SWACSM Abstract

Fluid Intake and Hydration Responses to Mass Participation Gravel Cycling

BRANDON RAIK, FRANCIS SALMON, GRACE HANDLER, & MATTHEW M. SCHUBERT

Metabolism and Applied Physiology Laboratory; Department of Kinesiology; California State University, San Marcos; San Marcos, CA

Category: Undergraduate

Advisor / Mentor: Schubert, Matthew M. (mschubert@csusm.edu)

ABSTRACT

Gravel cycling is a relatively new cycling discipline, with the Union Cycliste Internationale (UCI) hosting their first UCI Gravel World Championships in 2022. Gravel races combine features of road racing, cyclocross, and mountain biking, including various terrain of varying technical difficulty (paved roads, dirt roads, fire roads, single- and double-track trails), long distances, substantial vertical elevation gain, obstacles, and limited opportunities to stop for in-race nutrition. **PURPOSE:** To date, gravel racing has not been scientifically examined to determine the demands of the sport. Data from cycling road races indicate substantial fluid loss, which may impair exercise performance. This study assessed hydration responses to gravel races of three different distances. **METHODS:** This field study collected data on saliva osmolarity, body mass, fluid intake, and nutrition knowledge. Variables were assessed before and after a gravel cycling race in April 2023. A total of 121 participants completed pre-race surveys, 53 provided pre-race measures of body mass and saliva osmolarity (SOsm), and 38 participants completed post-race testing. **RESULTS:** Based on manufacturer cutpoints for SOsm, only 22.6% (n = 12) of participants were hydrated before the race, with 56.6% mildly dehydrated (n = 30), 18.9% moderately dehydrated (n = 10), and 1.9% severely dehydrated (n = 1). Post-race, 15% (n=6) were still hydrated, 20% (n = 8) were mildly dehydrated, 47.5% (n = 19) were moderately dehydrated, and 17.5% (n = 7) were severely dehydrated. Analyses revealed significant decreases in body mass and increases in SOsm from pre- to post-exercise in the two longer race distances ($p < 0.05$). There was a significant effect of race distance on energy, fluid, carbohydrate, and sodium intake ($p < 0.05$), but post-hoc comparisons were only significant for fluid intake. Sweat rates were not different ($p > 0.05$). Change in percent body mass and change in SOsm were not correlated ($r = -0.254$, $p = 0.118$). Longer race distances were associated with higher energy, fluid, carbohydrate, and sodium intake. **CONCLUSION:** This study provides data quantifying the fluid and nutrient intake during mass participation gravel cycling. Future studies should expand on our results by capturing in-race nutrient data and more sensitive hydration assessments.