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## Determination of step rate thresholds corresponding to physical activity intensity classifications in adults.

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### Abstract

**BACKGROUND:** Current recommendations call for adults to be physically active at moderate and/or vigorous intensities. Given the popularity of walking and running, the use of step rates may provide a practical and inexpensive means to evaluate ambulatory intensity. Thus, the purpose of this study was to identify step rate thresholds that correspond to various intensity classifications.

**METHODS:** Oxygen consumption was measured at rest and during 10 minute treadmill walking and running trials at 6 standardized speeds (54, 80, 107, 134, 161, and 188 m·min<sup>-1</sup>) in 9 men and 10 women (28.8 ± 6.8 yrs). Two observers counted the participants' steps at each treadmill speed. Linear and nonlinear regression analyses were used to develop prediction equations to ascertain step rate thresholds at various intensities.

**RESULTS:** Nonlinear regression analysis of the metabolic cost versus step rates across all treadmill speeds yielded the highest R<sup>2</sup> values for men (R<sup>2</sup> = .91) and women (R<sup>2</sup> = .79). For men, the nonlinear analysis yielded 94 and 125 step·min<sup>-1</sup> for moderate and vigorous intensities, respectively. For women, 99 and 135 step·min<sup>-1</sup> corresponded with moderate and vigorous intensities, respectively.

**CONCLUSIONS:** Promoting a step rate of 100 step·min<sup>-1</sup> may serve as a practical public health recommendation to exercise at moderate intensity.

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