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Impact of facilities management on the quality of life for the elderly in care and attention homes - cross-validation by quantitative and qualitative studies

Leung M, Yu J, Chong MLA.

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Abstract

The rapid increase in elderly population has increased demand on care services and care and attention homes in Hong Kong. Elderly residents in care and attention homes rely heavily on facilities to maintain their quality of life. However, many care and attention homes are not purpose-built for elderly people. This paper investigates the relationship between facilities management of care and attention homes and elderly quality of life using both quantitative and qualitative data. A questionnaire was distributed among elders of eight recruited care and attention homes with four categories (government-financed non-purpose-built, government-financed purpose-built, self-financed non-purpose-built and self-financed purpose-built) in Hong Kong. Selected care and attention homes were a good mixture of operating types, building age and building types. A total of 56 questionnaires were completed by both elderly residents and staff in care and attention homes (37.5% were male and 62.5% were female), followed by semi-structured interviews; 48.2% of respondents were over 80 years of age and 93% had lived in C&A homes for more than one year. The findings identified 19 indoor facilities factors and also measured elderly quality of life. The results showed that space identification, distance, ventilation, furniture, non-slip floors and recreation facilities were positively related to elderly quality of life. Based on these findings, several practical recommendations are proposed, including allocating larger spaces for bedrooms, designing ventilation, installation of non-slip flooring, family-like furniture and the arrangement of recreational facilities.

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Patterns of injury and outcomes in the elderly patient with rib fractures: a multicenter observational study

Van Vledder MG, Kwakernaak V, Hagenaaers T, Van Lieshout EMM, Verhofstad MHJ.

Eur. J. Trauma Emerg. Surg. 2018; ePub(ePub): ePub.

Affiliation: Trauma Research Unit, Department of Surgery, Erasmus MC, University Medical Center Rotterdam, P.O. Box 2040, 3000 CA, Rotterdam, The Netherlands.

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Abstract

BACKGROUND: High rates of pneumonia and death have been reported among elderly patients with rib fractures. This study aims to identify patterns of injury and risk factors for pneumonia and death in elderly patients with rib fractures.

METHODS: A retrospective multicenter observational study was performed using data registered in the national trauma registry between 2008 and 2015 in the South West Netherlands Trauma region. Data regarding demographics, mechanism of injury, pulmonary and cardiovascular history, pattern

of extra-thoracic and intrathoracic injuries, ICU admission, length of stay, and morbidity and mortality following admission were collected.

RESULTS: Eight hundred eighty-four patients were included. Median age was 76 years (P₂₅-P₇₅ 70-83). 235 patients (26.6%) were 81 years or older. Moderate or worse extra-thoracic injuries were present in 456 patients (51.6%), of whom 146 (16.6%) had severe head injuries and 45 (5.1%) severe spinal injuries. Median ISS was 9 (P₂₅-P₇₅ 5-18). The rate of pneumonia was 10% (n = 84). Ten percent of patients (n = 88) died. Risk factors for in-hospital mortality included age (OR 3.4; p = 0.003), presence of COPD (OR 1.3; p = 0.01), presence of cardiac disease (OR 2.6; p = 0.003), severe or worse head (OR 3.5; p < 0.001), abdominal (OR 6.8; p = 0.004) and spinal injury (OR 4.6; p = 0.011) by AIS, number of rib fractures (OR 2.6; p = 0.03), and need for chest tube drainage (OR 2.1; p = 0.021).

CONCLUSIONS: Pneumonia and death occur in about 10% of elderly patients with rib fractures. Apart from the severity of thoracic injuries, the presence and severity of extra-thoracic injuries and cardiopulmonary comorbidities are associated with poor outcome.

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Physical activity and associated medical cost savings among at-risk older adults participating a community-based health & wellness program

Towne SD, Li Y, Lee S, Smith ML, Han G, Quinn C, Du Y, Benden M, Ory MG.

PLoS One 2018; 13(6): e0198239.

Affiliation: Department of Environmental and Occupational Health, School of Public Health, Texas A&M University, College Station, Texas, United States of America.

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Abstract

INTRODUCTION: Physical activity declines are seen with increasing age; however, the US CDC recommends most older adults (age 65 and older) engage in the same levels of physical activity as those 18-64 to lessen risks of injuries (e.g., falls) and slow deteriorating health. We aimed to identify whether older adults participating in a short (approx. 90-minute sessions) 20 session (approximately 10-weeks) health and wellness program delivered in a community setting saw improvements in physical activity and whether these were sustained over time.

METHODS: Employing a non-equivalent group design, community-dwelling older adults were purposely recruited into either an intervention or comparison group. The intervention was a multicomponent lifestyle enhancement intervention focused on healthy eating and physical activity, including structured physical activity exercises within the class sessions. Two groups were included: intervention (survey group: n = 65; accelerometer subgroup: n = 38) and the comparison group (survey group: n = 102; accelerometer subgroup: n = 55). Measurements were made at baseline and approximately three months later to reflect immediate post-treatment period (survey, accelerometer) with long-term follow-up 6 months after baseline (survey). Adults not meeting the physical activity guidelines (i.e., 150/75 minutes of moderate-to-vigorous physical activity or MVPA) were targeted for subgroup analyses. Paired t-tests were used for bivariate comparisons, while repeated measures random coefficient models (adjusting for propensity scores using inverse probability of treatment weighted (IPTW) estimation) were used for multivariate models. Estimated medical costs associated with gains in physical activity were also measured among survey

respondents in the intervention group.

RESULTS: The accelerometer group contained 38 participants in the intervention group with 71% insufficiently active at baseline and 55 participants in the comparison group with 76% insufficiently active at baseline (<150 weekly MVPA minutes). The survey group contained 65 participants in the intervention group with 73.85% insufficiently active at baseline and 102 participants in the comparison group with 76.47% insufficiently active at baseline. In paired t-tests with the accelerometer group, a moderate effect size (-0.4727, $p = 0.0210$) indicating higher MVPA was found for intervention participants with <150 weekly MVPA at baseline. In fully adjusted analyses using propensity score matching, among the subjectively measured physical activity (survey) group, there was a differential impact from baseline to 6-month post among the intervention group with an improvement of 160 minutes among all study participants ($p < .0001$) versus no difference among the comparison group. For those insufficiently active at baseline, there was an improvement of 103 minutes among intervention ($p < .0001$) and 55 minutes among the comparison ($p < .0001$) with the improvement of the intervention significantly greater than that among the comparison ($p = 0.0224$). Further, among those insufficiently active at baseline there was a relative cost savings from baseline to 6-months over and above the estimated cost of the intervention estimated between \$143 and \$164 per participant.

DISCUSSION: This intervention was able to reach and retain older adults and showed significant MVPA gains and estimated medical cost savings among more at-risk individuals (baseline <150 MVPA). This intervention can be used in practice as a strategy to improve MVPA among the growing population of older community-dwelling adults.

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Severe hypoglycemia is associated with high risk for falls in adults with type 1 diabetes

Shah VN, Wu M, Foster N, Dhaliwal R, Al Mukaddam M.

Arch. Osteoporos. 2018; 13(1): e66.

Affiliation: University of Pennsylvania Perelman School of Medicine, 3400 Civic Center Blvd, Philadelphia, PA, 19104, USA.

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Abstract

We evaluated fall frequency and factors affecting falls among middle-aged and older adults with type 1 diabetes (T1D) from T1D Exchange Registry. Twenty-nine percent of T1D participants reported falls within the past 12 months. Severe hypoglycemia, diabetic peripheral neuropathy, and depression were associated with falls in adults with T1D.

PURPOSE: Fall is an important risk factor for osteoporotic fracture; we evaluated fall frequency and factors affecting falls among middle-aged and older adults with type 1 diabetes (T1D).

METHODS: Participants aged ≥ 55 years with T1D completed an email-based questionnaire on falls in the prior 12 months. Demographic, clinical, and fall-related information were gathered from the questionnaire; HbA1c was recorded from medical record data extraction.

RESULTS: Four hundred and thirty five adults with T1D completed the fall questionnaire (mean age 64 ± 7 years, 57% females, and 97% were non-Hispanic whites). The mean diabetes duration was 36 years with mean HbA1c of 7.3%. Among the 435 participants, 126 reported at least one fall in the

prior 12 months (29%). The fall frequency values in adults (55-64 years) with T1D and older adults (> 65 years) were 26 and 32%, respectively ($p = 0.16$). There was no significant difference in frequency of fall between female and male participants (31 vs. 26%, $p = 0.33$). Of 126 participants who had a fall, 44% had injuries due to fall, 24% required medical attention, and 13 participants reported fracture (10%). Severe hypoglycemia (odds ratio (OR) 3.6), diabetic peripheral neuropathy (OR 2.2), and depression (OR 1.7) were associated with falls in adults with T1D. Forty-one percent of participants were fearful of falls.

CONCLUSIONS: This is the first study on prevalence and risk factors for falls suggesting that falls are common in T1D and severe hypoglycemia is a unique diabetes-related factor associated with threefold higher risk for falls.

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Temporal trends in impairments of physical function among older adults during 2001-16 in Sweden: towards a healthier ageing

Santoni G, Angleman SB, Ek S, Heiland EG, Lagergren M, Fratiglioni L, Welmer AK.

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Affiliation: Division of Physiotherapy, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, SE-14186 Stockholm, Sweden.

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Abstract

BACKGROUND: a trend towards decline in disability has been reported in older adults, but less is known about corresponding temporal trends in measured physical functions.

OBJECTIVE: to verify these trends during 2001-16 in an older Swedish population.

METHODS: functional status was assessed at three occasions: 2001-04 ($n = 2,266$), 2007-10 ($n = 2,033$) and 2013-16 ($n = 1,476$), using objectively measured balance, chair stands and walking speed. Point prevalence was calculated and trajectories of change in impairment/vital status were assessed and were sex-adjusted and age-stratified: 66; 72; 78; 81 and 84; 87 and 90.

RESULTS: point prevalence of impairment was significantly lower at the 2013-16 assessment than the 2001-04 in chair stand amongst age cohorts 78-90 years, and in walking speed amongst age cohorts 72-84 years ($P < 0.05$), but not significantly different for balance. The prevalence remained stable between 2001-04 and 2007-10, while the decrease in chair stands and walking speed primarily occurred between 2007-10 and 2013-16. Among persons unimpaired in 2007-10, the proportion of persons who remained unimpaired in 2013-16 tended to be higher, and both the proportion of persons who became impaired and the proportion of persons who died within 6 years tended to be lower, relative to corresponding proportions for persons unimpaired in 2001-04. Overall, there were no corresponding changes for those starting with impairment.

CONCLUSIONS: our results suggest a trend towards less functional impairment in older adults in recent years. The improvements appear to be driven by improved prognosis amongst those without impairments rather than substantial changes in prognosis for those with impairments.

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The associations between falls, fall injuries and labor market outcomes among U.S. workers 65 years and older

Scott K, Fisher GG, Barón AE, Tompa E, Stallones L, DiGuseppi C.

J. Occup. Environ. Med. 2018; ePub(ePub): ePub.

Affiliation: Denver Public Health, Denver Health and Hospital Authority (Scott); Department of Psychology, Colorado State University, Fort Collins, Colorado (Fisher, Stallones); Department of Biostatistics and Informatics, Colorado School of Public Health, Aurora, Colorado (Barón); and Institute for Work & Health, Toronto, Ontario, Canada; Department of Epidemiology, Colorado School of Public Health, Aurora, Colorado (Tompa, Stallones, DiGuseppi).

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Abstract

OBJECTIVE: To examine whether falls are associated with the subsequent ability to work among workers 65 years and older.

METHODS: This longitudinal cohort study followed older workers enrolled in the Health and Retirement Study. Outcomes included time to health-related work limitation and to labor force exit.

RESULTS: After adjustment multiple falls with or without a medically-treated injury were associated with time to limitation (HR= 1.77, 95% CI: 1.30-2.40; HR= 1.48, 95% CI: 1.26-1.73, respectively).

Adjustment mitigated a crude relationship between falls and time to exit. Significant interactions suggest the relationship between falls and labor force exit depends on age, race and job demands.

CONCLUSIONS: Falls, both non-injurious and injurious, are associated with subsequent health-related work limitation among workers 65 and older. Fall prevention activities would benefit workers who want or need to keep working past age 65.

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Using temporal covariance of motion and geometric features via boosting for human fall detection

Ali SF, Khan R, Mahmood A, Hassan MT, Jeon AM.

Sensors (Basel) 2018; 18(6): s18061918.

Affiliation: School of Electrical Engineering and Computer Science, Gwangju Institute of Science and Technology (GIST), Gwangju 61005, Korea. mgjeon@gist.ac.kr.

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Abstract

Fall induced damages are serious incidences for aged as well as young persons. A real-time automatic and accurate fall detection system can play a vital role in timely medication care which will ultimately help to decrease the damages and complications. In this paper, we propose a fast and more accurate real-time system which can detect people falling in videos captured by surveillance cameras. Novel temporal and spatial variance-based features are proposed which comprise the discriminatory motion, geometric orientation and location of the person. These features are used along with ensemble learning strategy of boosting with J48 and Adaboost classifiers. Experiments have been conducted on publicly available standard datasets including *Multiple Cameras Fall (with 2 classes and 3 classes)* and *UR Fall Detection* achieving percentage accuracies of 99.2, 99.25 and 99.0,

respectively. Comparisons with nine state-of-the-art methods demonstrate the effectiveness of the proposed approach on both datasets.

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Characterizing within-subject variability in quantified measures of balance control: a cohort study

Worthen-Chaudhari LC, Monfort SM, Bland C, Pan X, Chaudhari AMW.

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Affiliation: School of Health & Rehabilitation Sciences, The Ohio State University, Columbus, OH, USA; Department of Orthopaedic Surgery, The Ohio State University, Columbus, OH, USA.

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Abstract

BACKGROUND: To longitudinally assess individuals using quantified measures, we must characterize within-subject variability (WSV) of the measures.

RESEARCH QUESTION: What is the natural within-subject variability (WSV) that can be expected in postural control over 3+ days?

METHODS: Thirteen individuals without orthopedic or neurologic impairment (mean(SD) = 55 (9) years; 76 (18) kg; 11 females/2 males) were recruited from a community workplace and consented to participate. Participants stood quietly with eyes closed (QEC) on a force platform (5 x 1 min x 6 days) in two stances: comfortable and narrow. We recorded center of pressure (COP) and calculated COP-based balance parameters. To analyze variance components, we applied a linear mixed model for repeated measures, calculating within-subject standard deviation (SDws) from the pooled variance not attributable to between-subject variability. To estimate WSV, we scaled SDws by a confidence interval (CI) factor (e.g. WSV at the 95%CI = $WSV_{95} = SDws * 1.96$) and report WSV_{95} for a range of conditions previously reported in the literature and the following measures previously found sensitive to or predictive of health: (primary) WSV_{95} of root-mean square amplitude of medial-lateral COP during QEC (RMSml); (secondary) WSV_{95} of COP ellipse area (COPa); (secondary) WSV_{95} of mean medial-lateral COP velocity (COPvml) during QEC.

RESULTS: WSV_{95} was estimated at RMSml = 0.8 mm, COPa = 99mm², and COPvml = 1.1 mm/s among healthy, middle-aged participants standing comfortably for one recommended data duration (4 x 30 s trials). A look up table provides values for alternate protocols that have been suggested in the literature and might prove relevant for clinical translation. **SIGNIFICANCE:** This work advances longitudinal assessment of individuals using quantified measures of postural control.

RESULTS enable practitioners/researchers to assess an individual's progress, maintenance, or decline relative to WSV at a defined CI level.

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Previous experience and walking capacity predict community outings after stroke: an observational study

Karageorge A, Vargas J, Ada L, Kelly PJ, McCluskey A.

Physiother. Theory Pract. 2018; ePub(ePub): ePub.

Affiliation: Discipline of Occupational Therapy , The University of Sydney , Sydney , Australia.

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Abstract

BACKGROUND: Following hospital discharge, stroke survivors may experience a decline in mobility, outings, and community participation. The aim of this study was to examine the relationship between demographic and clinical measures, and the level of participation by community-dwelling stroke survivors.

METHODS: A prospective, multicenter, observational study was conducted. Participants were 83 community-dwelling stroke survivors with participation goals who were undergoing post-inpatient rehabilitation in Australia. Predictors collected at baseline, early after hospital discharge were demographic (age, gender, living situation, home access) and clinical measures (walking capacity, driving status, baseline outings). The outcome of interest was community participation 6 months later, measured over 7 days as number of outings (collected in a self-report diary). An outing was any excursion beyond the perimeter of the participants' dwelling into a public street.

RESULTS: Number of outings 6 months after admission to the study (mean 8.5/week, SD 5.3) was predicted by number of outings at baseline, walking capacity, and age. Driving status did not predict number of outings.

CONCLUSION: The strongest predictors of community participation were the number of outings early post-inpatient rehabilitation, walking capacity, and age. The only significant modifiable predictor was walking capacity.

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