

Fluids and Hydration

How important are fluids?

Fluid replacement is probably the most important nutritional concern for athletes. Approximately 60% of your body weight is water. As you exercise, fluid is lost through your skin as sweat and through your lungs when you breathe. If this fluid is not replaced at regular intervals during exercise, you can become dehydrated.

When you are dehydrated, you have a smaller volume of blood circulating through your body. Consequently, the amount of blood your heart pumps with each beat decreases and your exercising muscles do not receive enough oxygen from your blood. Soon exhaustion sets in and your athletic performance suffers.

If you have lost as little as 2% of your body weight due to dehydration, it can adversely affect your athletic performance. For example, if you are a 150-pound athlete and you lose 3 pounds during a workout, your performance will start to suffer unless you replace the fluid you have lost. Proper fluid replacement is the key to preventing dehydration and reducing the risk of heat injury during training and competition.

How can I prevent dehydration?

The best way to prevent dehydration is to maintain body fluid levels by drinking plenty of fluids before, during, and after a workout or race. Often athletes are not aware that they are losing body fluid or that their performance is being impacted by dehydration.

If you are not sure how much fluid to drink, you can monitor your hydration using one of these methods.

1. **Weight:** Weigh yourself before practice and again after practice. For every pound you lose during the workout you will need to drink 2 cups of fluid to rehydrate your body.
2. **Urine color:** Check the color of your urine. If it is a dark gold color like apple juice, you are dehydrated. If you are well hydrated, the color of your urine will look like pale lemonade.

Thirst is not an accurate indicator of how much fluid you have lost. If you wait until you are thirsty to replenish body fluids, then you are already dehydrated. Most people do not become thirsty until they have lost more than 2% of their body weight. And if you only drink enough to quench your thirst, you may still be dehydrated.

Keep a water bottle available when working out and drink as often as you want, ideally every 15 to 30 minutes. High school and junior high school athletes can bring a water bottle to school and drink between classes and during breaks so they show up at workouts hydrated.

What about sport drinks?

Researchers have found that sports drinks containing between 6% and 8% carbohydrate (sugars) are absorbed into the body as rapidly as water and can provide energy to working muscles that water cannot. This extra energy can delay fatigue and possibly improve performance, particularly if the sport lasts longer than 1 hour. If you drink a sports drink, you can maintain your blood sugar level even when the sugar stored in your muscles (glycogen) is running low. This allows your body to continue to produce energy at a high rate.

Drinks containing less than 5% carbohydrate do not provide enough energy to improve your performance. So, athletes who dilute sports drink are most likely not getting enough energy from their drink to maintain a good blood sugar level. Drinking

Fluids and Hydration

beverages that exceed a 10% carbohydrate level (most soda pop and some fruit juices) often have negative side effects such as abdominal cramps, nausea, and diarrhea and can hurt your performance.

What does the sodium in sports drinks do?

Sodium is an electrolyte needed to help maintain proper fluid balance in your body. Sodium helps your body absorb and retain more water. Researchers have found that the fluid from an 8-ounce serving of a sports drink with 6% carbohydrates (sugars) and about 110 mg of sodium absorbs into your body faster than plain water.

Some parents, coaches, and athletes are concerned that sports drinks may contain too much sodium. However, most sports drinks are actually low in sodium. An 8-ounce serving of Gatorade has a sodium content similar to a cup of 2% milk. Most Americans do get

too much sodium, but usually from eating convenience-type foods, not from sports drinks.

What are guidelines for fluid replacement?

- Drink a sports drink containing 6% to 8% carbohydrate to help give you more energy during intense training and long workouts.

For example, 240 mL (a 1 cup serving) of a drink with 24 grams of carbohydrate per serving would have a 10% carbohydrate concentration. Almost all drinks have the grams of carbohydrate per serving and the volume in mL somewhere on the container.

- Drink a beverage that contains a small amount of sodium and other electrolytes (like potassium and chloride).
- Find a beverage that tastes good; something cold and sweet is easier to drink.

- Drink 10 to 16 ounces of cold fluid about 15 to 30 minutes before workouts. Drinking a sports drink with a 6% to 8% carbohydrate level is useful to help build up energy stores in your muscles.
- Drink 4 to 8 ounces of cold fluid during exercise at 10 to 15 minute intervals.
- Start drinking early in your workout because you will not feel thirsty until you have already lost 2% of your body weight; by that time your performance may have begun to decline.
- Avoid carbonated drinks, which can cause gastrointestinal distress and may decrease the fluid volume.
- Avoid beverages containing caffeine and alcohol due to their diuretic effect.
- Practice drinking fluids while you train. If you have never used a sports drink don't start during a meet or on race day. Use a trial-and-error approach until you find the drink that works for you.

Formula for percentage of carbohydrate in your drink

$$\frac{\text{grams of carbohydrate/serving}}{\text{mL of drink/serving}} \times 100 = \% \text{ of carbohydrate in drink}$$