Voluntary Dehydration in Runners Despite Favorable Conditions for Fluid Intake

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This study investigated the relationship between runners’ perceptions of fluid needs and drinking behavior under conditions of compensable heat stress (ambient temperature = 20.5 ± 0.7°C, 68.9°F; relative humidity = 76.6%). Eighteen experienced runners (15 men, 40.5 ± 2.5 y, and 3 women, 42 ± 2.3 y) were given ad libitum access to a sports drink (6% carbohydrate-electrolyte solution) at Miles 2, 4, 6, and 8. After the run (75.5 ± 8.0 min), subjects completed questionnaires that required them to estimate their individual fluid intake and sweat loss. Dehydration averaged 1.9% ± 0.8% of initial body weight (a mean sweat loss of 21.6 ± 5.1 mL·kg⁻¹·h⁻¹). Subjects replaced only 30.5% ± 18.1% of sweat loss and underestimated their sweat loss by 42.5% ± 36.6% (P ≤ 0.001). Subjects’ self-estimations of fluid intake (5.2 ± 3.2 mL·kg⁻¹·h⁻¹) were not significantly different from actual fluid intake (6.1 ± 3.4 mL·kg⁻¹·h⁻¹) and were significantly correlated (r = 0.63, P = 0.005). The data indicate that even under favorable conditions, experienced runners voluntarily dehydrate (P ≤ 0.001), possibly because they are unable to accurately estimate sweat loss and consequently cannot subjectively judge how much fluid to ingest to prevent dehydration. This conclusion suggests that runners should not depend on self-assessment to maintain adequate hydration, underscores the need for runners to enhance their ability to self-assess sweat losses, and suggests that a predetermined regimen of fluid ingestion might be necessary if they wish to maintain more optimal hydration.