Pre-participation hydration test with salivary osmolarity in marathon runners

Marc Geenen
Flemish Association of Sports Physicians (SKA), Belgium

Problem definition: More and more people are participating in endurance sports events without fully understanding the risks involved. One of those risks is dehydration. After having performed small scale hydration tests, SKA suspected that many amateur or even professional endurance runners in Flanders and its neighboring are not aware of their hydration and already have too little body water available before the start of a long distance run, despite the proven negative influence of dehydration on sports performance and the potentially serious dangers connected with severe dehydration: accidents due to drowsiness, hyperthermia, arrhythmia, etc. Such a water shortage can no longer be compensated during a match, even if you still drink a lot and thus weigh on the entire sports performance. SKA wants to corroborate this suspected unawareness of hydration status by testing a relatively large cohort of participants at several marathons.

Design: We wanted to test the hydration status and awareness of as many athletes as possible at various times during 48 hours before the start of a marathon. For practical reasons, such tests cannot take place in a lab and must be conducted near the athletes (Point of Care). Because the classic test methods analysis of blood or urine is complex, embarrassing or invasive, we use an osmolality test with saliva, a relatively new testing procedure.

Method: We tested athletes in the run-up to the Paris (3/4/2022) and Rotterdam (10/4/2022) marathons with a validated salivary osmolality testing device. We did that before the start, when the athletes picked up their starting number. For each person who wanted to cooperate after random addressing, we tapped the tongue with a disposable strip in the measuring device, in accordance with the instructions of the manufacturer (the Australian MX3). A test (20") with explanation (1'30") took on average barely 2 minutes, so we could test many athletes. Each test subject received the result in milliosmol, so that the athlete could optimize his or her hydration strategy if desired.

Conclusion:

1. Of 779 marathon runners, more than half were sub optimally hydrated before the race.
2. Severe hypohydration rarely occurred.
3. Nobody had ever had a hydration test.
4. Nobody knew saliva as a test medium or technology for hydration monitoring.

Biography

Marc Geenen, MSc (Catholic University of Louvain), studied linguistics and medicine. He is a board member of the Flemish Association of Sports Physicians (SKA) in Belgium and Head of Science with perform to achieve, an institute and knowledge center specialized in diagnostic and training-oriented technology for athletes. He is a speaker at International sports-medical conferences, specializing in hydration, RMT and sports-related cardiac arrest. He is also a medical writer who has up till now (co)written five books on medical topics.

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