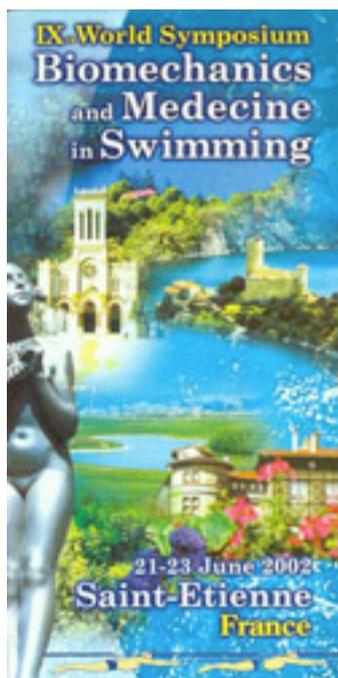


Citação e resumo

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RESUMO



INTRODUCTION

The determination of the time of exercise to exhaustion at the minimum velocity that elicits maximal oxygen consumption (TLim- vVO_{2max}) has arisen in the last years, and seems to be very interesting for assessing various aspects of performance and training of endurance athletes (Billat et al., 1994). Although swimming isn't considered to be a typical endurance sport, it seems very important to study the maintenance of the swimmers at intensities correspondent to their aerobic power. The purpose of this study was to measure the TLim- vVO_{2max} and to verify the existence of an oxygen uptake slow component (O_{2SC}) in swimming, on swimming-pool conditions, as it was observed for Demarie et al. (2001) in flume swimming for pentathletes.

METHODS

Ten physical education students participated in this study (23.1±3.3 years, 169.5±8.5 cm, and 61.9±9.3 Kg). Each subject performed a continuous incremental protocol for freestyle vVO_{2max} assessment, starting at 0.9m/sec, with increments of 0.05m/sec per 200m stages. VO_{2max} was considered to be reached according to traditional physiological criterions, and vVO_{2max} was consider as the swimming velocity correspondent to the first stage that elicits VO_{2max} . 48h later, they swam to exhaustion at vVO_{2max} to assess TLim- vVO_{2max} . O_{2SC} was calculated as the difference between the last VO_{2} measurement and the one measured during the 3rd minute of exercise (Demarie et al. 2001). VO_{2} was directly measured using a *Sensormedics 2900* oxymeter mounted on a special *charriot* running along the pool. Swimming velocity was controlled using a visual pacer (*GBK-Portugal*). [LA-] were measured before, immediately, and 3min after both tests, using an *YSI1500* auto-analyser, and heart rate was monitored with a *Polar advantage* system.

RESULTS AND DISCUSSION

Results pointed out a mean VO_{2max} of 3372.0±841.6ml.min⁻¹ and 54.2±8.2ml.Kg⁻¹.min⁻¹ in the incremental test. Obtained vVO_{2max} was 1.19±0.08 (m.sec⁻¹). The

mean duration of the TLim-vVO₂max test was 325±76.5sec. No significant differences were noticed in VO₂max and maximal heart rate between the two tests. Nevertheless, maximal blood lactate concentration was significantly different between the incremental and the rectangular tests (7.8±1.4 vs. 10.9±2.3mM.l⁻¹, p=0.001). A slow component of VO₂ kinetics (O₂SC) appeared in the all out swim at vVO₂max (279.0±195.2ml.min⁻¹), and it was found to be correlated to the TLim-vVO₂max (r=0.744, p=0.014). In conclusion, O₂SC is observed also in swimming-pool conditions, and it is correlated with TLim-vVO₂max. Meanwhile, TLim-vVO₂max is in accordance with typical formulations of aerobic power training sets for swimmers.
