Abstract

Do Performance Parameters Compare Between an Anaerobic Set and the 100-M Event in Swimming? [†]

Elissavet Terzi *, Ariadni Skari, Stefanos Nikolaidis, Konstantinos Papadimitriou, Athanasios Kabasakalis and Vassilis Mougios

Laboratory of Evaluation of Human Biological Performance, School of Physical Education and Sport Science at Thessaloniki, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece

* Correspondence: elizaterzi@hotmail.gr

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Abstract: **AIM:** Anaerobic interval sets are commonly used in the training program of swimmers competing in short-distance events. However, data regarding the way that these sets compare to the competitive events are lacking. The aim of this study was to examine if there are differences in speed, blood lactate, stroke rate (SR), and stroke index (SI) between an anaerobic set of 4 × 50 m maximal swimming with work-to-rest ratio of approximately 1:4 and the 100-m event in freestyle stroke. **MATERIAL & METHOD:** Twenty-seven competitive swimmers (11 males, 16 females), aged 16.1 ± 1.1 years, completed the two tests on different days, in a random counterbalanced order. In each test, blood lactate was measured before and repeatedly after exercise through a portable lactate analyzer. Time and SR were recorded for each 50 m of the tests, and speed and SI were subsequently calculated. Three-way analysis of variance (time × test × gender) and Pearson's correlation analysis were used. The level of statistical significance was set at $\alpha = 0.05$. **RESULTS:** Average speed was higher at 4 × 50 m compared to 100 m (1.62 ± 0.10 and 1.56 ± 0.10 , respectively, $p < 0.001$) and was correlated between tests ($r = 0.930$, $p < 0.001$). Peak blood lactate after 4 × 50 m was higher compared to 100 m (14.8 ± 3.1 and 10.9 ± 3.3 mmol/L, respectively, $p < 0.001$) and was correlated between tests ($r = 0.640$, $p < 0.001$). Average SR was higher in 4 × 50 m compared to 100 m (47.0 ± 3.6 and 44.5 ± 3.2 cycles/min, respectively, $p < 0.001$) and was correlated between tests ($r = 0.836$, $p < 0.001$). Average SI did not differ but was correlated between tests ($r = 0.937$, $p < 0.001$). Males had higher SR and SI and were faster than females ($p < 0.05$) but did not differ from females regarding lactate. **CONCLUSIONS:** Based on the aforementioned differences and correlations, the 4 × 50 m training set could be used to improve the parameters that have impact on performance in the 100-m event.

Keywords: anaerobic exercise; blood lactate; stroke index; stroke rate; swimming

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