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 (VO2), 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 VO2 and RER. Heart rate was recorded electrocardiographically throughout the test. Subjects maintained normal arm swing patterns. Carrying hand-held weights did not significantly increase VO2 (ml.kg-1.min-1) at either walking speed (4.8, 6.4 km/hr). At the two running speeds (8.0, 9.6 km/hr) VO2 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 VO2 or HR. Running with hand-held weights can increase VO2, with 2.27 kg appearing to be the load threshold.

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