EFFECTS OF TEMPERATURE CHANGE ON FLUID INTAKE ON PERFORMANCE

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Abstract

INTRODUCTION: Fluid intake during exercise is a very important aspect to both health and performance of an athlete. It is known that during exercise, an increase in exercise intensity causes an increase in HR, breathing rate, VO_2 (L/min), and other physiologic variables. The body must rid itself of heat that builds up due to the breakdown of energy providers such as glycogen, protein, fat, and blood glucose and muscle contraction. Body temperature is another variable that is affected by increase in exercise, but proper hydration helps aid the body in getting rid of excess heat and helps return the body to homeostasis. During exercise, it is recommended that an athlete intake fluids and it makes sense to drink cold fluids to dissipate heat, and this is what most athletes prefer.

PURPOSE: The purpose of this study was to evaluate whether a temperature change in fluid intake would affect the performance of an individual during a submaximal bike test.

METHODS: Six men (age 21 ± 1.67 yrs) of the University of Texas at Arlington volunteered to participate in this study. Each subject was asked to perform two trials, one consisting of cold-water intake, and the other with hot water. After consuming the water, each subject performed a thirty-minute submaximal exercise test on a cycle ergometer with increasing workload until the subject reached his or her 70% max heart rate. At the beginning, and every 10-minute mark of each test, heart rate (HR), rate of perceived exertion (RPE), and body temperature (BT ° F) were recorded along with the values measured by the metabolic cart, oxygen consumption (VO_2).

RESULTS: The variables measured were averaged for the entire 30 min submaximal exercise for cold (C) and hot (H) water: HR (C: 142.5 ± 3.27 bpm; H: 141.83 ± 2.48 bpm), RPE (C: 12.5 ± 1.52; H: 13.2 ± 0.75), VO_2 (C: 1.91 ± 0.25 L/min; H: 1.85 ± 0.65 L/min), BT (C: 99.13 ± 0.47 ° F; H: 99 ± 0.39 ° F) were not significantly different between the different temperatures of the water ($p > 0.05$).

CONCLUSION: The results of this study indicate that there was no alteration in the performance of an individual when drinking either hot or cold water and riding at 70% age predicted heart rate maximum for 30 minutes.

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Results

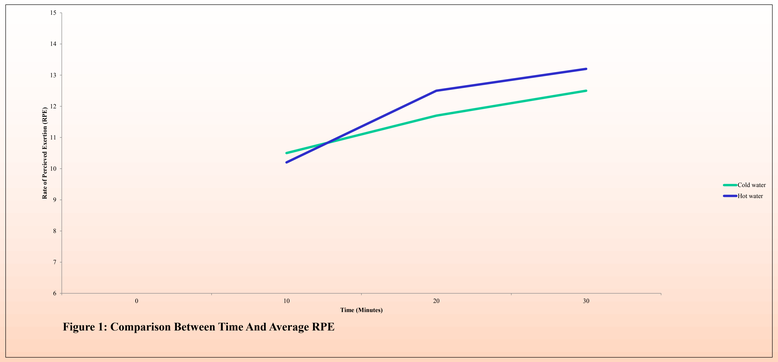

Figure 1: Comparison Between Time And Average RPE

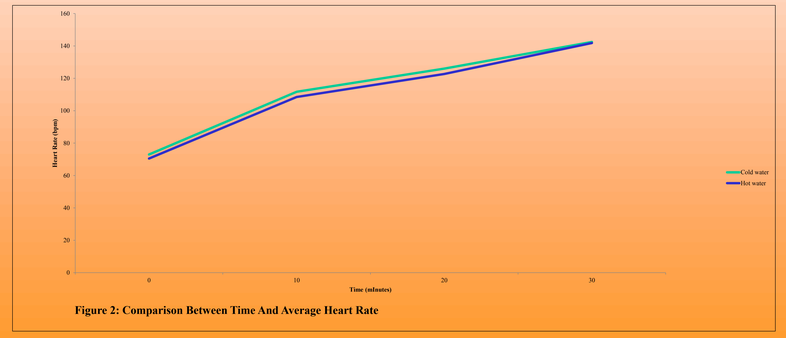

Figure 2: Comparison Between Time And Average Heart Rate

Results (cont'd)

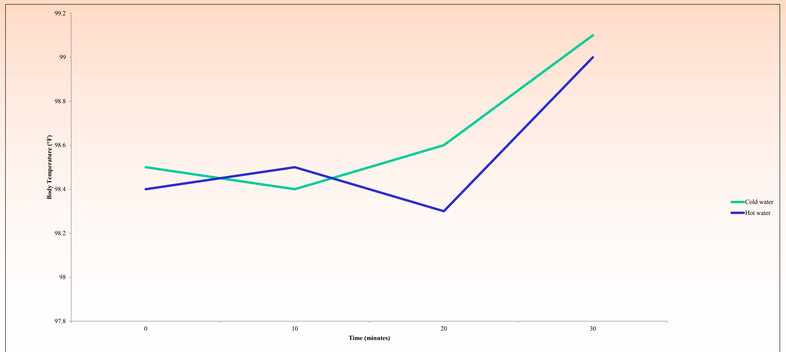

Figure 3: Comparison Between Time And Average Body Temperature

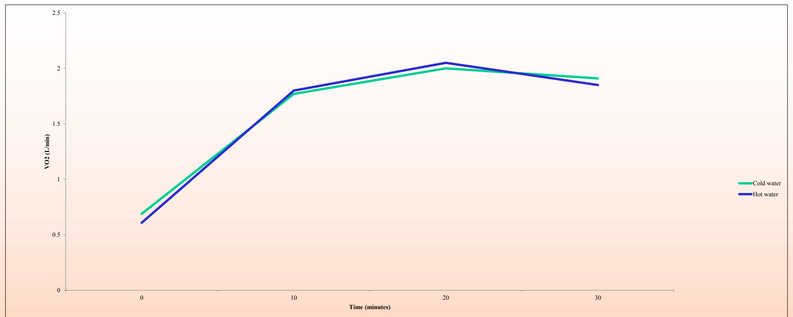

Figure 4: Comparison Between Time And Average VO2

Conclusions

The results of this study indicate that there was no alteration in the performance of an individual when drinking either hot or cold water and riding at 70% age predicted heart rate maximum for 30 minutes.