

26. SWACSM Abstract

Investigation of Swimming Economy while Wearing Different Triathlon Wetsuit Styles at Submaximal Front Crawl Swimming

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ABSTRACT

Triathlon wetsuits commonly use for the potential benefits of swimming performance and thermoregulation. Triathletes may select different wetsuit styles depending on many factors (e.g., temperature regulation swimming technique, body type, and training purpose). However, there is a lack of empirical evidence of how different wetsuit styles affect the physiological responses to swimming. **PURPOSE:** The purpose of this study was to investigate the physiological responses during submaximal intensity front crawl swimming using different wetsuit styles. **METHODS:** Fourteen participants (n=6 men, n=8 women; all recreational triathletes or swimmers) completed a swimming graded exercise test wearing a swimsuit only to determine maximal oxygen consumption (VO_{2max}). A test speed was calculated from these data to represent 80% VO_{2max} . Participants then completed four 4-min submaximal swimming conditions at this speed: regular swimsuit (NWS), buoyancy short (BS), sleeveless (SLW), and full sleeve wetsuit (FSW). The order of the conditions was randomized. All conditions were conducted in a swimming flume and metabolic measurements were made using a metabolic cart with a mixing chamber. The rate of O_2 consumption (VO_2), rate of CO_2 production (VCO_2), ventilation (V_E), heart rate (HR), and respiratory exchange ratio (RER) were determined as the average for the last minute of each condition. Rating of perceived exertion (RPE) was assessed after each condition. **RESULTS:** VO_2 and HR were statistically different by wetsuit conditions ($p < 0.01$; NWS: 37.5 ± 5.9 ml·kg⁻¹·min⁻¹, 148±12 bpm, BS: 34.0 ± 6.4 ml·kg⁻¹·min⁻¹, 141±14 bpm, SLW: 31.4 ± 4.9 ml·kg⁻¹·min⁻¹, 137±12 bpm, and FSW: 32.2 ± 5.3 ml·kg⁻¹·min⁻¹, 139±12 bpm). In addition, VCO_2 , V_E , RER, and RPE were significantly influenced by wetsuit conditions (VCO_2 and V_E : $p < 0.01$, RER and RPE: $p < 0.05$). Swimming without a wetsuit significantly increased VO_2 , HR, VCO_2 , and V_E relative to the other conditions ($p < 0.05$). Furthermore, all dependent variables were not statistically different between SLW and FSW ($p > 0.05$). **CONCLUSION:** Swimming with a regular swimsuit is the least economical at the test speed. Additionally, it seems that either SLW or FSW can be used without significant physiological changes when swimming at the intensity of the triathlon race.