Abstract

Introduction: Heart rate variability and resting metabolic rate are commonly used to assess an athlete’s physiological status and energy requirements. Exercise-induced dehydration can reach up to 5% of body mass per hour. Consequently, dehydration may have a profound physiological effect on human’s homeostasis. Objectives: To compare the effects of dehydration and rehydration after exercise on heart rate variability and resting metabolic rate in college athletes. Methods: 14 college athletes were divided into a dehydration group (n=7) and a rehydration group (n=7), both submitted to basal (T1) heart rate variability and resting metabolic rate measurements. After basal measurements both groups were actively dehydrated (-3.4 ±0.4% of body mass for both groups). Afterwards, dehydration group rested, while rehydration group received fluid intake (during a 3 h period) equivalent to 150% of body mass loss achieved during active dehydration. Four hours after active dehydration heart rate variability and resting metabolic rate were re-assessed (T2). Results: At T2 both rehydration group (+13%) and dehydration group (+30%) achieve a significant (p<0.05) increase in resting metabolic rate, however, only dehydration group showed a significant reduction in heart rate variability. More so, the change in resting metabolic rate was significantly higher in dehydration group compared to rehydration group. Discussion: Hydration status after exercise affects resting metabolic rate and heart rate variability, highlighting the necessity to control hydration state before resting metabolic rate and heart rate variability assessment.

Keywords