GATORADE SPORTS SCIENCE INSTITUTE®

Understanding Athletes' Sweat

For more than 30 years, the Gatorade Sports Science Institute (GSSI) has worked with athletes – both on and off the field – to study every aspect of hydration. What has GSSI learned? That there is more to sweat than meets the eye.

SODIUM IS NOT "ONE SIZE FITS ALL"

The amount of sodium found in athletes' sweat can vary drastically from one person to another. Sodium content in sweat ranges from **230-2,070 mg/L,** which is approximately 1/25 to 1 full teaspoon.

WHO, WHAT & WHERE YOU ARE AFFECTS SWEAT RATE

According to a recent retrospective study, the main factors in predicting sweat sodium concentration include:

Gender	Age	Season of the year
Male > Female	Adult > Youth	Cooler Months > Warmer Months

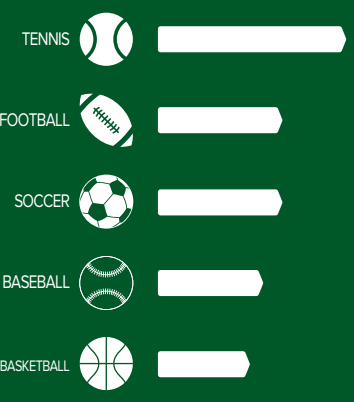
Knowing an individual's hydration needs during exercise enables athletes and coaches to maximize athletic performance and help minimize hydration-related risks and dehydration. An accurate way to assess an individual's hydration needs is by calculating their sweat rate.

$$\frac{[\text{PRE WEIGHT} - \text{POST WEIGHT}] + [\text{FLUID CONSUMED} - \text{URINE VOLUME}]}{[\text{EXERCISE TIME} \div 60]} = \text{SWEAT RATE}$$

Visit GSSIweb.org to utilize the Fluid Loss Calculator

Note: Sweat rate should be measured multiple times throughout a season as it will vary with environmental conditions and level of competition.

THE SWEATIEST ATHLETES



APPLES TO ORANGES: COMPARING LOCAL VS. WHOLE-BODY SWEAT SODIUM CONCENTRATION

Sweat sodium varies across different regions of the body, meaning that:

Local Sweat Sodium Concentration ≠ **Whole-Body Sweat Sodium Concentration**

Best practices for determining whole-body sweat rate:

- Test in conditions (intensity, environment, season, equipment, etc.) relevant and specific to that of the athlete's training/competition
- Have athletes wear minimal clothing for all body mass measures
- Weigh athletes in the same clothing before and after exercise
- Monitor and weigh all fluid/food intake and urine losses during exercise

Laitano, O., J.L. Runco, L. Baker (2014) SSE #128: Hydration Science and Strategies in Football. 27:128. http://www.gssiweb.org/en/Article/sse-128-hydration-science-and-strategies-in-football
Baker, O., K.A. Barnes, M.L. Anderson, D.H. Passe, J.R. Stofan (2016). Normative data for regional sweat sodium concentration and whole-body sweating rate in athletes. J. Sports Sci. 34:4

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