

Conclusion: The shorter time constant for the primary phase of the VO₂ response in swimming (but not the amplitude of the slow component) appears to be associated with higher aerobic fitness and performance.

Reference: Roels et al. (2005). Specificity of VO₂ max and the ventilatory threshold in free swimming and cycle ergometry: comparison between triathletes and swimmers. *Br J Sports Med* 39:965-968

THE USE OF NUTRITIONAL SUPPLEMENTS BY ELITE PORTUGUESE SWIMMERS

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Introduction: A well-planned diet provides the athlete with adequate levels of nutrients; however, there are many sportsmen/sportswomen taking nutritional supplements (NSs) in spite of their possible contamination with prohibited compounds and the unproved efficacy of the majority of them. In Portugal, no official data regarding the consumption of NSs is available. This study aimed to determine the prevalence and determinants of the use of NSs by elite Portuguese swimmers.

Methods: Thirty six swimmers (14 women; 17.3 years), belonging to the Portuguese national team, volunteered to participate in this study. Between January and March, subjects were asked to complete a questionnaire that included questions to characterise the use of NSs, and a semiquantitative food-frequency questionnaire.

Results: The prevalence of the use of NSs was 91.7%, with a mean consumption of 3.7 NSs per swimmer (between 1 and 10). Regarding the type of supplements and fluids ingested, the most used were sport drinks (75.8%), magnesium (60.6%), multivitamins/minerals (57.6%), proteins (27.3%) and vitamin C (21.2%), with no significant gender and age category (<18 years vs. >18 years) differences. The most frequent reasons for the intake of NSs were: 'to improve sports performance' (57.6%), 'to have more energy/to reduce fatigue' (57.6%), 'to accelerate recovery' (42.4%), "to have more focus" (15.2%, with an age-based difference: <18 years=23.6%; >18 years=64.3%; p=0.034) and "to prevent/to treat diseases or injuries" (15.2%). Physicians (57.6%), coaches (30.3%), family (24.2%) and the swimmer him/herself (21.1%) were the main source of information and advice, with no statistical differences between gender and age groups. The estimated intakes for most nutrients (16 studied) were above the recommendations. For girls between 19 and 30 years (n=4), the estimate mean ingestion of potassium (4305 mg/day), calcium (938 mg/day), folate (385 mcg/day), vitamin D (3.6 mcg/day) and vitamin E (10.8 mg/day) was under the recommendations. For boys with 14-18 years (n=11), the estimate mean intake of potassium (4392 mg/day), vitamin D (4.8 mcg/day) and vitamin E (13.2 mg/day) was under the recommendations. For males with ages between 19 and 30 years (n=11), only the estimated mean intake of vitamin E (12.9 mg/day) was under the recommendations.

Conclusions: The prevalence of the consumption of NSs was high and not justified due to an adequate nutrient intake by swimmers. In general, the type of NSs used and their determinants were not associated with gender or age group. Therefore, dietary education could be beneficial to maximize elite swimmers' performance and health benefits that result from optimal nutrition.

PHYSIOLOGICAL AND PSYCHOLOGICAL ASPECTS OF SWIMMERS IN DIFFERENT TRAINING PERIODS

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Introduction: Even though many investigations have studied the psychological and physiological responses of athletes to periods of intensified training, only sparse information is provided regarding the interactions of these responses during the recovery period (Steinacker et al. 2000). Therefore, we aimed to investigate the effects of different training loads on stress and recovery perception (SRP) and on plasma activity of creatine kinase (CK).

Methods: Subjects were highly trained, male swimmers (17.7 ± 1.3 y.o.). SRP and CK were evaluated after two distinct training phases. On the first, subjects swam approximately 50.000 meters in the week during 5 weeks. On the second, swimmers covered an average of 25.000 meters in the week, for 2 weeks. 05 ml blood were obtained from the antecubital vein for determination of CK. SRP was evaluated using the questionnaire RESTQ-Sport for the Portuguese language (Costa & Samulski, 2005). The Student's t-test and Pearson's product moment correlation were used for statistical analysis. Significance level was p<0.05.

Results: After the second training phase, a significant reduction of CK was observed when compared to the first measurement (261.66 ± 120.04 U/L; 167.92 ± 57.14 U/L), along to a reduction of scale scores in RESTQ-Sport Conflicts/Pressure (2.42 ± 0.79; 1.98 ± 0.9), Fatigue (2.28 ± 1.07; 1.12 ± 0.71), Lack of Energy (2.02 ± 0.83; 1.5 ± 0.61), Perturbations on Intervals (2.00 ± 0.69; 1.23 ± 0.75) e Lesions (2.5 ± 0.91; 1.57 ± 1.04). Furthermore, significant increases were seen on scales Physical Recovery (3.07 ± 1.23; 3.75 ± 1.08) and Being in Shape (3.23 ± 1.23; 4.00 ± 1.12). However, no significant correlations between scores and CK were observed in any of the sampling phases. Conclusion: Sharp training volume decreases after a period of high training loads may cause improvements on psychological and physiological profiles of the athletes investigated. However, these aspects may not necessarily be correlated.

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