

Adaptation of Hormone Changes in Long-distance Running Athletes of Athletics UNY's Athletic Student Activity Unit to Variations in Exercise Intensity. (HITT)

by Prof. Dr. Sumaryanto,M.Kes, Dr. Eddy Purnomo,M.Kes, dr. Novita Intan Arovah,MPH,PhD.

ABSTRACT

Abstract Anabolic/catabolic hormone balance in athletes is used to monitor and evaluate the acute hormonal response and chronic effects of exercise. The purpose of this study was to determine the response (acute effect) and adaptation (adaptation effect) between anabolic (i.e. testosterone) and catabolic (i.e. cortisol) hormones which were given 6 weeks of training to the HITT method in long-distance athletes, students of Athletics UNY's Athletic Student Activity Unit. This research is an experimental study with a one group pretest and post test design with the number of research subjects totaling 20 male athletes with inclusion criteria in the form of athletes who are members of the long-distance running group at the athletic UNY's Athletic Student Activity Unit with an age range of 17-25 years. Research subjects did exercise for 6 weeks of physical exercise with the HITT method. Measurement of the acute effect and hormonal adaptation of testosterone/cortisol was carried out by taking blood before exercise (pretest) and after the initial exercise in the first session (response) after 6 weeks of training, the third measurement (posttest) was carried out to measure adaptation of HITT exercise to hormonal adaptation of athletes. Statistical analysis were conducted using the Friedman test using SPSS-25 by comparing hormonal response data at pretest, post test 1 and post test 2. The results of the normality test for the testosterone hormone data were pretest $p > 0.05$, response test $p > 0.05$ and pretest $p > 0.05$, while the cortisol pretest data were $p > 0.05$, pretest $p > 0.05$ and post-test data $p > 0.05$, then homogeneity test for the testosterone hormone was homogeneous with a magnitude of $p > 0.05$ while the cortisol homogeneity test was $p > 0.05$. While the results of the different tests for the three tests for testosterone, there was no difference in the average between the pretest, response test and posttest with a p value = 0.443, but descriptively there was a difference in the mean between the three tests. Meanwhile, for the different test for the hormone cortisol, there was also no average difference between the pretest, response test and posttest with a p value = 0.093, then for differences in adaptation between the hormone testosterone and cortisol there was a significant difference with a p value = 0.04. Conclusion The results show that there is no significant difference in six weeks of training using the HITT method but there is a difference in the average adaptation and response of the hormones testosterone and cortisol from long-distance runner athletes from UNY athletics UNY's Athletic Student Activity Unit. These data support the importance of the hormones testosterone and cortisol as potential biological markers, especially for longdistance runners. Further research is required on hormonal response and adaptation in a more heterogeneous population and a longer follow-up period.

Kata Kunci: *Exercise response, Exercise adaptation, Testosterone and Cortisol.*