Physiologic and perceptual responses during treadmill running with ankle weights.

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Abstract

This study examined the effects of ankle weighting on physiologic and perceptual responses during treadmill running in seven healthy, female recreational runners with a mean maximal aerobic power of 48.4 +/- 4.0 ml/kg/min. Each subject completed four experimental one-mile runs at individually selected treadmill running speeds with 0, 1.6, 3.2 and 4.8 kg weights on their ankles. The subjects selected a speed at which they would run (train) if their objectives were to significantly improve cardiovascular function and induce weight loss. Metabolic and cardiovascular responses were continuously monitored, and ratings of perceived exertion were recorded near the end of the activity. During the unweighted run, the subjects selected a running speed of 6.87 +/- 0.63 mph which resulted in a net energy expenditure of 0.153 kcal/kg/min or 1.34 +/- 0.16 kcal/kg/mile. This corresponded to a training intensity of 76.3% +/- 5.1% of maximum oxygen consumption or 88.1% +/- 9.7% of maximum heart rate. Addition of weight to the ankles caused a significant decrease (p less than .05) in the running speed selected and, therefore, did not result in any significant changes (p greater than .05) in the rate of oxygen consumption, heart rate or ratings of perceived exertion when compared to the unweighted condition. These observations are in contrast to previous studies on ankle weighting which were conducted at fixed treadmill running speeds. However, the use of ankle weights did have a tendency to increase gross and net energy expenditure of running when values were expressed in kcal/mile because of slower self-selected running speeds under these conditions. This increase in energy expenditure could be of physiologic significance if running with ankle weights was performed on a regular basis at a fixed distance.

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