

Thirst Sensation Does Not Effect Reaction Time But Decreases Mood in Men

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ABSTRACT

Exercise in hot environments results in dehydration accompanied by thirst sensation, a vital signal for fluid homeostasis. While cognitive performance and mood have been studied with exercise in hot environments and in dehydration states, no studies have investigated the effect of inducing thirst on cognitive performance and mood. **PURPOSE:** To investigate the effect of inducing thirst on cognitive performance and mood. **METHODS:** Twelve recreationally active men (mean±SE age: 29±3.6 years; body mass: 74.7±2.3 kg; height, 179.4±2.0 cm; maximal oxygen consumption [VO_{2max}]: 49.8±1.9 ml kg⁻¹ min⁻¹) performed 90 mins of cycling at 55% VO_{2max} in a environmentally controlled chamber (ambient temperature, 34.9±0.2°C; relative humidity, 30.3±0.3%; wind speed, 3.4 miles ·h⁻¹) followed by a 12 km cycling time trial. Two experimental conditions were performed with: subjects drank 25 mL of water every 5 minutes (NT) and infused 25 mL of isotonic saline every 5 minutes via intravenous intravenous tube (T) to maintain hydration across conditions. Thirst was measured every 5 minutes with the visual analog scales. Additionally, rectal temperature (T_{rec}), skin temperature (T_{sk}) were recorded every 5 minutes. The Environmental Symptoms Questionnaire (ESQ), Profile of Mood States (POMS), a modified flanker task, and body mass were performed and recorded at the beginning (Pre) and the end (Post) of each trial. The flanker task assesses reaction time with congruent and incongruent conditions. Incongruent measures executive function while congruent trials measure simple reaction time. **RESULTS:** There was no significance between body mass loss and USG (p>.05) demonstrating similar hydration states between thirst intervention. T_{rec} and thirst were significantly higher in T compared to NT after 15 minutes and throughout the 90 minutes of exercise and 12 km time trial (p≤.05). Subjects reported difficulty concentrating when feeling thirsty (T: 1.8±0.2; NT: 1.4±0.1, p≤.05) and after exercise (Pre: 1.3±0.2, Post: 1.9±.2, p≤.05), however, there were no interactions (p>.05). Subjects also reported more fatigued after exercise (Pre: 2.0±0.6, Post: 13.8±1.2, p≤.05), independent of thirst interventions. Although there was a significant interaction between congruency and thirst condition, T and NT were comparable (p>.05). **CONCLUSION:** After inducing thirst with exercise in hot environments, subjects were more fatigued and experienced trouble concentrating, however, reaction time was not affected . More research is necessary, but the results of this study suggest strategies to mitigate thirst are important to maintain mood during physical performance, however, does not affect cognitive performance.