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Research article

Pedometer Accuracy During Stair Climbing and Bench Stepping Exercises

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ABSTRACT

The purpose of the present investigation was to examine pedometer accuracy during stair climbing and descending as well as during the performance of a bench stepping exercise. Ten healthy men participated in the present investigation. All subjects ascended and descended an 18 cm high public staircase, and performed a bench stepping exercise by using a 10, 20 and 30 cm high platforms, while wearing three different commercial pedometers (DW-800, YM, HJ-700IT; OM, Lifecorder; KZ). In both situations, the stepping rate was controlled at 40, 50, 80, 100 and 120 steps·min^{-1}. The pedometer scores tended to underestimate the actual number of steps during stair climbing with a slower stepping rate and/or the lower height of a platform. During the stair ascending and descending and the bench stepping exercise using 20 to 30 cm high platforms at 80 to 120 steps·min^{-1}, the magnitude of the measurement error was -3.8 ± 10. 8 % for KZ, -2.1 ± 9.8 % for YM and -11.0 ± 18.9 % for OM. These results indicate that the KZ and the YM can accurately assess the number of steps during stair climbing using 20 to 30 cm high platforms at 80 to 120 steps·min^{-1}.

Key words: Digi-walker, LIFECORDER, activity monitor, accelerometer

Key Points

- Pedometers can assess the number of step accurately within an acceptable range of measurement error during the stair climbing

activities at a stepping rate of 80 step·min or faster with 18 cm or higher stairs.

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