

Effect of Competition on the Salivary Cortisol Level in Elite Boy Swimmers

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Abstract

Background: The effect of exercise on serum and salivary cortisol levels depends on the intensity of sports. So far, no study has evaluated the effect of acute exercise on cortisol levels.

Objectives: This study aimed to determine and compare the salivary cortisol concentration two weeks and 30 minutes before competition in elite adolescent boy swimmers. Also, we determined the association between anxiety and salivary cortisol levels.

Methods: We included 14 elite boy swimmers aged 10 - 13 years old. Anxiety was assessed using the Sports Competition Anxiety Test (SCAT) 30 minutes before the competition. Saliva samples were measured two weeks and 30 minutes before the swimming competition. The enzyme-linked immunosorbent assay (ELISA) technique was used to assess salivary cortisol levels. Using paired t-test, we compared salivary cortisol levels 30 minutes and two weeks before the competition. Also, we used linear regression to examine the effect of anxiety on salivary cortisol levels before the competition.

Results: Our results showed a significantly elevated cortisol level 30 minutes before the competition compared to two weeks before the competition (5.24 ± 1.97 vs. 3.47 ± 1.03 $\mu\text{g/dL}$, $P = 0.007$). However, pre-competition salivary cortisol levels were not significantly related to SCAT, somatic, and cognitive anxiety ($P > 0.05$).

Conclusions: According to the results of this study, swimming competition influenced salivary cortisol response before the competition.

Keywords: Exercise, Swimming, Anxiety, Saliva, Cortisol