

原著論文

小学生児童における手首および腰部装着時の 加速度計 ActiGraph の歩数の精度

Accuracy of step count using wrist- and waist-worn ActiGraph
during treadmill exercise in elementary school children

秋武 寛¹⁾ 鉄口 宗弘²⁾ 三村 寛一³⁾

Hiroshi Akitake¹⁾ Munehiro Tetsuguchi²⁾ Kan-ichi Mimura³⁾

Abstract

Objective: The purpose of this study was to clarify the number of steps taken by wrist- and waist-mounted ActiGraph accelerometers in elementary school children. **Methods:** Twenty-two elementary school children (9 girls and 13 boys) participated in this laboratory-based study. The subjects performed walking, brisk walking, and running for 3 minutes each on the treadmill, respectively. They were required to wear two Actigraph wGT3X-BT activity monitors simultaneously at two locations recommended by the manufacturer, and one positioned on the wrist and the other on the waist. The validity criterion for the number of steps was determined by videotaping each trial and later replaying it to count steps taken. **Results & discussion:** The ActiGraph accelerometer when worn on the wrist significantly underestimated 31.2 % at walking, 46.5 % at brisk walking, and 46.4 % at running, respectively ($p < 0.001$). The ActiGraph accelerometer when worn on the waist significantly underestimated 19.6 % at walking ($p < 0.001$), and underestimated 2.7 % at brisk walking, and overestimated 1.4 % at running, respectively. These results suggested that the number of steps recorded with the ActiGraph accelerometer when worn on the waist was recommended more than when worn on the wrist in elementary school children.

キーワード: 身体活動, 信頼性, 妥当性, トレッドミル, 身体活動量計
physical activity, reliability, validity, treadmill, activity monitors

I. 緒言

ヒトの一般的な移動手段は、歩行であった。歩行は、1960年代から歩数計の技術を利用して客観的に歩数を評価し、様々な健康関連指標と

の関連を調査してきた (Bassett et al., 2017)。歩数は、身体活動をシンプルに評価する重要な指標の一つである (Tuder-Locke et al., 2018; Simpson et al., 2015)。子どもの日常の身体活

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- 1) びわこ成蹊スポーツ大学 スポーツ学部 *Faculty of Sport Study, Biwako Seikei Sport College, Shiga, Japan*
2) 大阪教育大学 表現活動教育系保健体育部門 *Division of Art, Music, and Physical Education, Osaka Kyoiku University, Osaka, Japan*
3) 滋慶医療科学大学 医療管理学研究科 *Graduate School of Medical Safety Management, Jikei University of Health Care Science, Osaka, Japan*