**SafetyLit August 5th 2018**

**Design features of randomized clinical trials of vitamin D and falls: a systematic review**

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*Nutrients* 2018; 10(8): e10080964.

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**DOI** 10.3390/nu10080964 **PMID** 30049963

**Abstract**

Recent guidelines have advocated against the use of vitamin D supplementation as a means to prevent falls in older adults. However, meta-analyses of the available trials have reached divergent conclusions, and the key design features of these trials have not been well characterized. We conducted a systematic review of 30 randomized trials that reported the effects of vitamin D supplements on falls. Trials were identified by reviewing references of published meta-analyses and updated with a systematic PubMed search. We assessed three key design features: (1) recruitment of participants with vitamin D deficiency or insufficiency; (2) provision of daily oral vitamin D supplementation; and (3) utilization of highly sensitive at-event falls ascertainment. The trials enrolled a median of 337 (IQR: 170-1864) participants. Four (13.3%) trials restricted enrollment to those who were at least vitamin D insufficient, 18 (60.0%) included at least one arm providing daily supplementation, and 16 (53.3%) used at-event reporting. There was substantial heterogeneity between trials, and no single trial incorporated all three key design features. Rather than concluding that vitamin D is ineffective as a means to prevent falls, these findings suggest that existing trial evidence is insufficient to guide recommendations on the use of vitamin D supplements to prevent falls.

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**Documented, systematic and individualized communication with the attending physician for fall risk reduction/injury mitigation care planning**

Smith DA.

*J. Am. Med. Dir. Assoc.* 2018; 19(8): 714-716.

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**DOI** 10.1016/j.jamda.2018.05.032 **PMID** 30055821

**Abstract**

Falls are common in nursing homes (NHs) and may result in serious injury to the resident as well as legal and regulatory liability for the NH. Some of these falls and injuries might be avoided if attending physicians were involved in risk reduction. I developed a communication tool to solicit from attending physicians specific risks for patients most likely to experience a fall and injury, and to consider strategies to reduce those risks. The communication tool addresses medications, osteopenia, vitamin D deficiency, vision, hearing, gait/balance/peripheral sensation, injury mitigation, altered mental status, restraints, and philosophy of treatment. An important component of implementation is to ensure full participation by the attending physician. Suggestions for implementation and evaluation are discussed, as well as potential application to clinical problems

other than falls.

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**Envisioning the future for older adults: autonomy, health, well-being, and social connectedness with technology support**
Rogers WA, Mitzner TL.
*Futures* 2017; 87: 133-139.

**DOI** 10.1016/j.futures.2016.07.002 **PMID** unavailable
**Abstract**
Envisioning the future of older adults of 2050 is a challenging task given the heterogeneity of the older adult population. We consider primarily the domains of home, health, and social participation for individuals over age 65 and the potential role of information, communication, and robotic technology for enhanced independence, maintenance of autonomy, and enriched quality of life. We develop several scenarios to illustrate the diversity of circumstances, health, and living situations for older adults in the future. We discuss possible negative outcomes resulting from the proliferation of technology, including increased social isolation and a widening digital divide. However, we focus primarily on envisioning desired situations wherein older adults have autonomy and independence; are easily able to manage their health and wellness needs; have rich and rewarding opportunities for social connectedness, personal growth, continued life purpose, and overall high quality of life. To attain this future, we must be acting now: designing the technology with involvement by today's older adults who represent the needs and capabilities of tomorrow's older adults; developing the necessary infrastructure to support widespread availability and deployment of these technologies; and supporting the integration of technology into people's lives at younger ages with adaptive functionality to support changing needs and preferences.
**PDF Y Endnote Y**

**Lessons learned from implementing a programme of home modifications to prevent falls amongst the general population**
Keall MD, Howden-Chapman P, Pierse N, Cunningham CW, Baker MG.
*Safety (Basel)* 2018; 4(2): e26.

**DOI** 10.3390/safety4020026 **PMID** unavailable
**Abstract**
Home fall injuries amongst the general population are common and costly. In the Home Injury Prevention Intervention (HIPI) trial, we showed that 26% of medically treated home fall injuries could be prevented by a package of home modifications undertaken by qualified builders. This paper describes how we addressed unexpected safety issues associated with the implementation of the programme. Following the intervention, we ensured that participants could contact the builders. We monitored any problems or issues over a two-year period. We also held public meetings to explain the results of the study and record participants' comments about the trial.

Generally, people were satisfied with the modifications. However, there were clear safety issues with particular modifications and we revisited homes to address these. These findings highlight the need to allocate some resources for monitoring and remediation work to follow up interventions, and also a need for some regulation of the quality of safety products.
**PDF Y Endnote Y**

**Relationship between home safety and prevalence of falls and fear of falling among elderly people: a cross-sectional study**
Mortazavi H, Tabatabaeichehr M, Taherpour M, Masoumi M.
*Mater. Sociomed.* 2018; 30(2): 103-107.
**Affiliation:** Student Research Committee, Gerontological Care Research Center, North Khorasan University of Medical Sciences, Bojnurd, Iran.

**DOI** 10.5455/msm.2018.30.103-107 **PMID** 30061798 **PMCID** PMC6029911
**Abstract**
INTRODUCTION: Falls and fear of falling are considered as the major factors affecting the elderly's disabilities, so that most of these individuals often find their homes as a safe environment.
AIM: The aim of this study was to evaluate the relationship between home safety and prevalence of falls and fear of falling among older adults.
MATERIALS AND METHODS: This cross-sectional study was conducted on 450 elderly people who lived in Bojnrud, Northeast of Iran, from December 2016 to July 2017 using cluster sampling method. A demographic characteristics questionnaire, Fall Efficiency Scale-International (FES-I)questionnaire, and Home Safety Checklist were employed as research instruments.
RESULTS: Out of the study population, 157 individuals (35.7%) had a history of falls in the past one year. The mean score for fear of falling in the elderly people examined was 29.14±11.07 and the same value for home safety status was equal to 11.31±4.17. The mean score for fear of falling was significantly correlated with history of falls in older adults ($p<0.0001$). There was also a statistically significant relationship between home safety status and prevalence of falls and fear of falling in the elderly ($p<0.0001$). Besides, the results of logistic regression analysis showed that fear of falling could be estimated by 29-51%, taking the history of falls in the last 12 months and home safety mean score into account ($p<0.0001$).
CONCLUSION: Home safety status and demographic variables could have effects on falls and fear of falling in elderly individuals. Therefore, putting these factors together, older adults at the risk of further falls can be identified and provided with trainings through planning and appropriate interventions to prevent the incidence of falls and their negative consequences among them.
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**The effect of walking speed on quality of gait in older adults**
Huijben B, van Schooten KS, Van Dieën JH, Pijnappels M.
*Gait Posture* 2018; 65: 112-116.
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**DOI** 10.1016/j.gaitpost.2018.07.004 **PMID** 30053539

**Abstract**

BACKGROUND: Gait quality characteristics can contribute to the identification of individuals at risk of falls. Since older adults with high fall risk tend to walk slower than older adults with a lower fall risk, walking speed may underlie differences in gait quality characteristics.

RESEARCH QUESTION: How does walking speed affect gait quality characteristics in older people?

METHODS: We investigated the effect of walking speed on gait characteristics in 11 older adults (aged 69.6 ± 4.1 years). Trunk accelerations (Dynaport MoveMonitor) were recorded during 5 min of treadmill walking at four different speeds. From these trunk accelerations we calculated step frequency, root mean square, harmonic ratio, index of harmonicity, sample entropy and logarithmic divergence rate per stride.

RESULTS: Our results showed that all gait characteristics were affected by walking speed, except for sample entropy in antero-posterior (AP) direction. An increase in walking speed resulted in a higher step frequency, higher standard deviation, more symmetric gait, more smooth vertical (VT) accelerations, less smooth accelerations in medio-lateral (ML) and AP directions, less regular dynamics in ML direction, more regular dynamics in VT direction, and a more stable gait pattern overall. SIGNIFICANCE: These findings suggest that, within a range of 0.5-1.4 m/s, a lower walking speed results in a lower gait quality, which may underlie differences in gait quality between older fallers and non-fallers.



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**The epidemiology and economic burden of hip fractures in Israel**

Barnea R, Weiss Y, Abadi-Korek I, Shemer J.

*Isr. J. Health Policy Res.* 2018; 7(1): e38.

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**DOI** 10.1186/s13584-018-0235-y **PMID** 30068383

**Abstract**

BACKGROUND: Hip fractures increase the risks of mortality and major morbidity in the elderly. Hip fractures are associated with chronic pain, reduced mobility, disability and increasing dependence. We evaluated the direct costs incurred to the Israeli healthcare system in 2013 as a result of hip fracture injuries in elderly patients.

METHODS: Hip fractures costs evaluation consisted of first-year and long-term direct costs. Data on the incidence of hip fractures resulting in hospitalizations were retrieved from the Israeli Ministry of Health's (MOH) Central Database of Hospital Admissions. Hospitalization, rehabilitation and nursing utilization rates and costs were estimated based on the professional literature and according to the MOH's price list.

RESULTS: During 2013, 6285 elderly patients were hospitalized in Israel due to hip fractures. Direct costs of hip fracture, comprising hospitalization, rehabilitation and nursing costs incurred during the first year after the injury, were estimated at 454 million New Israeli Shekels (NIS; 83,841 NIS per person). Long-term nursing care costs in 2013 were 265 million NIS, with an average cost of

approximately 49,000 NIS for 1600 elderly persons receiving long-term nursing care as a result of a hip fracture. Overall, the total direct costs of hip fracture in the elderly population in Israel in 2013 were 719 million NIS.
CONCLUSIONS: The direct costs of hip fractures in Israel among the elderly are approximately 719 million NIS per year. The majority of costs are associated with the first year following the injury. To reduce healthcare costs in Israel, changes in the country's healthcare policy on hip fractures are required. For example, there is a need for a program for detecting high- risk populations, and for early intervention following the injury.
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**The prevalence of sarcopenia in community-dwelling older adults, an exploration of differences between studies and within definitions: a systematic review and meta-analyses**
Mayhew AJ, Amog K, Phillips S, Parise G, McNicholas PD, de Souza RJ, Thabane L, Raina P.
*Age Ageing* 2018; ePub(ePub): ePub.
**Affiliation:** McMaster Institute for Research on Aging, Hamilton, Ontario, Canada.

**DOI** 10.1093/ageing/afy106 **PMID** 30052707
**Abstract**
BACKGROUND: sarcopenia in ageing is a progressive decrease in muscle mass, strength and/or physical function. This review aims to summarise the definitions of sarcopenia in community-dwelling older adults and explore similarities and differences in prevalence estimates by definition.
METHODS: a systematic review was conducted to identify articles which estimated sarcopenia prevalence in older populations using search terms for sarcopenia and muscle mass. Overall prevalence for each sarcopenia definition was estimated stratified by sex and ethnicity. Secondary analyses explored differences between studies and within definitions, including participant age, muscle mass measurement techniques and thresholds for muscle mass and gait speed.
RESULTS: in 109 included articles, eight definitions of sarcopenia were identified. The lowest pooled prevalence estimates came from the European Working Group on Sarcopenia/Asian Working Group on Sarcopenia (12.9%, 95% confidence interval: 9.9-15.9%), International Working Group on Sarcopenia (9.9%, 3.2-16.6%) and Foundation for the National Institutes of Health (18.6%, 11.8-25.5%) definitions. The highest prevalence estimates were for the appendicular lean mass (ALM)/weight (40.4%, 19.5-61.2%), ALM/height (30.4%, 20.4-40.3%), ALM regressed on height and weight (30.4%, 20.4-40.3%) and ALM / body mass index (24.2%, 18.3-30.1%) definitions. Within definitions, the age of study participants and the muscle mass cut points used were substantive sources of between-study differences.
CONCLUSION: estimates of sarcopenia prevalence vary from 9.9 to 40.4%, depending on the definition used. Significant differences in prevalence exist within definitions across populations. This lack of agreement between definitions needs to be better understood before sarcopenia can be appropriately used in a clinical context.
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**Timing of physiotherapy following fragility hip fracture: delays cost lives**

Frenkel Rutenberg T, Vitenberg M, Haviv B, Velkes S.

*Arch. Orthop. Trauma Surg.* 2018; ePub(ePub): ePub.

**Affiliation:** Orthopedic Department, Rabin Medical Center, Beilinson Hospital, Affiliated to the Sackler Faculty of Medicine, Tel Aviv University, 39 Jabotinsky St., 49100, Petah Tikva, Israel.



**DOI** 10.1007/s00402-018-3010-1 **PMID** 30054813

**Abstract**

INTRODUCTION: Post-operative physiotherapy (PT) following fragility hip fractures is intended to improve balance, gait, and muscle strength for enhanced functional outcomes. This study aims to assess whether postponing initiation of PT effects patients' outcomes during hospitalization and in the first 3 months following discharge.

MATERIALS AND METHODS: A retrospective study comparing consecutive patients, 65 years and older, who were operated for fragility hip fractures between 2011 and 2016, within 48 h from admission, and started PT treatment either in the first post-operative day (POD1) or later (POD2-5). Patients were operated upon as soon as medically possible and in accordance with theater availability. All surgeries were performed outside of workday hours (either in the afternoon or during the weekend). Group allocation was established corresponding with the surgical day, as PT services are unavailable during weekends and holidays, and surgeries were performed daily. Primary outcomes were mortality either within hospital or in the post-operative year. Secondary outcomes were in-hospital complications, recurrent hospitalizations, and orthopedic complications within 3 months.

RESULTS: 747 patients were included in the study; 525 patients started PT at POD1 and 222 had delayed PT. Patients' demographics, living arrangements, age-adjusted Charlsons' co-morbidity index, mobility, hemoglobin levels, and implant type were comparable. In-hospital mortality was significantly higher for the delayed PT group, 6.8 vs. 3.2% (OR 2.2, 95% CI 1.06-4.42, p value 0.034). One-year mortality, in-hospital complications, and the average number of 3 months' recurrent hospitalizations did not differ between groups. A trend for more orthopedic complications was noted in the delayed PT group (p = 0.099), and patients from this group were readmitted more often due to orthopedic surgery-related reasons (p = 0.031).

CONCLUSIONS: Post-operative delay in PT following fragility hip fracture surgery was related to increased risk for in-hospital mortality.

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**Dynamic balance gait for walking assistance exoskeleton**

Chen Q, Cheng H, Yue C, Huang R, Guo H.

*Appl. Bionics Biomech.* 2018; 2018: e7847014.

**Affiliation:** Center for Robotics, School of Automation Engineering, University of Electronic Science and Technology of China, Chengdu, China.



**DOI** 10.1155/2018/7847014 **PMID** 30065785 **PMCID** PMC6051332

**Abstract**

PURPOSE: Powered lower-limb exoskeleton has gained considerable interests, since it can help patients with spinal cord injury(SCI) to stand and walk again. Providing walking assistance with SCI patients, most exoskeletons are designed to follow predefined gait trajectories, which makes the patient walk unnaturally and feels uncomfortable. Furthermore, exoskeletons with predefined gait trajectories cannot always maintain balance walking especially when encountering disturbances.
DESIGN/METHODOLOGY/APPROACH: This paper proposed a novel gait planning approach, which aims to provide reliable and balance gait during walking assistance. In this approach, we model the exoskeleton and patient together as a linear inverted pendulum (LIP) and obtain the patients intention through orbital energy diagram. To achieve dynamic gait planning of exoskeleton, the dynamic movement primitive (DMP) is utilized to model the gait trajectory. Meanwhile, the parameters of DMP are updated dynamically during one step, which aims to improve the ability of counteracting external disturbance.
FINDINGS: The proposed approach is validated in a human-exoskeleton simulation platform, and the experimental results show the effectiveness and advantages of the proposed approach.
ORIGINALITY/VALUE: We decomposed the issue of obtain dynamic balance gait into three parts: (1) based on the sensory information of exoskeleton, the intention estimator is designed to estimate the intention of taking a step; (2) at the beginning of each step, the discrete gait planner utilized the obtained gait parameters such as step length *S* and step duration *T* and generate the trajectory of swing foot based on (*S*, *T*); (3) during walking process, continuous gait regulator is utilized to adjust the gait generated by discrete gait planner to counteract disturbance.
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**Effects of a multimodal intervention on gait and balance of subjects with progressive multiple sclerosis: a prospective longitudinal pilot study**

Bisht B, Darling WG, White EC, White KA, Shivapour ET, Zimmerman MB, Wahls TL.
*Degener. Neurol. Neuromuscul. Dis*. 2017; 7: 79-93.
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**DOI** 10.2147/DNND.S128872 **PMID** 30050380 **PMCID** PMC6053103

**Abstract**

PURPOSE: To investigate the effects of a multimodal intervention including a modified Paleolithic diet, nutritional supplements, stretching, strengthening exercises with electrical stimulation of trunk and lower limb muscles, meditation and massage on walking performance and balance of subjects with progressive multiple sclerosis (MS).
MATERIALS AND METHODS: Twenty subjects with mean (standard deviation) age of 51.7 (6.4) years and Expanded Disability Status Scale score of 6.2 (1) participated in a 12-month study. Assessments were completed at baseline, 3, 6, 9, and 12 months.
RESULTS: The entire cohort did not show significant changes in any of the assessments over 12 months except higher speed of walking toward the 10 feet mark during timed up and go (TUG) test at 6 months compared with baseline (mean change 7.9 cm/s [95% confidence interval {CI}]: 0.3, 15.2; *p*=0.041). Sub-group analysis revealed that 50% subjects (n=10) showed decrease in TUG time from baseline to at least 3 of 4 time-points post-intervention and were considered as responders

(TUG-Res), the remaining 10 subjects were considered as nonresponders (TUG-NRes). Over 12 months, TUG-Res showed decreased mean TUG time by 31% (95% CI: -52%, -2%), increased median Berg Balance Scale scores (42 to 47), 30% increase in mean timed 25-foot walk speed (>20% considered clinically significant) and increased speed of walk toward 10 feet mark during TUG by 11.6 cm/s (95% CI: -3.0, 25.9) associated with increases in step lengths and decrease in step duration. TUG-NRes showed deterioration in walking ability over 12 months. Comparison of TUG-Res and TUG-NRes showed no significant differences in adherence to intervention but better stride duration and longer step length at baseline for TUG-Res than for TUG-NRes ($p$<0.05).
CONCLUSION: A multimodal lifestyle intervention may improve walking performance and balance in subjects with progressive MS who have mild-to-moderate gait impairment, whereas subjects with severe gait impairments may not respond to this intervention. Future trials should assess effects of this intervention in subjects with MS during early stages of the disease.
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**Investigating falls in adults with intellectual disability living in community settings and their experiences of post-fall care services: protocol for a prospective observational cohort study**
Ho P, Bulsara C, Patman S, Bulsara M, Downs J, Hill AM.
*BMC Geriatr.* 2018; 18(1): e171.
**Affiliation:** School of Physiotherapy and Exercise Science, Curtin University, GPO Box U1987, Perth, WA, 6845, Australia.

**DOI** 10.1186/s12877-018-0862-8 **PMID** 30060735
**Abstract**
BACKGROUND: Falls among older adults with intellectual disability (ID) are recognised as a serious health problem potentially resulting in reduced health-related quality of life and premature placement in residential care. However there are limited studies that have investigated this problem and thus falls rates among older adults with ID remain uncertain. Furthermore, people with ID rely heavily on familial and professional care support to address health problems, such as after having a fall. No studies have explored the post-fall care that people with ID receive.
METHOD: This research will be carried out in two phases using a convergent mixed methods design. The aim of Phase 1 is to estimate the falls rate by prospectively observing a cohort of older adults (≥ 35 years) with ID (n = 90) for six months. Phase 1 will be conducted according to STROBE guidelines. In Phase 2, participants from Phase 1 who have experienced a fall(s) will be asked to participate in a semi-structured interview to explore their post-fall experience.
DISCUSSION: This study will determine the rate of falls among older adults with ID living in community based settings, which will assist to identify the extent of this problem. Data collected from the study will also aid in understanding the circumstance of falls and related falls risk factors in this cohort. This will include exploring any barriers that older adults with ID may encounter when seeking or undertaking recommended post-fall care advice.
FINDINGS from this research will potentially inform future development of falls prevention services for older adults with ID. This study has been approved by the University Human Research Ethics Committee. TRIAL REGISTRATION: The protocol for this study is registered with the Australian New

Zealand Clinical Trial Registry (ACTRN12615000926538) on 7 September 2015. www.anzctr.org.au/Trial/Registration/TrialReview.aspx?id=368990&isReview=true.
**PDF Y Endnote Y**

**Prediction of falls in subjects suffering from Parkinson disease, multiple sclerosis, and stroke: methodologic issues**
Sabour S.
*Arch. Phys. Med. Rehabil.* 2018; 99(8): 1688.
**Affiliation:** Department of Clinical Epidemiology, School of Health, Shahid Beheshti University of Medical Sciences, Tehran, I.R. Iran; Safety Promotion and Injury Prevention Research Center, Shahid Beheshti University of Medical Sciences, Tehran, I.R. Iran.

**DOI** 10.1016/j.apmr.2018.02.018 **PMID** 30053990
**Abstract** [Abstract unavailable]
**PDF Y Endnote Y**

**Response to letter "Prediction of falls in subjects suffering from Parkinson disease, multiple sclerosis, and stroke: methodologic issues"**
Cattaneo D, Gervasoni E, Pupillo E, Bianchi E, Agostini M, Rovaris M, Aprile I, Montesano A, Beghi E.
*Arch. Phys. Med. Rehabil.* 2018; 99(8): 1688-1689.
**Affiliation:** IRCCS - Istituto di Ricerche Farmacologiche Mario Negri, Milano, Italy.

**DOI** 10.1016/j.apmr.2018.04.001 **PMID** 30053989
**Abstract** [Abstract unavailable]
**PDF Y Endnote Y**

**Spotlight on postural control in patients with multiple sclerosis**
Prosperini L, Castelli L.
*Degener. Neurol. Neuromuscul. Dis.* 2018; 8: 25-34.
**Affiliation:** Department of Neurology and Psychiatry, Sapienza University, Rome, Italy.

**DOI** 10.2147/DNND.S135755 **PMID** 30050386 **PMCID** PMC6053902
**Abstract**
Multiple sclerosis (MS) is a disease that heavily affects postural control, predisposing patients to accidental falls and fall-related injuries, with a relevant burden on their families, health care systems and themselves. Clinical scales aimed to assess balance are easy to administer in daily clinical setting, but suffer from several limitations including their variable execution, subjective judgment in the scoring system, poor performance in identifying patients at higher risk of falls, and statistical concerns mainly related to distribution of their scores. Today we are able to objectively and reliably assess postural control not only with laboratory-grade standard force platform, but also with low-cost systems based on commercial devices that provide acceptable comparability to gold-standard equipment. The sensitivity of measurements derived from force platforms is such that we can detect balance abnormalities even in minimally impaired patients and predict the risk of future accidental

falls accurately. By manipulating sensory inputs (dynamic posturography) or by adding a concurrent cognitive task (dual-task paradigm) to the standard postural assessment, we can unmask postural control deficit even in patients at first demyelinating event or in those with a radiologic isolated syndrome. Studies on neuroanatomical correlates support the multifactorial etiology of postural control deficit in MS, with the association with balance impairment being correlated with cerebellum, spinal cord, and highly ordered processing network according to different studies. Postural control deficit can be managed by means of rehabilitation, which is the most important way to improve balance in patients with MS, but there are also suggestions of a beneficial effect of some pharmacologic interventions. On the other hand, it would be useful to pay attention to some drugs that are currently used to manage other symptoms in daily clinical setting because they can further impair postural controls of patients with MS.

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**Trend in disability-adjusted life years (DALYs) for injuries in Korea: 2004-2012**

Kim Y, Kim YJ, Shin SD, Song KJ, Kim J, Park JH.

*J. Korean Med. Sci.* 2018; 33(31): e194.

**Affiliation:** Department of Emergency Medicine, Seoul National University Hospital, Seoul National University College of Medicine, Seoul, Korea.



**DOI** 10.3346/jkms.2018.33.e194 **PMID** 30069168 **PMCID** PMC6062432

**Abstract**

BACKGROUND: Injury is a major public health problem and accounts for 10% of the global burden of disease. This study intends to present the temporal trend in the injury burden in Korea and to compare the burden size by injury mechanism and age group.

METHODS: This study was a nationwide population-based observational study. We used two data sets, the death certificates statistics and the Korean National Hospital Discharge Survey data (2004-2012). We calculated age-standardized disability-adjusted life year (DALY) from years of life lost (YLL) and years lived with disability (YLD) and trend analysis.

RESULTS: The DALYs of road injury decreased ($P$ = 0.002), falls did not exhibit a trend ($P$ = 0.108), and self-harm increased overall ($P$ = 0.045). In the road injury, the YLLs decreased across all 4 age groups (0-14, 15-49, 50-79, ≥ 80) and the YLDs decreased in the 0-14-year-old group. In total, the DALYs of road injuries decreased in the 0-14-year-old group. In the fall injury, although the YLLs decreased in the over 80-year-old group, the YLDs increased in the 50-79-year-old group and the over 80-year-old group. The burden of self-harm injury was high in the age group 15 years and over, especially in the 15-49-year-old group.

CONCLUSION: The leading causes of the injury burden were road injuries, falls, and self-harm. The burden of road injury and self-harm have recently shown a gradual decreasing tendency. On the other hands, that of fall injuries are continually high in the age group over 50 years of age.

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