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Impact of Acute Supraventilation Breathing Technique on Anaerobic Swim Performance in Collegiate Swimmers

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Research indicates that pre-activity breathing exercises such as breath holds, or hyperventilation may improve performance. Supraventilation (SVB) is a breathing technique that combines hyperventilation periods with subsequent breath holds. It is unknown if such a technique performed prior to an event could enhance performance. **PURPOSE:** The purpose of this study is to examine the effects of a pre-exercise SVB breathing protocol on swim sprint performance. **METHODS:** Ten NCAA DIII collegiate swimmers (7 males, 3 females; age 20.30 ± 1.25 yrs; weight 162.40 ± 24.57 lbs.; height 69.04 ± 3.86 in.) completed a randomized, crossover study consisting of 2 trials with at least 48 hours in between. For each trial subjects completed a standardized warmup followed by the assigned breathing condition: 1) SVB (3 sets of 30 rapid deep breaths followed by a max breath hold) or 2) normal breathing (NB) prior to a 100-yd swim trial. Heart rate was measured immediately after warm-up, continuously during the breathing protocol, prior to the swim trial, immediately, 1.5-, 3- and 5-minutes post swim trial. Blood lactate (BLA) was recorded prior to the warmup, immediately and 5-minutes post swim. Performance measures included time to completion, number of strokes, number of breaths taken, and ratio of strokes per breath. Arterial oxygen saturation and dizziness were measured during and after the breathing protocols. During the SVB protocol, breath hold times were recorded. **RESULTS:** There were no significant differences (p 's > 0.05) between NB and SVB in trial time (58.01 ± 6.17 s. ; 57.74 ± 5.11 s.), total breaths (21.70 ± 5.79 ; 20.3 ± 5.72), strokes per breath (2.99 ± 0.62 ; 3.15 ± 0.72), and total strokes (62.2 ± 6.32 ; 61.4 ± 8.66). Additionally, there were no significant difference (p 's > 0.05) in BLA between conditions at pre-trial (1.00 ± 0.66 mmol/L; 1.03 ± 0.37 mmol/L) immediately post-trial (9.48 ± 2.43 and 9.55 ± 2.78) and 5-minutes post (10.3 ± 1.71 and 10.15 ± 2.86). **CONCLUSION:** Our pilot data revealed no significant differences in performance or physiological measures between conditions, however, data trends favored SVB. These findings warrant further exploration of the SVB technique for performance enhancement.

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