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Sports drinks, glycerol and body hydration: Are recommendations and practice consistent with research?

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Limited research has compared different regimens of glycerol and fluid intake on their effectiveness for hydration. Twelve subjects (9 male and 3 female) completed six trials that involved the ingestion of six different regimens of fluid ingestion; distilled water (DW), 6% carbohydrate and 24 mEq/L electrolytes (CE), 100 mEq/L electrolytes (EL), 1.2 g of glycerol/kg BW as a bolus solution (Gly), 1.2 g of glycerol/kg of body weight as a glycerol bolus+5.6% solution (Gly+Sol) and 1.2 g of glycerol/kg BW as a 5.6 % solution (Sol). Total fluid intake was constant for all trials at 26 mL/kg of BW. For DW, CE, EL, Gly+Sol and Sol, fluid ingestion began at time 0 and was repeated every 30 min for 2 h. For Gly, a 40% solution was ingested at time 0 followed by distilled water every 30 min through 120 min. Data are presented in the order of DW, CE, EL, Gly, Gly+Sol, and Sol, respectively. Peak body water gain occurred at 60, 90, 150, 150, 150 and 150 min, respectively. The peak relative change in hydration from baseline (%LBM; LBM=62.58±11.23 kg) was 0.46±0.69, 0.39±0.46, 0.90±0.47, 1.09±0.49, 1.39±0.58, and 1.62±0.52 %LBM, respectively. However, at 300 min the change in hydration equaled -1.2±0.76, -1.11±0.49, -0.17±0.47, 0.20±0.52, 0.05±0.82, and 0.10±0.59 %LBM, respectively. Results indicated that Gly+Sol were the most effective (magnitude and duration) hydrating drink, followed by Sol, Gly and EL. All three glycerol regimens hydrated the body better than CE, and CE hydrated the body no different to DW.

Biography

Robert A Robergs has completed his MA in Sports Science and Cardiac Rehabilitation from Wake Forest University in 1987, and his PhD in Human Bioenergetics from Ball State University in 1990. He has worked at the University of New Mexico from 1990 to 2010 and has been at Charles Sturt University since 2011. He has published more than 130 research manuscripts in peer reviewed journals, and co-authored multiple textbooks in clinical, introductory and advanced exercise physiology. His research interests are in altitude physiology, cardiovascular physiology, muscle metabolism, metabolic acidosis and hydration.

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