WATER INTAKE INFLUENCE IN SWIMMING PERFORMANCE IN 100-M FRONT CRAWL IN WELL-TRAINED SWIMMERS

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INTRODUCTION:
Swimming training can induce significant stress on various physiological systems and is distinctive since it is the only sport conducted entirely in a body weight–supported prone or supine position in water, featuring simultaneous use of arms and legs for propulsion with low eccentric and central nervous system demands [1]. Since many athletes experience fluid imbalances that can sabotage performance and even health [2], the purpose of this study was to evaluate hydration status and water intake during a simulated swimming competition influence on body mass (BM), sweat rate (SR), sweat loss (SL), % of body mass loss (%BML), heart rate (HR), urine pH and 100-m front crawl performance in well-trained swimmers.
METHODS:
Twelve male competitive swimmers participated in the study (mean ± SD; 16.25 ± 1.66 years of age, 176.50 ± 6.35 cm of height, 66.13 ± 8.30 kg of BM. After a pretraining urine sample was collected for initial pH evaluation (pHi), each participant completed a validated food frequency questionnaire regarding the assessment of fluid intake during the day [3]. Afterward, BM was measured and considered initial BM (BMi), and later, athletes were provided with a 50 cl bottle of water. The first group (G1) were the swimmers with a water intake ≤ 340 mL, and the second group (G2), with a water intake ≥ 350 mL and ≤ 500 mL, in both cases immediately ingested before the 800-m aerobic swim of low to moderate intensity in-water warm-up. Then, in the middle of a 6-min rest period, initial heart rate (HRi) was measured, and after, 4 x 25 m maximal front crawl swimming were performed with 1-min rest in between, followed by another 6-min rest period before the 100-m maximal front crawl swimming trial (T100). Immediately after, end HR (HRend) was measured, and the same procedure was completed after a 5-min rest period for recovery HR assessment (HRr).
RESULTS:
A total of six swimmers lost BM during the 45 minutes swimming training session, three integrated G1 (water intake ≤ 340 mL) and the other three G2 (water intake ≥ 350 mL and ≤ 500 mL). Five swimmers increased their BM (two in G1 and three in G2), and one swimmer presented no change in BM (G1). Correlations were observed in both groups between HR and urine pH data, water intake, and SL, but only in G1 was the HRend correlated to body mass loss (BML) and %BML (respectively, r=-0.81 and r=-0.82, in both cases p <0.05). Furthermore, also only in G1, T100 was strongly correlated to water intake and SL (in both cases, r=-0.85, p <0.05).
CONCLUSION:
Our results suggest the measurement of individual needs to optimize fluid intake strategies and having an adequate hydration plan in place before, during, and after training can help not only swimming performance enhancement, but also aid in recovery of swimmers.

References
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