Energy expenditure in three modes of activity using the Caltrac

In order to be valid and useful as an activity monitor, instruments or devices must be able to quantify EE accurately and be able to distinguish between different types and intensities of activity. This study joins others in substantiating that the Caltrac is a reliable instrument.  

However, the Caltrac personal activity monitor was shown to be able to only estimate EE for running, race walking, or stepping in young women. Results from this study suggest that the Caltrac is relatively insensitive in determining individual EE or discriminating energy cost for modes of activity that require different styles of movement patterns. Perhaps when novel movement patterns such as race walking are studied, an accelerometer that is responsive in three dimensions such as the Tritrac 3RD (Hemokinetics, Inc.) may be more appropriate. However, the correlational data support the continued use of the Caltrac in free moving settings when large population data samples are collected especially if an intensity correction factor such as heart rate could be incorporated.

Grateful recognition is given to graduate students, Heather Silverman, John Noble, and Carol Walker, who assisted in the collection of the data. Partial financial support for this project was provided by a grant from Reebok International L.T.D.


14 Hogberg P. Length of stride, stride frequency, "flight" period and maximum distance between the feet during running with different speeds. Arbeitsphysiologie 1952;14: 431-4.


Commentary

This carefully executed and well presented piece of work describes the accuracy (reliability and validity) of a commercially available motion sensor, the Caltrac, in measuring energy expenditure during different modes of exercise. The authors conclude that the Caltrac is highly reliable but not particularly valid, and may significantly overestimate (running and walking) or underestimate (stepping) energy expenditure. It is best used to discriminate broad bands of physical activity in large population studies.

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