The relationship between training load and the mucosal immune and hormonal responses has been the focus of many research projects. Immune depression may occur after intense training and competition often associated with psychological stress. On the other hand, changes on cortisol and testosterone also occur after exercise. The possibility to use of saliva parameters to monitor some hormonal and immune behaviour is very promising. The purpose of this study was to monitor the salivary IgA, testosterone and cortisol response to aerobic and anaerobic land tasks and 2 aerobic swim protocols, using several time points.

Twelve male swimmers participated on this study. During 10 days they accomplish four different protocols: two swim aerobic tasks – a 20 minutes continuous swim (T20) and an intermittent 5 x 400 meters with 45’ rest (T5x400); and two land protocols- the Luc Léger and the Wingate Anaerobic Test. The schedule used alternated land and water protocols, with at least 48 hours between them. All sessions took place at the same hour of the day (7.00pm). Saliva samples were collected for determination of IgA, cortisol and testosterone concentrations, and IgA secretion rate (srIgA). The testosterone to cortisol ratio (T/C) was also determined. Saliva samples were also collected, in order to access the immune and hormonal response on a recovery day.

All hormonal and immune variables used on this study have a circadian pattern, reaching the highest values in the morning. At resting day, the variation for all 3 parameters was quite smooth with no significant changes between all the time points studied. The acute response of salivary [IgA] and srIgA following swimming and the Wingate protocols showed a decrease at 1.5h after exercise and a slight recovery 2.5h after. However, the kinetic response of [IgA] after the Luc Léger test, was different. A significant decrease was found 2.5h after exercise, probably related with the extreme fatigue associated with this test. Cortisol concentrations showed significant elevation 15’ after the intermittent swimming protocol and decreased 1.5h to 2.5h after both swimming protocols. 24 hours after testing, cortisol values remained higher than the initials only for the continuous swimming protocol. Significant lower values were found for testosterone following the swimming protocols 1.5h and 2.5h after for intermittent and at 2.5h after for the continuous. The T/C showed significant lower values after the intermittent swimming protocol and at wake-up following T20’ and Luc Léger protocols. The magnitude of the alterations of immune and hormonal markers matches well. The variation of the testosterone levels showed a significant correlation with the [IgA] and srIgA for the aerobic protocols ($r=0.946$ for T20; $r=0.910$ for T5x400; $r=0.881$ for Luc Léger). For the Wingate test this correlation was not significant but approached it. These results confirm the interdependence of hormonal and immune systems.

Keywords: Immunology, Testosteron, Cortisol/Cortisone