SWACSM Abstract

A Comparison of Swimming Economy Between Two Full-Sleeve Wetsuits

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ABSTRACT

A wetsuit is an important piece of equipment that a triathlete uses during their swim-bike-run race. Wetsuits differ based on style (*e.g.,* full-sleeve or sleeveless), manufacturer and price. **PURPOSE**: The purpose of this study was to compare swimming economy in two full-sleeve wetsuits in a group of recreational swimmers and triathletes. **METHODS**: Nine men (34.3 ± 13.3 years old) and six women (37.8 ± 16.0 years old) completed a progressive swim test to exhaustion in a swim flume without a wetsuit to determine their peak rate of oxygen consumption (VO_{2peak}). This was followed by three 5-min swimming bouts at a constant, submaximal speed. The three trials were randomized and consisted of an entry-level full-sleeve wetsuit (*blueseventy* Sprint), a high-end full-sleeve wetsuit (*blueseventy* Helix) and no wetsuit. Rates of O_2 consumption and CO_2 production were measured using a metabolic cart and heart rate was determined with a chest strap. Data from the last 2 min of each submaximal swimming trial were analyzed. **RESULTS**: Peak rate of O_2 consumption was 40.6 ± 8.0 ml kg^{-1} min^{-1} and corresponded to a respiratory exchange ratio, heart rate and rating of perceived exertion (RPE; Borg scale) of 0.97 ± 0.07, 165 ± 12 bpm, and 16.2 ± 1.7, respectively. The pace for the submaximal swimming trials was 1.02 ± 0.14 m/s, which corresponded to 79.7% ± 6.7% of their VO_{2peak}. The subjects expended 9.8 ± 2.7 and 9.9 ± 2.9 kcal/min while swimming in the high-end and entry-level wetsuit, respectively. Both wetsuits reduced energy expenditure compared to swimming without a wetsuit (11.8 ± 3.5 kcal/min; $p < 0.001$). Heart rate was significantly higher ($p < 0.001$) with no wetsuit (146 ± 12 bpm), but did not differ between wetsuits (high-end 137 ± 13 bpm; entry-level 137 ±15 bpm). Arm cadence did not differ between trials ($p = 0.571$). Lastly, RPE was 12.1 ± 1.6 with no wetsuit compared to 10.9 ± 1.4 ($p = 0.018$) and 11.1 ± 1.5 ($p = 0.051$) for the high-end and entry-level wetsuits, respectively. **CONCLUSION**: The were no differences in any measured variable between wetsuits, although swimming with either wetsuit was more economical compared to swimming without a wetsuit. Data from this study suggest that a wetsuit should be worn when allowed but that the specific model of wetsuit may be less important. Future studies should compare two homogenous groups of swimmers or triathletes (e.g., elite vs. beginner) or see how wearing a wetsuit affects performance during the cycling segment of a triathlon.