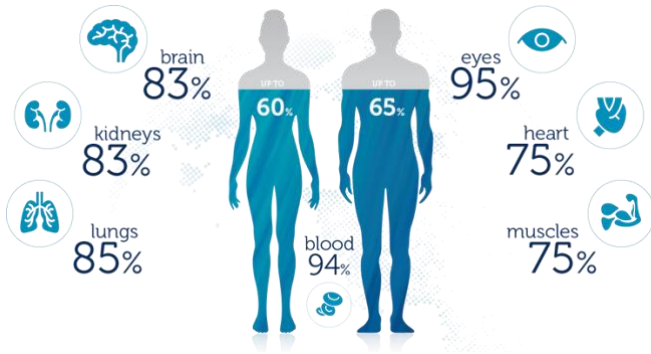


HYDRATION

The term hydration refers to the level of total body water content. Water is essential for bodily function as every cell needs water to function properly. Some functions that use water include temperature regulation, waste excretion, lubrication of joints, and regulation of blood pressure. Your total lean body mass is about **74% water!**



Electrolytes

In addition to water being essential, so are electrolytes. The most commonly lost electrolytes in sweat are sodium, chloride, and small amounts of potassium, calcium, and magnesium.

Assessing hydration

- The two easiest ways for athletes to assess their hydration status are: perform pre- and post-activity weigh-ins
 - Wear same clothing during pre- and post- weights
- Observe the color of urine and compare to the chart at the end of this document

Hydration Strategies

- Fluid containing sodium, CHO, and protein to increase fluid retention
- Avoid carbonated drinks
- Try to avoid high-sugar drinks
- 16 oz per 1 lb lost
- 2 mL/lb for each hour of activity
- Should be customized to the individual based on sweat rate and other factors

What is Dehydration?

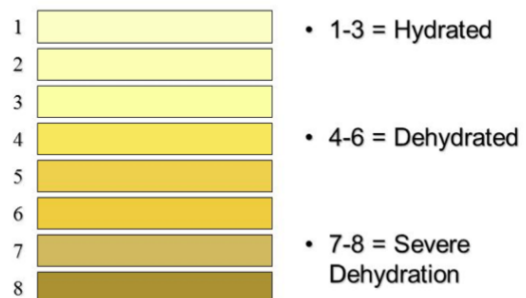
Dehydration occurs when fluid consumption is less than fluid loss

- Negative effects on cardiovascular system, thermoregulation, and exercise performance
- Drastic effects with 2% weight loss
- Symptoms include: dry mouth, low urine output, extreme thirst, dizziness or lightheadedness, headache, fatigue or sleepiness, nausea
- Many athletes begin activity in a dehydrated state

Performance Effects

- Dehydration effects performance with as little as 1% change in body weight
- Decreased performance of endurance activities, more pronounced decreases with $\geq 2\%$ change in body weight
- Increased blood pressure, decreased cardiac output
- More susceptible to heat illness due to the inability to efficiently cool core body temperature

Hydration Urine Chart



HYDRATION

References

1. Bergeron M. Youth sports in the heat: recovery and scheduling considerations for tournament play. *Sports Med.* 2009;39(7):513-522.
2. Chia M, Mukherjee S. Original article: Hydration status of heat-acclimatized youth team players during competition. *Sci Sport.* November 1, 2012;27:e51-e54.
3. Da Silva R, Mündel T, Marins J, et al. Pre-game hydration status, sweat loss, and fluid intake in elite Brazilian young male soccer players during competition. *J Sports Sci.* January 2012;30(1):37-42.
4. Decher N, Casa D, Brown S, et al. Hydration Status, Knowledge, and Behavior in Youths at Summer Sports Camps. *Int J Sports Physiol Perform.* September 2008;3(3):262-278.
5. Desbrow B, Jansen S, Barrett A, Leveritt M, Irwin C. Comparing the rehydration potential of different milk-based drinks to a carbohydrate-electrolyte beverage. *Appl Phys Nutr Metab.* December 2014;39(12):1366-1372.
6. Kavouras S, Arnaoutis G, Sidossis L, et al. Educational intervention on water intake improves hydration status and enhances exercise performance in athletic youth. *Scand J Med Sci Sports.* 2012;(5):684.
7. Maughan R, Shirreffs S. Dehydration and rehydration in competitive sport. *Scand J Med Sci Sports.* October 3, 2010;20:40-47.
8. Maughan R, Shirreffs S. Development of hydration strategies to optimize performance for athletes in high-intensity sports and in sports with repeated intense efforts. *Scand J Med Sci Sports.* October 2, 2010;20:59-69.
9. Rowland T. Fluid Replacement Requirements for Child Athletes. *Sports Med.* April 2011;41(4):279-288.
10. Shirreffs S. Hydration in sport and exercise: water, sports drinks and other drinks. *Nutr Bull.* December 2009;34(4):374-379.
11. Shirreffs S, Sawka M. Fluid and electrolyte needs for training, competition, and recovery. *J Sport Sci.* 2011;29 Suppl 1:S39-S46.
12. Silva R, Mündel T, Marins J, et al. Fluid balance of elite Brazilian youth soccer players during consecutive days of training. *J Sport Sci.* April 2011;29(7):725-732.
13. Sobana R, Nirmala M. Analysis of knowledge, attitudes and practices between male and female college athletes on hydration and fluid replacement. *Int J Sports Sciences & Fitness.* July 2014;4(2):144.
14. Yeargin S, Bowman S, Eberman L, Edwards J. Fluid Delivery Method Influences Drinking Efficiency Among Physically Active Children. *Athl Ther Today.* January 2016;21(1):56-61.