

## Effect of Unstable Base of Support on Energy Expenditure of Resistance Training Exercise

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*Int J Exerc Sci* 2(1): S34, 2009. **PURPOSE:** To determine the effect of an unstable base of support on energy expenditure of a short duration, moderate intensity circuit resistance exercise. **METHODS:** Participants were 1 female and 8 males ( $27.0 \pm 6.7$  yrs.). Data collection included 2 conditions: 1) standing on inflatable balance discs (unstable) and 2) standing on the floor (stable). The order of each condition was counterbalanced and separated by at least one day. Duration of each condition was 13 minutes and included 3 phases: 1) 3-minute pre-exercise standing in place, 2) a continuous, 5-minute circuit of four exercises, and 3) 5-minute post exercise standing in place. Dumbbells ( $15.9 \pm 4.6$  lbs) were used throughout all phases of each condition. Exercise order was eccentric squat, concentric squat, concentric arm curl, concentric overhead, eccentric overhead, and eccentric arm curl, each performed at 44 bpm. Energy expenditure was determined by open-circuit spirometry (ParvoMedics, True One®) and heart rate monitored by a chest strap sensor (Polar). Separate paired t-tests were used to determine differences between 1) total energy expenditure (Kcals) and average oxygen consumption ( $VO_2$ , l/min) of each 13-min condition, and 2) average heart rate over the 5 minutes of exercise for each condition. **RESULTS:** Kcals ( $64.0 \pm 12.6$  vs  $54.9 \pm 11.5$ ),  $VO_2$  ( $1.11 \pm 0.33$  vs  $0.85 \pm 0.17$  l/min), and HR ( $122.7 \pm 25.8$  vs  $117.0 \pm 26.5$  bpm) were significantly ( $p < 0.05$ ) higher in response to using balance discs. **CONCLUSION:** A less stable base of support may increase energy expenditure of resistance training.

