TACSM Abstract

Effect of Unweighting using the Lightspeed Lift on Energy Expenditure During Treadmill Walking and Jogging

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ABSTRACT

Support and unweighting systems, such as AlterG, are often used in rehabilitation and alternative training, which provide an exercise effect that can minimize fitness- or performance-related loss. **PURPOSE**: The purpose of this study is to explore the effect of using a treadmill bungee support system (Lightspeed Lift) on oxygen consumption (VO_2), heart rate (HR), and rating of perceived exertion (RPE). **METHODS**: Twenty-four participants (age =22.1±2.9 yrs, ht=169.8±10.1 cm, wt=76.5±13.7 kg) completed four trials (with and without support) of walking (3 mph) and jogging (5 mph). Repeated Measures ANOVA were used to determine significant differences between trials for each condition. Alpha was set at .05 for all tests. **RESULTS**: While there was no significant difference in VO_2 while walking with (13.8±2.5 ml/kg/min) and without (13.0±1.4 ml/kg/min) supports (p=.381), there was a significant difference in VO_2 while jogging with (26.6±4.0 ml/kg/min) and without it (29.2±2.5 ml/kg/min), p=.014. There was no significant difference in HR while walking with (106.9±15.5 b/min) and without (108.3±14.4 b/min) support (p=1.0), nor while jogging with (154.7±21.4) and without (160.0±20.2 b/min) it, p=.129. Participants perceived the support system provided 60.8±26.2% help while walking and 66.7±26.2% while jogging, however, there was no significant difference in RPE (Borg's 6-20 scale) with (8.4±2.2) and without (8.3±1.9) support while walking (p=.913), nor with (12.1±2.5) and without (11.5±2.0) support while jogging, p=.130. Body weight was significantly lower with (68.4±13.4 kg) the support system prior to walking compared to without it (76.5±13.7 kg), p=.001, whereas body weight significantly increased with the support system at the conclusion of the 5-min walk (69.9±13.1 kg), p=.001. These same trends in body weight were evident before jogging with (68.8±13.2 kg) and without (76.5±13.6 kg) the support system, p=.001, and after the 5-min jog with (70.1±13.1 kg) compared to without it prior to the jog, p=.001. **CONCLUSION**: While this system provides unloading (approximately 10% of body weight), energy expenditure changes very little with the manufacturer's recommended unweighting. This may be due to slippage of the straps during exercise that may reduce unloading, the novelty of walking on such a system (gait changes), or the small amount of unloading.