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### Hydration is More Important than Exogenous Carbohydrate Intake during Push-to-the-Finish Cycling in the Heat

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Dehydration  $\geq 2\%$  loss of body mass is associated with reductions in performance capacity and carbohydrate-electrolyte solutions are often recommended to prevent dehydration and provide a source of exogenous carbohydrate during competitive exercise. It is also well established that performance capacity in the heat is diminished compared to cooler conditions, a response primarily attributable to greater cardiovascular strain caused by high skin and core temperatures. **PURPOSE:** Because hydration status, environmental conditions, and carbohydrate availability interact to influence performance capacity, we sought to determine how these factors affect push-to-the-finish cycling performance. **METHODS:** Ten trained cyclists (6 men, 4 women; aged 21-38 yrs) exercised at a moderate intensity ( $2.5 \text{ W} \cdot \text{kg}^{-1}$ ) in a hot-dry condition (40C, 20% RH) until they lost 2% body mass. Subjects then consumed either no fluid (NF) or enough fluid (water, WAT; Gatorade<sup>®</sup>, GAT; or GoodSport<sup>™</sup>, GS) to replace 75% of their body mass deficit over 30 min. After a 30-min light-intensity warm-up ( $1.5 \text{ W} \cdot \text{kg}^{-1}$ ) in a 35C, 20% RH environment, subjects then completed a 120-kJ time trial (TT). A subset of four subjects returned to the laboratory to repeat the WAT, GAT, and GS treatments to determine if between-beverage differences in time-trial performance were evident with a longer TT in thermoneutral conditions (21C and 20% RH; 250-kJ TT). **RESULTS:** In the heat trials, TT time-to-completion was significantly improved with consumption of WAT ( $535 \pm 214 \text{ sec}$ ), GAT ( $539 \pm 226 \text{ sec}$ ), and GS ( $534 \pm 238 \text{ sec}$ ) compared to NF ( $631 \pm 310 \text{ sec}$ ; all  $p < 0.01$ ) with no differences among fluid types. In the longer TT in thermoneutral conditions, all four subjects improved TT performance in the GS ( $919 \pm 353 \text{ sec}$ ) trial compared to WAT ( $960 \pm 376 \text{ sec}$ ) and three subjects improved TT performance in the GAT ( $946 \pm 365 \text{ sec}$ ) trial compared to WAT. **CONCLUSION:** These findings suggest that hydration is more important than carbohydrate availability during a sprint-to-the-finish cycle exercise in the heat, while carbohydrate availability becomes more important during this type of task in cooler conditions.

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