

【Original Article】

Association of Physical Activity and Sedentary Behavior with Falls in Japanese Community-dwelling Older Adults: a 1-year Prospective Cohort Study

Jun Kitayuguchi^{1,2}, Masamitsu Kamada^{3,4}, Shigeru Inoue⁵, Hiroharu Kamioka⁶, Takafumi Abe^{1,7}, Shimpei Okada⁸, Yoshiteru Mutoh⁹

Abstract

Objective: To examine whether physical activity and sedentary behavior were associated with the occurrence of falls among a community-dwelling older population.

Methods: This was a community-based, 1-year prospective cohort study. In 2009, baseline questionnaires were mailed to 3080 randomly selected residents aged 60 to 79 years; 2534 residents (82.3%) responded to the baseline survey, and 1-year follow-up surveys were subsequently mailed to them. The data for 1890 respondents who had no falls in the past year at baseline were analyzed. Physical activity and sedentary behavior were assessed by the Japanese short version of the International Physical Activity Questionnaire. Association between physical activity status (moderate to vigorous physical activity; MVPA and sedentary behavior time; SBT) and the occurrence of falls was analyzed by multivariable-adjusted logistic regression analysis with adjustment for sex, age, education years, self-rated health, depressive symptom, smoking, chronic disease history, chronic knee pain, medication use and consultation with physicians.

Results: A total of 163 (10.5%) participants had at least one fall during 12 months at 1-year follow-up. MVPA level was not significantly associated with falls. Compared with adults reporting lowest MVPA (0 MET-hours/week), odds ratios for falls were 1.72 (95% confidential interval; CI 0.98–3.02) among those with the middle MVPA (8.25–23.0 MET-hours/week) and 1.31 (95% CI 0.75–2.29) among those with the highest MVPA (≥ 75.4 MET-hours/week). However, the longest SBT (≥ 420 min/day) was significantly associated with higher risk of falls (adjusted odds ratio=1.96, 95% CI=1.02–3.79), compared with the shortest SBT (0–119 min/day).

Conclusions: Prolonged SBT was associated with greater risk of falls in older adults. Our findings indicate the importance of evaluating the SBT as a predictor of falls in community-dwelling older adults. Future longitudinal studies with objective measurements are needed.

Keywords: exercise, sedentary time, musculoskeletal disorders, locomotive syndrome

-
- 1) Physical Education and Medicine Research Center UNNAN, Unnan, Japan
 - 2) Department of Environmental Symbiotic Studies, Tokyo University of Agriculture, Tokyo, Japan
 - 3) Division of Preventive Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA
 - 4) Department of Health Promotion and Exercise, National Institute of Health and Nutrition, Tokyo, Japan
 - 5) Department of Preventive Medicine and Public Health, Tokyo Medical University, Tokyo, Japan
 - 6) Faculty of Regional Environment Science, Tokyo University of Agriculture, Tokyo, Japan
 - 7) Department of Orthopaedic Surgery, Shimane University School of Medicine, Izumo, Japan
 - 8) Physical Education and Medicine Research Foundation, Tomi, Japan
 - 9) The Research Institute of Nippon Sport Science University, Tokyo, Japan