Proper Hydration for Exercise - Water or Sports Drinks

What and when athletes drink depends upon exercise duration and intensity

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Water is essential for athletes picturegarden / Getty Images

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Water is the most essential ingredient to a healthy life. Water has many important functions in the body including:

- Transportation of nutrients / elimination of waste products.
- Lubricating joints and tissues.
- Temperature regulation through sweating.
- Facilitating digestion.

Importance of Water During Exercise

Proper hydration is especially important during exercise. Adequate fluid intake for athletes is essential to comfort, performance and safety. The longer and more intensely you exercise, the more important it is to drink the right kind of fluids.

Dehydration

Athletes need to stay hydrated for optimal performance. Studies have found that a loss of two or more percent of one’s body weight due to sweating is linked to a drop in blood volume. When this occurs, the heart works harder to move blood through the bloodstream. This can also cause muscle cramps, dizziness and fatigue and even heat illness including:

- Heat Exhaustion
- Heat Stroke

Causes of Dehydration

- Inadequate fluid intake
- Excessive sweating
- Failure to replace fluid losses during and after exercise
- Exercising in dry, hot weather
- Drinking only when thirsty

Hyponatremia - Water Intoxication

Although rare, recreational exercisers are also at risk of drinking too much water and suffering from hyponatremia or water intoxication. Clearly, drinking the right amount of the right fluids is critical for performance and safety while exercising.

Adequate Fluid Intake for for Athletes

Because there is wide variability in sweat rates, losses and hydration levels of individuals, it is nearly impossible to provide specific recommendations or guidelines about the type or amount of fluids athletes should consume.

Finding the right amount of fluid to drink depends upon a variety of individual factors including the length and intensity of exercise and other individual differences. There are, however, two simple methods of estimating adequate hydration:

1. Monitoring urine volume output and color. A large amount of light colored, diluted urine probably means you are hydrated; dark colored, concentrated urine probably means you are dehydrated.
2. Weighing yourself before and after exercise. Any weight lost is likely from fluid, so try to drink enough to replenish those losses. Any weight gain could mean you are drinking more than you need.

Things that Affect Fluid Loss in Athletes

- High altitude. Exercising at altitude increases your fluid losses and therefore increases you fluid needs.
- Temperature. Exercising in the heat increases you fluid losses through sweating and exercise in the cold can impair you ability to recognize fluid losses and increase fluid lost through respiration. In both cases it is important to hydrate.
- Sweating. Some athletes sweat more than others. If you sweat a lot you are at greater risk for dehydration. Again, weigh yourself before and after exercise to judge sweat loss.
- Exercise Duration and Intensity. Exercising for hours (endurance sports) means you need to drink more and more frequently to avoid dehydration.
To find the correct balance of fluids for exercise, the American College Of Sports Medicine suggests that "individuals should develop customized fluid replacement programs that prevent excessive (greater than 2 percent body weight reductions from baseline body weight) dehydration.

The routine measurement of pre- and post-exercise body weights is useful for determining sweat rates and customized fluid replacement programs. Consumption of beverages containing electrolytes and carbohydrates can help sustain fluid-electrolyte balance and exercise performance."

According to the Institute of Medicine the need for carbohydrate and electrolytes replacement during exercise depends on exercise intensity, duration, weather and individual differences in sweat rates. [They write, "fluid replacement beverages might contain ~20–30 meq/L sodium (chloride as the anion), ~2–5 meq/L potassium and ~5–10% carbohydrate."]

Sodium and potassium are to help replace sweat electrolyte losses, and sodium also helps to stimulate thirst. Carbohydrate provides energy for exercise over 60-90 minutes. This can also be provided through energy gels, bars, and other foods.

**What about Sports Drinks?**

Sports drinks can be helpful to athletes who are exercising at a high intensity for 60 minutes or more. Fluids supplying 60 to 100 calories per 8 ounces helps to supply the needed calories required for continuous performance.

It's really not necessary to replace losses of sodium, potassium and other electrolytes during exercise since you're unlikely to deplete your body's stores of these minerals during normal training.

If, however, you find yourself exercising in extreme conditions over 3 or 5 hours (a marathon, Ironman or ultramarathon, for example) you may likely want to add a complex sports drink with electrolytes.

**General Guidelines for Fluid Needs During Exercise**

While specific fluid recommendations aren't possible due to individual variability, most athletes can use the following guidelines as a starting point, and modify their fluid needs accordingly.

**Hydration Before Exercise**
- Drink about 15-20 fl oz, 2-3 hours before exercise
- Drink 8-10 fl oz 10-15 min before exercise

**Hydration During Exercise**
- Drink 8-10 fl oz every 10-15 min during exercise
- If exercising longer than 90 minutes, drink 8-10 fl oz of a sports drink (with no more than 8 percent carbohydrate) every 15 - 30 minutes.

**Hydration After Exercise**
- Weigh yourself before and after exercise and replace fluid losses.
- Drink 20-24 fl oz water for every 1 lb lost.
- Consume a 4:1 ratio of carbohydrate to protein within the 2 hours after exercise to replenish glycogen stores.