Government of **Western Australia**
Combat Sports Commission

EDITH COWAN UNIVERSITY

Why Hydration Testing Doesn't Work for Monitoring Rapid Weight Loss in Combat Sports

Biomarkers are inaccurate and unreliable

Hydration testing is often proposed as a way to monitor athletes' weight loss and protect their health. But if the tests **don't reflect real fluid loss**, or **give different results each time**, they become misleading and unusable.

Why Do Accuracy and Reliability Matter in Hydration Testing?

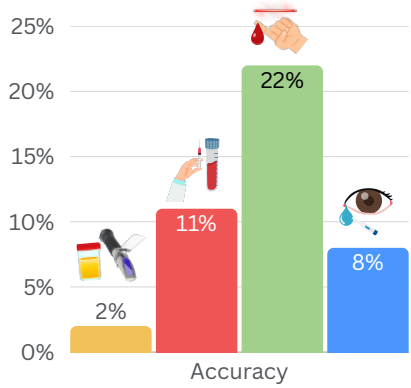
Accuracy means: Does the test reflect the true amount of fluid or weight lost?

Reliability means: Will the result be the same each time we test?

⚠️ If hydration tests are inaccurate or inconsistent, they cannot be used to monitor, assess, or regulate rapid weight loss practices.

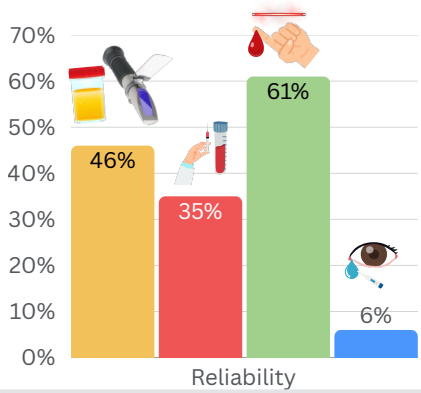
Accuracy:

How well do hydration markers reflect actual weight loss?



Reliability:

Can hydration markers give the same result across trials?



Urine specific gravity | Serum Osmolality | Fingerprick blood | Tear Osmolarity

✅ Fingerprick blood was the best, but still only explained 22% of the weight lost.

❌ Other markers like urine and tear fluid explained even less.

👉 **Conclusion:** Biomarkers do not accurately reflect rapid weight loss.

✅ Fingerprick blood was again the best, but agreement was 61% across two identical trials.

❌ Other methods were even less consistent.

👉 **Conclusion:** Biomarkers are not reliable enough to track weight loss over time.

⚠️ **Hydration testing should not be used** to assess or manage rapid weight loss before competition.

👉 Even though it can appear objective, **hydration testing is not accurate or reliable** enough to be useful in this context.

Study Details

SCAN ME

c.doherty@ecu.edu.au

combat_sports_research

Doherty CS, Fortington LV, Barley OR. **Blood, Sweat, and Tears: Implications for Hydration Testing in Combat Sports-Investigating Body Mass Loss and Biomarker Changes.** Scand J Med Sci Sports. 2024, 34(8):e14701. doi: 10.1111/sms.14701.