

高齢者の日常身体活動と メタボリックシンドロームの罹患率との関係 — 加速度計を用いた 10 年間の縦断研究 —

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Objectively Measured Physical Activity and Metabolic Syndrome in Older Japanese Adults: Longitudinal Data from the Nakanoyo Study

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ABSTRACT

Background. There are significant cross-sectional associations between metabolic profiles and yearlong physical activity in older adults, with better health in those taking at least 8,000–10,000 steps/day and/or spending at least 20–30 min/day at >3 metabolic equivalents (METs). The present study examines these relationships longitudinally.

Methods. Subjects were free-living Japanese aged 65–84 years (198 men, 242 women). Pedometer/accelerometers measured daily step count and physical activity intensity continuously for 10 years, with evaluation of metabolic syndrome criteria at baseline and each year end. At year-end, participants were screened for metabolic syndrome (modified criteria of NCEP-ATP III).

Repeated measures analysis of variance assessed changes in month-averaged physical activity scores for each July. Cox proportional hazards regression analysis assessed independent relationships between baseline physical activity and the 10-year risk of suffering from metabolic syndrome, after controlling for baseline number of metabolic

syndrome diagnostic markers, age, sex, smoking status and alcohol consumption.

Results. Subjects maintained their physical activity over the 10 years. Most individuals aged 65–74 years who took >10,000 steps/day and/or spent >30 min/day of activity >3 METs consistently showed ≤ 2 metabolic syndrome diagnostic markers, as did those aged 75–84 years with >8,000 steps/day and/or >20 min/day at >3 METs. A multivariate-adjusted Cox proportional hazards model predicted that the risk of suffering from metabolic syndrome during the 10 years was 2.3–4.2 and 1.9–3.0 times greater in the two least active quartiles of participants (taking <6,400 steps/day and spending <12 min/day at >3 METs, respectively) relative to the most active quartiles (taking >8,500 steps/day and spending >20 min/day at >3 METs, respectively).

Conclusions. This prospective study supports our cross-sectional observations. After adjustment for potential confounders, the metabolic health of older people is associated with both the quantity (daily step count) and the quality (daily duration at an intensity >3 METs) of habitual physical activity. To conserve metabolic health, elderly people should be encouraged to take at least 8,000–10,000 steps/day and/or spend at least 20–30 min/day at >3 METs.

要 旨

加齢に伴う身体活動の減少は、メタボリックシンドロームを代表とした生活習慣病の発症に影響を及ぼす最も重要な因子の一つである。本研究は高齢者における日常身体活動の量と質とメタボリックシンドロームの関係を縦断的に検証した。

65～84歳の高齢者440名を対象に1軸加速度センサー内蔵の身体活動計を用いて歩数と活動強度を毎日24時間連続して10年にわたり測定し、ベースラインの日常身体活動と10年間のメタボリックシンドロームの発症リスクとの独立した関係を評価した。多変量調整Cox比例ハザードモデルで推定したところ、より不活発な2群(歩数<6,400歩/日と中強度活動時間<12分/日)はより活発な群(歩数>8,500歩/日と中強度活動時間>20分/日)と比べてメタボリックシンドローム発症リスクがそれぞれ2.3～4.2倍と1.9

～3.0倍大きかった。メタボリックシンドロームの予防のためには、高齢者は少なくとも歩数で8,000～10,000歩/日かつ/または中強度活動時間で20～30分/日の身体活動を行うことが奨励された。