



Exercise Biochemistry Review

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

PL-021

The research of High temperature exercise under different humidity environment effect on the body of water and salt metabolism

Wenping Feng¹, Junfen Zhang², Wenyuan Shang¹, Pingxue Qiu³, Aiqi Yu³

1.CHINA institute of Sport Science

2.NANJING Sport Institute

3.BEIJING Sport University

Objective Objective: This study was to investigate the body under high temperature (33 °C) with different relative humidity (80%, 50%, 20%) combination of environment, respectively for 20 min 60% VO₂max individual strength of quiet before and after the exposure of movement and under the same conditions, by measuring the participants within the body weight, serum sex hormone of blood, blood Na⁺、K⁺、Na⁺、K⁺ concentration in the urine of change, to explore in the sports stress and thermal stress of two kinds of stimulating the body water and salt metabolism characteristics, and to explore the effects of environmental humidity on the body's homeostasis.

Methods Methods: This study selected 12 students of sports training major from Beijing sports university as subjects, with themselves as the control. The experiment is divided into six categories, respectively: high temperature 33°C and 20% RH exposure group, the high temperature 33°C and 20% RH campaign group, high temperature 33°C and 50% RH exposure group, the high temperature 33°C and 50% RH campaign group, high temperature 33°C and 80% RH exposure group and high temperature 33°C and 80% RH. In this study all the environmental temperature are set up to 33°C, exercise intensity level of 60% VO₂max selection for individual participants. Before every experiment, all participants were asked to quiet sit for 20 min and then measure the subjects' body weight, charge the subjects' vein blood and urine, take the same operation immediately after the experiment. Blood samples were stored at room temperature for 1 h, and 3000r/min was centrifuged for 20min. Serums were gathered through centrifugation, The urine and Serums were partial shipments in tube to be indicators of measurement. Serum Renin、ANGII、ALD、ADH、ANP、Na⁺、K⁺ concentration of serum and urine were tested

Results Results: (1)The subjects' weight loss percentage of exercise group was obviously higher than that of quiet exposure group, the difference is statistically significant ($P < 0.01$); In 80% RH environment weight loss percentage is significantly higher than that of 50% RH and 20% RH values ($P < 0.01$).There is no difference between 20%RH and 50%RH. (2) The exercise group of Renin, ANGI, ALD, ADH, concentration is significantly higher than the value of exposed group ($P < 0.01$), but the ANP concentrations were significantly lower than pure quiet exposure levels ($P < 0.01$).

Conclusions Conclusions: (1) The body sweat more after exercise than just quiet exposed in high temperature, weight loss phenomenon more obvious; And with the increase of relative humidity environment, dehydration will more serious. (2) Exercise factors can significantly promote the release of blood Renin, ANGI, ALD, ADH and inhibit the release of ANP in the blood. By the way of strengthening the absorption process of water and ions, it can maintain the body's balance of water and ions.