Exercise Biochemistry Review

Proceedings of IBEC 2018, Beijing, China, October 23-25
PO-189

Cardiac autonomic recovery from an acute bout of cardio pulmonary exercise test

Honggang Yin
1.Shanghai University of Sport
2.Guangzhou Sport University

Objective Heart rate variability (HRV) is a non-invasive clinical indicator of cardiovascular health, to date there has been little agreement on what HRV recovery following exercise. The present study aimed to evaluate the acute effects of cardio pulmonary exercise test (CPET) on cardiac autonomic activity in adolescent individuals.
Methods Fifty-two healthy participants (Male=26, age: 20.31±1.49 years, height: 176±5.67 cm, body mass: 69.08±10.27 kg. Female=26, age: 20.62±0.98 years, height: 162.46±5.39 cm, body mass: 53.42±7.31 kg) underwent CEPT measurements of HR_{max} and VO_{2peak}. Tests were performed on the Master Screen CPX model according to the Bruce protocol (JAEGER, Germany). Predicted peak heart rate was calculated as 220-age. HRV measurements were collected using the SphygmoCor device (AtCor Medical, Australia) at baseline, 5, 30 and 60 min after the CPET. Differences between groups were assessed using an independent t-test. The HRV variables were analyzed using a 2-factor [sex (male, female); time (Baseline, Post-5min, Post-30min, Post-60min)] repeated-measures ANOVA.
Results There were significant differences in VO_{2peak} (51.09±4.41 vs. 37.59±3.62 ml min^{-1} kg^{-1}) (P<0.05), RPE (ratings of perceived exertion)、RER (respiratory exchange ratio) were similar between groups (P>0.05). There were significant increases (P<0.01) in heart rate, markers of sympathetic activity (nLF) and sympathovagal balance (nLF/nHF) for 60 min after the CEPT trial, there were also significant decreases (P<0.01) in markers of vagal tone (RMMSD, nHF) for 60 min. There were no significant interactions between groups from rest to recovery from maximal exercise for any HRV variables. The overall change in ln LF/HF was of greater proportion in male participants(P<0.05) within 5 min.
Conclusions Our findings indicate that the change of autonomic recovery was difference between male and female within 5 min, and it takes longer than 60 min to recover following an acute bout of CPET trial.