THE ENERGY REQUIREMENT OF WALKING WITH RESTRICTED BLOOD FLOW

Abstract
Previous research has demonstrated favorable outcomes with restricted blood flow walking. The purpose of this study was to investigate if using elastic knee wraps as a mode of blood flow restriction (BFR) could increase oxygen consumption (VO2), energy expenditure (EE) and heart rate (HR) over control (CON) during low intensity walking. Ten healthy men and women performed two trials of treadmill walking with (BFR) and without (CON) restricted blood flow. Elastic knee wraps (76 mm wide) were placed around the upper thigh of both legs during BFR. Exercise consisted of five 2-min bouts of walking at 75 m/min with, 1-min rest between each bout. VO2, EE, and HR were measured following each exercise bout. VO2 and EE was significantly higher with BFR for bouts 2-5, but was not different after the first bout, or 3 minutes post exercise. HR was significantly elevated over control with BFR at every time point except baseline. In conclusion, there are differences for VO2, EE, and HR between BFR and CON, despite both walking at the same absolute workload. It remains unknown if subtle differences in EE between exercise conditions results in favorable physiologic change over time.

Key words: blood flow restriction, heart rate, energy expenditure