urinary incontinence ($p \leq 0.001$), visual deficit ($p \leq 0.001$) and heart failure ($p \leq 0.001$) were significantly associated with the high risk of falls.

CONCLUSION: The use of specific tools in the prevention of falls allows the improvement in the quality of assistance based on scientific evidence, allowing effective intervention and potentiating patient safety.

Language: en

The impact of time to surgery after hip fracture on mortality at 30- and 90-days: does a single benchmark apply to all?

Beaupre LA, Khong H, Smith C, Kang S, Evens L, Jaiswal PK, Powell JN. *Injury* 2019; ePub(ePub): ePub.

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30948037

Abstract

INTRODUCTION: Delays to surgery after hip fracture have been associated with mortality. Uncertainty remains as to what timing benchmark should be utilized as a marker of quality of care and how other patient factors might also influence the impact of time to surgery on mortality. The goal of this study was to determine how time to surgery affects 30- and 90-day mortality by age and to explore the impact of preoperative comorbid burden and sex.

PARTICIPANTS: We used population-based administrative data from a Canadian province collected from 01April2008 to 31March2015. Of 12,713 Albertans 50-years and older who experienced a hip fracture and underwent surgery within 100 h of admission, 11,996 (94.8%) provided data.

METHODS: Time to surgery was analyzed in hours from admission to surgery. Age and the interaction between age and time to surgery were evaluated using logistic regression. Charlson co-morbidity score and sex were also considered in the analysis. Survival was evaluated at 30- and 90-days post hip fracture using a provincial registry.

RESULTS: The average age of the cohort was 79.6 ± 11.2 years and 8,412 (70.1%) were female. Overall, 586 (4.9%) patients died within 30-days and 1,023 (8.5%) died within 90-days of hip fracture. Mortality increased significantly with increasing time to surgery (30-day mortality odds ratio [OR] = 1.03; 95%CI 1.01-1.05; 90-day mortality OR = 1.03; 95% CI 1.01-1.04). Mortality also increased substantially with increasing age; those ≥ 85 years were 19.63 (95% CI 6.83-67.33) and 15.66 (95%CI 7.20-37.16) times the odds more likely to die relative to those between 50-64 years of age at 30-days and 90-days postoperatively respectively. Further, those who were ≥ 85 years were more significantly affected by increasing time to surgery than those who were 50-64 years of age at both 30-days ($p = 0.04$) and 90-days ($p = 0.025$) post-fracture. Males and those with a higher comorbid burden also had higher odds of dying after controlling for time to surgery ($p < 0.001$). **CONCLUSION:** Time to surgery following hip fracture may have a differential effect on 30- and 90-day survival dependent on age. Older patients appear to be at higher risk of dying with surgical delays than younger patients.

Keywords

Hip fracture; Mortality; Surgical delay

Accelerometer-based human fall detection using convolutional neural networks

Santos GL, Endo PT, Monteiro KHC, Rocha EDS, Silva I, Lynn T. *Sensors (Basel)* 2019; 19(7): s19071644.

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Abstract

Human falls are a global public health issue resulting in over 37.3 million severe injuries and 646,000 deaths yearly. Falls result in direct financial cost to health systems and indirectly to society productivity. Unsurprisingly, human fall detection and prevention are a major focus of health research. In this article, we consider deep learning for fall detection in an IoT and fog computing environment. We propose a Convolutional Neural Network composed of three convolutional layers, two maxpool, and three fully-connected layers as our deep learning model. We evaluate its performance using three open data sets and against extant research. Our approach for resolving dimensionality and modelling simplicity issues is outlined. Accuracy, precision, sensitivity, specificity, and the Matthews Correlation Coefficient are used to evaluate performance. The best results are achieved when using data augmentation during the training process. The paper concludes with a discussion of challenges and future directions for research in this domain.

Language: en

Keywords

accelerometer; convolutional neural networks; deep learning; human fall detection; sensor

Characteristics that affect score reliability in the Berg Balance Scale: a meta-analytic reliability generalization study

Meseguer-Henarejos AB, Rubio-Aparicio M, López-Pina JA, Carles-Hernández R, Gómez-Conesa A. *Eur. J. Phys. Rehabil. Med.* 2019; ePub(ePub): ePub.

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30955319

Abstract

INTRODUCTION: The Berg Balance Scale is the most widely used clinical scale used to assess balance performance in neurological conditions. Reliability is not an unalterable value of a scale across different applications, but is a property referring to the results obtained with the scale, not the instrument in itself. The results of a scale can vary depending on the context where it is applied and the characteristics of the participants, therefore the reliability coefficient should be reported in each study. A systematic review and meta-analysis of the reliability coefficients obtained in different applications of the test with the data at hand is the best method to examine how the reliability of a test scores varies. The objectives of this systematic revision are: To determine the mean of internal consistency, intra and interrater reliability of the Berg balance scale in the clinical, nonclinical and mixed populations, to determine the methodological and substantive characteristics and to propose a predictive model enabling researchers and clinicians to use it in the future to estimate the expected reliability based on the characteristics of the most relevant studies. **EVIDENCE ACQUISITION:** The MEDLINE (Pubmed), EMBASE and CINAHL databases were searched from 1989 to 2015. Two reviewers independently selected empirical studies published in English or in Spanish that applied the Berg Balance Scale and reported any reliability coefficient. **EVIDENCE SYNTHESIS:** The 80 samples in the 65 studies reported any the Berg Balance Scale reliability estimate. Coefficient alpha ranged from .62 to .98, with a mean of .92. For intra-rater agreement, the mean intraclass correlation was $ICC+ = .957$, and for inter-rater agreement $ICC+ = .97$. The SD of the Berg Balance Scale scores presented statistically significant relationships with the coefficient alpha and with ICC (intra-rater). In addition, the clinical population and the institutionalized population presented statistically significant relationships with the coefficient alpha. The sample size and mean scale results were also statistically related to ICCs (intra-rater).

CONCLUSIONS: The alpha coefficient and intra- and inter-rater agreement for Berg Balance Scale scores was very satisfactory. Several characteristics of the studies were statistically associated to the alpha coefficient and with intra-rater reliability.

Development of a strategy to predict and detect falls using wearable sensors

Ribeiro NF, André J, Costa L, Santos CP. *J. Med. Syst.* 2019; 43(5): e134.

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30949770

Abstract

Falls are a prevalent problem in actual society. Some falls result in injuries and the cost associated with their treatment is high. This is a complex problem that requires several steps in order to be tackled. Firstly, it is crucial to develop strategies that recognize the locomotion mode, indicating the state of the subject in various situations. This article aims to develop a strategy capable of identifying normal gait, the pre-fall condition, and the fall situation, based on a wearable system (IMUs-based). This system was used to collect data from healthy subjects that mimicked falls. The strategy consists, essentially, in the construction and use of classifiers as tools for recognizing the locomotion modes. Two approaches were explored. Associative Skill Memories (ASMs) based classifier and a Convolutional Neural Network (CNN) classifier based on deep learning. Finally, these classifiers were compared, providing for a tool with a good accuracy in recognizing the locomotion modes.

RESULTS have shown that the accuracy of the classifiers was quite acceptable. The CNN presented the best results with 92.71% of accuracy considering the pre-fall step different from normal steps, and 100% when not considering.

Language: en

Keywords

Associative Skill Memories (ASMs); Convolutional Neural Network (CNN); Deep learning; Gait analysis; Inertial Measurement Units (IMUs); Principal Component Analysis (PCA)

Improving hospital safety culture for falls prevention through interdisciplinary health education

Lopez-Jeng C, Eberth SD. [Health Promot. Pract.](#) 2019; ePub(ePub): ePub.

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30966813

Abstract

BACKGROUND: Falls are a serious public health problem, with an estimated 37.3 million falls a year requiring medical assistance. Improving hospital culture to address safety and falls prevention is a major organizational challenge that requires interdisciplinary teams and evidence-based education to change individual behaviors and improve outcomes.

METHODS: We collaborated with an interdisciplinary team of health practitioners at a critical access hospital to develop a health education program tailored to their internal assessment of falls and safety issues. The resulting program used the Five As behavior change model and evidence-based health education. Education session activities and posttests were used to measure participant outcomes, and the Agency for Healthcare Research and Quality (AHRQ) Hospital Survey on Patient Safety Culture was distributed hospital-wide to measure patient safety culture pre- and postintervention.

RESULTS: Participants reported increased knowledge, attitudes, and motivations with attendance at education sessions. The AHRQ Hospital Survey showed positive improvements in 10 of the 11 composite categories, 4 of which were statistically significant.

CONCLUSION: The use of the Five As, along with an interdisciplinary health education approach, can improve individual hospital employee falls prevention knowledge, attitudes, and motivations. That individual-level change can improve patient safety culture at the organizational level.

Language: en

Keywords

behavior change theory; health education; health research; injury prevention; safety; theory

Machine learning-based pre-impact fall detection model to discriminate various types of fall

Kim TH, Choi A, Heo HM, Kim K, Lee K, Mun JH. [J. Biomech. Eng.](#)2019; ePub(ePub): ePub.

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30968932

Abstract

Preimpact fall detection can send alarm service faster to reduce long-lie conditions and decrease the risk of hospitalization. Detecting various types of fall to determine the impact site or direction prior to impact is important because it increases the chance of decreasing the incidence or severity of fall-related injuries. In this study, a robust preimpact fall detection model was developed to classify various activities and falls as multi-class and its performance was compared with the performance of previous developed models. Twelve healthy subjects participated in this study. All subjects were asked to place an inertial measuring unit module by fixing on a belt near the left iliac crest to collect accelerometer data for each activity. Our novel proposed model consists of feature calculation and infinite latent feature selection algorithm, auto labeling of activities, application of machine learning classifiers for discrete and continuous time series data. Nine machine-learning classifiers were applied to detect falls prior to impact and derive final detection results by sorting the classifier. Our model showed the highest classification accuracy.

RESULTS for the proposed model that could classify as multi-class showed significantly higher average classification accuracy of $99.57 \pm 0.01\%$ for discrete data-based classifiers and $99.84 \pm 0.02\%$ for continuous time series-based classifiers than previous models ($p < 0.01$). In the future, multi-class preimpact fall detection models can be applied to fall protector devices by detecting various activities for sending alerts or immediate feedback reactions to prevent falls.

Language: en

Smart triggering of the barometer in a fall detector using a semi-permeable membrane

Lu W, Stevens M, Wang C, Redmond S, Lovell NH. [IEEE Trans. Biomed. Eng.](#) 2019; ePub(ePub): ePub.

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PMID

30969912

Abstract

The inclusion of a barometer in a wearable fall detector has been shown to improve the detection accuracy by measuring the altitude change associated with a fall event. However, the barometer is a power-hungry sensor, and the sensing power of barometer can be the dominant power consumption source in a wearable fall detector. In this study, we propose a triggering method that reduces barometer power consumption and prolongs the battery life. This approach utilizes a hermetically-sealed and waterproof enclosure, with a small inlet covered by a semi-permeable membrane (SPM) to delay the time at which equilibrium between the internal and external pressures is reached, allowing the barometer to be woken from an idle low-power mode and capture the rising air pressure caused by the decrease in altitude during the fall. Two alternative signal processing methods were applied to the pressure waveform to detect the rising pressure pattern, a differential moving average filter (DMAF) and a Kalman filter (KF). The proposed fall detector was evaluated with data collected from a laboratory-based trial and a free-living trial, in which the barometric pressure data, recorded in open-air, were passed through a mathematical model of the leaky enclosure and SPM assembly. The results show that the proposed fall detector with a 3.7V, 140mAh lithium-polymer battery provides a long battery life (DMAF 447 days, KF 444 days) while not compromising the sensitivity (DMAF 91.8%, KF 91.9%), specificity (DMAF 95.2% and KF 95.5%), or the false alarm rate (DMAF 0.035 alarms/hour and KF 0.064 alarms/hour).

Language: en

The association between osteoporosis and grip strength and skeletal muscle mass in community-dwelling older women

Taniguchi Y, Makizako H, Kiyama R, Tomioka K, Nakai Y, Kubozono T, Takenaka T, Ohishi M. [Int. J. Environ. Res. Public Health](#) 2019; 16(7): e16071228.

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Abstract

This cross-sectional study investigated the association between osteoporosis, grip strength, and skeletal muscle mass in community-dwelling older women. Data obtained from 265 older women who participated in a community-based health check survey (Tarumizu Study) were analyzed. Face-to-face interviews with participants revealed their history of osteoporosis. Appendicular skeletal muscle mass was assessed through bioelectrical impedance analysis, and appendicular skeletal muscle index was calculated. Dominant grip strength was also assessed. Loss of skeletal muscle mass (appendicular skeletal muscle mass < 5.7 kg/m²) and muscle weakness (grip strength < 18 kg) were determined based on criteria for sarcopenia put forth by the Asian Working Group for Sarcopenia. The prevalence rates of osteoporosis, muscle weakness, and loss of skeletal muscle mass were 27.2%, 28.7%, and 50.2%, respectively. Loss of skeletal muscle mass was more prevalent in participants with osteoporosis than in those without (65.3% vs. 44.6%, $p < 0.01$). The association between osteoporosis and muscle strength was not significant (30.6% vs. 28.0%, $p = 0.68$). After covariate adjustment, loss of skeletal muscle mass was found to be independently associated with osteoporosis (odds ratio 2.56, 95% confidence interval 1.33–4.91). In sum, osteoporosis was found to be associated with loss of skeletal muscle mass, but not with muscle weakness in community-dwelling older women.

Language: en

Keywords

loss of skeletal muscle mass; older women; osteoporosis