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The Effect of Two Commercially Available Beverages on Fluid Retention During Exercise in Heat

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Presenter Information
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**BACKGROUND**

Wildland Firefighters (WLFs) are at high risk for fluid imbalance due to arduous work in extreme heat.

Exercise induced dehydration has significant effects on subsequent performance, physiological strain, and work capacity.

Restoration of fluid balance by ingesting a volume of fluid greater than sweat rate is imperative to rehydration.

The contents of the fluids ingested, specifically sodium, may affect fluid retention during submaximal exercise in the heat.

**METHODS**

**Subjects:** Ten aerobically fit males (22.5 ± 3.9 years, 82.2 ± 10.1 kg, 53.9 ± 5.9 ml·kg⁻¹·min⁻¹ VO₂ max.)

**Competition:** Subjects completed a ninety minute Heat Stress Test (HST) in hot conditions (39°C, 30%RH) while walking at 50% VO₂ max.

**Fluid Delivery:** Fluid delivery was equal to 150% of sweat rate and administered after 45 minutes of exercise. Either DD (60.9 mM Na⁺, 3.4% CHO) or G (18.4 mM Na⁺, 5.9% CHO) were delivered using a double blind random crossover design and trials were separated by two weeks.

Pre trial nude body weight, HCT, Hb, and USG were collected. After forty-five minutes of exercise, nude weight was collected to determine sweat rate and fluid was ingested. Following ninety minutes of exercise, HCT and USG were collected. The subjects rested for thirty minutes after testing. Thirty minutes after ninety minute exercise bout, HCT, Hb, nude body weight, urine volume, and USG were collected. Throughout the trial and rest period, RPE and heart rate were collected every fifteen minutes.

**RESULTS**

This was the first study to examine the effect of oral hydration on fluid retention and hydration measures during exercise.

We found that there was no significant differences in fluid retention when supplemented with either DD or G following ninety minutes of exercise in the heat.

**CONCLUSION**

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We found that there was no significant differences in fluid retention when supplemented with either DD or G following ninety minutes of exercise in the heat.