Meta-Analysis of Exercise Associated Hyponatremia in Endurance Athletes

PRIYANKA PANDYA, FRANK WYATT, LON KILGORE, and BENITO VELASQUEZ
Cardiopulmonary Laboratory; Department of Athletic Training Exercise Physiology; Midwestern State University; Wichita Falls, TX

Category: Masters

ABSTRACT

PURPOSE: The main purpose of this meta-analytical review was to quantify the pathophysiological changes of exercise-associated hyponatremia. The other purpose was to quantify the preventive measures and treatment of exercise-associated hyponatremia in endurance athletes by reviewing the earlier findings. METHODOLOGY: The pathophysiology, preventive measures and treatment of exercise-associated hyponatremia were studied by meta-analysis. Published articles related to exercise-associated hyponatremia in endurance athletes were taken as the data. Data were entered into the coding sheet. Mean and standard deviation were analyzed for the variables and dependent t-test was performed for the fluid consumed and excreted and pre- and post-race weight of the athletes. RESULTS: The results of the meta-analysis show that serum sodium is greatly affected by the environmental temperature, time taken to complete the race, NSAID consumption and the amount of fluid consumed. There was a significant difference between pre-race and post-race body mass. The difference after a dependent samples t-test was -11.87 with a standard deviation of 15.14. From the meta-analytical review, it was found that 0.9% saline solution is the treatment rendered for exercise-associated hyponatremia. DISCUSSION: Pathophysiology of exercise-associated hyponatremia is usually due to excess fluid retained in the body that causes weight gain in the athlete. Preventive measures cannot be universally described. There is a significant difference between the pre-race and post-race body mass in endurance athletes with exercise-associated hyponatremia. The primary treatment preferred for exercise-associated hyponatremia is infusion of 0.9% saline hypertonic solution.