

Effects of a Self-Selected Pace on $\text{VO}_{2\text{max}}$ during a Running Test to Volitional Exhaustion

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PURPOSE: The purpose of this study was to evaluate the effects of a self-selected pace during an incremental running test to volitional exhaustion on the attainment of $\text{VO}_{2\text{max}}$ values. **METHODS:** Thirteen aerobically-trained females (22.4 ± 1.66 years, $1.63 \pm .05$ m, 57.3 ± 10.2 kg) with prior experience in $\text{VO}_{2\text{max}}$ testing and RPE volunteered to participate in the current study. Each subject completed a ramp protocol (TVO_2) whereby the speed of the treadmill was increased by 1 km/hr every minute until volitional fatigue and a self-paced protocol (EVO_2) whereby each subject was able to self-select the treadmill speed to correspond to predetermined RPE values that were increased during 5 x 2-min stages. The treadmill gradient was set at 1% for each protocol and the subjects completed each protocol in a randomized order. The variables of $\text{VO}_{2\text{max}}$, running velocity at fatigue, time to exhaustion, and thermal sensation during each protocol were compared using paired t-tests with $\alpha \leq 0.05$. **RESULTS:** There was no significant difference in $\text{VO}_{2\text{max}}$ (43.18 vs 43.33 ml/kg/min, $p=.790$) and running velocity at fatigue (14.9 vs 14.7 km/hr, $p=.530$) between the two protocols, while time to exhaustion was significantly longer during TVO_2 (671.5 vs 592.7 s, $p=.003$). Additionally, there was no significant difference in perceived heat between the protocols (3.9 vs 3.8 , $p=.387$). Based on the $\text{VO}_{2\text{max}}$ criteria selected, 7 of the 13 subjects achieved $\text{VO}_{2\text{max}}$ in each protocol. **CONCLUSION:** Although $\text{VO}_{2\text{max}}$ values were not significantly different between the protocols, subjects predominately exercised at a lower intensity and for a shorter (finite) duration of time during EVO_2 . These findings may be accredited to the closed-loop design that enabled subjects to develop a pacing strategy for optimal performance. This has implications for future studies whereby similar $\text{VO}_{2\text{max}}$ values can be found using an experimental design that better resembles conditions encountered outside the laboratory.