OXYGEN CONSUMPTION DURING DRAFTING IN SWIMMERS

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Introduction

Drafting is the term used in sports physiology and biomechanics to describe the achievement of a more shift and protected position, and can be defined as a technique / strategy in which the competitors are aligned in a group with the aim of reducing the effect of the strength of trawling which opposes to the movement. In this sense, the increasingly common use and successfully effect of the Drafting raised new questions in terms of features and mechanisms that regulate the human displacement in sports such as athletics (1), cycling (2), swimming (3) and triathlon (4), The aim of this study was to evaluate the oxygen consumption in Drafting, using different distances between swimmers, and compare the situation with swimming alone.

Methods

A group of 7 trained male subjects (63.85 ± 9.33 kg, 173.72 ± 6.87 cm; 15.0 ± 0, 81 years; personal record in the 200 meters freestyle = 133.98 ± 4.76 seconds) were evaluated. The swimmers met the following protocol: i) swam two hundred meters freestyle at a constant speed, ii) swam immediately behind a swimmer (0m), iii) swam 3m behind a swimmer, iv) swam 6m behind a swimmer. The swimming in Drafting has always been run at the same speed of the first race and it always behind a swimmer. During all the evidence the VO2 was measured by a gas analyzer (K4b2, COSMED, and Italy) coupled to a valve (Aquatrainer, COSMED, and Italy). In analyzing the data we perform an "averaging" of 10 seconds for every subject, a "smoothing" of 3 points and have a further filter of the number of breaths per minute (rpm), setting up the ceiling of 55 rpm.

Results

With regard to the values of consumption of oxygen, the differences between the free swim and swim in different situations of Drafting were not significant and only on condition 0 m there was a decrease in VO2, compared with the swim free. Mean±SD values for VO2 in different situations were on condition 0 m (35,92 ± 4,85); on condition 3 m (37,04 ± 6,58) and on condition 6m (36,76 ± 5,87) for $p< 0.05$.

Although, the absence of many articles available on this subject in swimming, the main results seem to indicate a reduction in energy consumption in a state of Drafting, which did not occur in this study.

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Conclusions

The hydrodynamic drag coefficient of a swimmer that follows behind increases gradually with the distance between the swimmers.

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