

Variations in salivary testosterone, cortisol, and DHEA levels in professional rugby union players during the preseason training period

Stefania Pacini¹, Jacopo J.V. Branca¹, Massimo Gulisano¹, Matteo Levi Micheli¹, Marco Ceroti² and Gabriele Morucci¹

¹ Department of Experimental and Clinical Medicine, University of Firenze, 50134 Firenze, Italy

² Molecular and Nutritional Epidemiology Unit, ISPO, 50134 Firenze, Italy

Excessive training and inadequate recovery can lead to states of overtraining and performance decrements. The anabolic-catabolic balance by testosterone, cortisol and DHEA-S resulted a useful endogenous indicator to evaluate and monitor the athlete's training state and the effectiveness of the training program [1]. In this study sixteen professional rugby players provided saliva samples during the official preseason training period. Hormone saliva levels were determined by immunoenzymatic assay (Grifols, Italy). The results showed that both cortisol levels and DHEA-S to cortisol ratio levels significantly decreased during the initial reduced training sub-period according to the goal of the training program. Furthermore the testosterone to cortisol ratio levels significantly increased during the initial sub-period as well as during the organic muscle conditioning period and after a 2-day recovery time following the conditioning period. Testosterone levels were positively correlated with the Gacon physical test and the maximum cardiac frequency during the initial reduced training sub-period. No correlation was observed between hormone levels and genotype. However ACE genotypes (I/D polymorphism) statistically correlated with the different morphotype related to the rugby player position. Our data shows that cortisol and testosterone to cortisol ratio levels can be considered useful tools to evaluate the athlete's physical stress during the training program. According to data available in literature the morphotype related to the rugby player position is deeply affected by the ACE gene polymorphism.

References

[1] Maso et al. (2004) Salivary testosterone and cortisol in rugby players: correlation with psychological overtraining items. *Br J Sports Med* 38: 260-263.

Key words

Testosterone, cortisol, DHEA, rugby, ACE gene polymorphism.