

Validity and Reproducibility of the Self-Administered Shorter Version of the Physical Activity Questionnaire Used in the JPHC Study

Fujimi Takeda-Imai^{1,2)}, Seiichiro Yamamoto³⁾, Hitomi Fujii⁴⁾, Mitsuhiro Noda⁵⁾,
Manami Inoue¹⁾, and Shoichiro Tsugane⁵⁾

Abstract

The objective of this study was to evaluate the validity and reproducibility of a self-administered physical activity questionnaire to estimate physical activity level. The questionnaire was developed as the Shorter Version of the Physical Activity Questionnaire (S-PAQ) for used in the Japan Public Health Center-based Prospective Study (JPHC Study). Validity and reproducibility of the S-PAQ were evaluated using a 24-hour physical activity record (24-R) as a gold standard. A total of 110 subjects were recruited from the participants in the four areas of the JPHC Study cohort on a voluntary basis. The subjects completed the S-PAQ twice (Surveys 1 and 2) with an approximately half-year interval between. Daily total energy expenditure (TEE) was estimated from the S-PAQ and the 24-R. The Spearman correlation coefficients for estimated daily TEE were calculated using the S-PAQs and the 24-R for validity, and using the S-PAQs of Surveys 1 and 2 for reproducibility. In addition, a prediction formula was constructed to estimate daily TEE from 24-R using the S-PAQ Survey 1 data with regression methods. This prediction formula was validated using the S-PAQ Survey 2 results. Correlation coefficients for validity were 0.55 (95% confidence interval; CI: 0.40-0.67) for Survey 1 and 0.49 (95% CI: 0.33-0.60) for Survey 2. The correlation coefficient for reproducibility was 0.68 (95%CI: 0.56-0.77). The prediction formula explained 24% of the total variation of the daily TEE from the 24-R. In conclusion, the three questions that make up the S-PAQ can be validly used in epidemiological surveys, while prediction of daily TEE using S-PAQ is not recommended for use in quantitative individual-level instruction.

Key words: self-administered physical activity questionnaire, validity, reproducibility, daily total energy expenditure, 24-hour physical activity record

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- 1) Epidemiology and Prevention Division, Research Center for Cancer Prevention and Screening, National Cancer Center, Tokyo, Japan
 - 2) Department of Environmental and Occupational Health, Toho University School of Medicine, Tokyo, Japan
 - 3) Cancer Information Services and Surveillance Division, Center for Cancer Control and Information Services, National Cancer Center, Tokyo, Japan
 - 4) Tama Center Clinic Mirai, Tokyo, Japan
 - 5) Department of Diabetes and Metabolic Medicine International Medical Center of Japan, Tokyo, Japan