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ACUTE AND CHRONIC SYSTEMIC IRISIN RESPONSES DURING FULL SEASON TRAINING IN YOUNG SWIMMERS

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Keywords: Irisin, acute effect, chronic effect, swimming training

Regular physical activity entails important fitness benefits and combats the development of common diseases such as obesity and type 2 diabetes. More specifically, systemic effects of exercise such as the increase in total energy expenditure can be attributed to a messenger system between muscle and fat tissue. That system includes irisin, a protein that is secreted into the bloodstream and triggers the browning of white adipose tissue. There are contradictory findings concerning the influence of exercise training on serum irisin concentration. This study was undertaken to investigate the acute and chronic effects of a full season swimming training on serum irisin, both at rest (PRE) and after (POST) maximal exercise testing in young volunteers. Twelve well-trained male swimmers (age 14.08 ± 1.0 yrs) participated in the study. Measurements were carried out at the beginning of the training season (T1) and pre and post the taper of each of the two competitive periods (i.e., T2, T3 for the first macrocycle, and T4, T5 for the second macrocycle, respectively). At each of the above time points, blood samples were collected pre and 1 hour post a maximal, 400m swimming testing. Serum irisin levels were measured by ELISA using a commercially available kit and adjustment for plasma volume changes were performed before data analysis. Significant PRE-POST (testing) differences were found at T3 ($p = 0.039$), while all POST values were below the PRE ones throughout the experimental period. No significant differences were found between the POST values, although there was a tendency for irisin to increase at T2, T4, and T5. Moreover, rest (PRE) irisin values were not significantly different throughout the experimental period, although there was a tendency for them to decrease

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at T2 and T4. Our findings suggest that exercise affects circulating irisin levels, which are probably depended on the volume and intensity of exercise training. These findings might shed more light on the physiological role of irisin and support the notion that this factor links physical activity to energy metabolic homeostasis.

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