

## Hormonal responses to a period of training and recovery in trained male rowers

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**Purpose:** To track the changes in hormonal response to a sub-maximal exercise challenge across a period of training and recovery. **Methods:** 8 trained male rowers ( $22.5 \pm 1.5$  yr,  $186.0 \pm 2.1$  cm,  $86.6 \pm 2.9$  kg,  $5.08 \pm 0.1$  l.min<sup>-1</sup>) undertook a 3-day period of intense training followed by a 3-day recovery period. A 2000m rowing ergometer performance test was undertaken in the morning prior to, and after, the 3-day training period and the morning after the 3-day recovery. A 6-min sub-maximal exercise challenge with blood samples taken prior (PRE), immediately after exercise (POST) and 10 minutes after exercise (P10) was undertaken on the morning prior to, and on the afternoon of each of the 3-days of training. The sub-maximal exercise challenge was also undertaken on the morning and afternoon of each of the recovery days. Hormones were analysed for response to the exercise challenge, response across the periods of training and recovery and for diurnal effects in the recovery period. **Results:** Mean power in the performance tests declined across the training period from  $382.0 \pm 9.4$  to  $370.6 \pm 10.2$  watts ( $p=0.012$ ). Across the 3 days of recovery the exercise performance improved with mean power increasing from  $370.6 \pm 10.2$  to  $385.0 \pm 8.8$  watts ( $p=0.001$ ). Mean power was not different between pre-training and post-recovery performance tests ( $p=0.388$ ). Testosterone concentration increased across the sub-maximal exercise challenge (PRE v POST,  $p=0.005$ ) and declined to below pre-exercise values at 10 min post-exercise ( $p<0.001$ ). Testosterone showed a Time of Day effect for the recovery phase of the study with higher values in the morning ( $p=0.001$ ). Cortisol was elevated, relative to other sessions, in blood samples collected prior to the performance tests ( $p<0.02$ ). Testosterone-cortisol ratio, was lower for morning than for afternoon measures during the recovery period ( $p=0.039$ ). **Conclusion:** Hormonal responses to a period of intense training and recovery are marked. That hormone concentration can be influenced by time of day and subsequent exercise suggests caution when interpreting these data as a means of monitoring the training and recovery response. *This research was part-funded by the Australian Institute of Sport.*