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## Physiological effects of walking and running with hand-held weights.

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### Abstract

To study the effect of walking and running with hand-held weights on oxygen uptake (VO<sub>2</sub>), heart rate (HR), respiratory exchange ratio (RER), and ratings of perceived exertion (RPE), ten males (means age = 26.1 +/- 5.5 yrs) completed 4 submaximal treadmill tests during each of four test sessions, one week apart. Protocols consisted of carrying one of four randomly assigned hand-held weight configurations (0, 0.45, 1.36, 2.27 kg per hand) while walking or running for 5-min at each of four speeds (4.8, 6.4, 8.0, 9.6 km/hr) at 4% grade. Open circuit spirometry methods were utilized for the determination of steady rate VO<sub>2</sub> and RER. Heart rate was recorded electrocardiographically throughout the test. Subjects maintained normal arm swing patterns. Carrying hand-held weights did not significantly increase VO<sub>2</sub> (ml.kg<sup>-1</sup>.min<sup>-1</sup>) at either walking speed (4.8, 6.4 km/hr). At the two running speeds (8.0, 9.6 km/hr) VO<sub>2</sub> was significantly greater when the heaviest load (2.27 kg) was compared to the three lighter loads (0, 0.45, 1.36 kg). The results of this study suggest that walking with hand-held weights of 2.27 kg or less while maintaining a normal arm swing is an insufficient stimulus for significantly increasing VO<sub>2</sub> or HR. Running with hand-held weights can increase VO<sub>2</sub>, with 2.27 kg appearing to be the load threshold.

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