Fuel utilization of Supported Treadmill Running
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Supported treadmill running is used in clinical and athletic settings for rehabilitation and overcoming movement disabilities. Prescription for exercise intensity is difficult due to the added support during treadmill exercise. PURPOSE: To measure fuel utilization of supported treadmill running.

METHODS: College age volunteers were fitted into a full-body support harness for all trials that allowed volunteers to be partially supported during treadmill running. Oxygen consumption (VO$_2$) was measured using an open flow system during body weight (control) and supported (experimental) running. Respiratory Exchange Ratio (RER) was calculated as VCO$_2$/VO$_2$. Volunteers completed control and experimental trials at treadmill speeds of 2.24 m·s$^{-1}$, 2.46 m·s$^{-1}$, 2.68 m·s$^{-1}$, and 3.13 m·s$^{-1}$. Experimental trials were classified as running at either 90% ($n = 10$) or 85% ($n = 9$) of bodyweight. Data for VO$_2$, heart rate and RER were collected at rest and during all trials. RESULTS: Average (± SD) RER under control conditions were 0.93 (±0.07), 0.98 (±0.11), 0.98 (±0.06), and 1.07 (±0.11) for treadmill speeds of 2.24, 2.46, 2.68, and 3.13 m·s$^{-1}$, respectively. Average (±SD) RER experimental conditions at 90% of body weight were 0.97 (±0.07), 0.98 (±0.06), 1.01 (±0.08), and 1.04 (±0.07) for treadmill speeds above. At 85% of bodyweight, average RER was 0.96 (±0.09), 1.00 (±0.08), 0.98 (±0.07), and 1.04 (±0.09) for same speeds as above. Across all speeds, average RER values were 0.99, 1.00, and 0.99 for control, 90%, and 85% of body weight. CONCLUSION: We conclude that volunteers were doing less external work during supported running yet fuel utilization was similar.

Keywords: Supported running, fuel utilization, exercise, metabolic rate, respiratory exchange ratio
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