



NUTRITION AND PROPER FUELING FOR PERFORMANCE - WHAT YOU NEED TO KNOW AND DON'T KNOW TO ASK.

Fluids and Hydration

Hydration is one of the most important nutritional concerns for an athlete. Approximately 60% of the body weight is water. As an athlete trains or competes, fluid is lost through the skin in sweat and the lungs while breathing. If this fluid is not replaced at regular intervals during practice or competition, it can lead to dehydration. A dehydrated athlete has a decreased volume of blood circulating through their body and consequently:

- The amount of blood pumped with each heart beat decreases
- Exercising muscles do not receive enough oxygen
- Exhaustion sets in and performance suffers
- By products of exercise are not flushed out as regularly as they should be

Research has shown that losing as little as 2% of total body weight can negatively affect athletic performance. For example, if a 150-pound athlete loses three pounds during a workout or competition, their ability to perform at peak performance due to dehydration is reduced. Proper fluid replenishment is the key to preventing dehydration.

Preventing Dehydration

The best way to prevent dehydration is to maintain body fluid levels by consuming plenty of fluids before, during and after workout or competition. Often athletes do not realize they are losing body fluids or they are negatively impacting their performance through dehydration. Athletes who are not sure how much fluid to drink can monitor hydration using two helpful techniques:

- Weighing themselves before and after practice. For every pound lost during the workout, drink three cups of fluid to rehydrate
- Check urine color, urine that is dark gold in color indicates dehydration. Urine similar in color to pale lemonade or weak tea is a sign of a hydrated athlete. See the chart below:

URINE COLOR CHART



Too often athletes wait to drink until they are thirsty. Thirst is not an accurate indicator of how much fluid an athlete has lost. Athletes who wait to replenish body fluids until feeling thirsty are already dehydrated. Most individuals do not become thirsty until more than 2% of body weight is lost. Waiting until you are thirsty can affect your performance.

Guidelines for Proper Hydration

In summary, below are keys to help maintain proper hydration

- Monitor Fluid losses by weighing-in before and after training, especially during hot weather and conditioning phases of the season.
 - For each pound lost during exercise drink three cups of fluids
- Do not restrict fluids before, during or after an event
- Never rely on thirst as an indicator

About Fluid Replacement Drinks

It is now believed that sports drinks containing between 6 and 8 percent carbohydrates are absorbed into the body more rapidly than water and can provide energy to the working muscle that water cannot. A growing body of evidence suggests that consumption of a sports drink containing carbohydrates can delay fatigue and possibly improve performance. It appears that athletes who consume a sports drink can maintain blood glucose levels at a time when muscle glycogen stores are diminished. This allows carbohydrate utilization and energy production to continue at high rates. Beverages containing more than one kind of sugar (i.e. glucose and fructose) can increase carbohydrate absorption rates because each sugar is absorbed via different channels.

The Importance of Electrolytes Provided by Fluid Replacement Drinks

The ingestion of sodium during exercise may help with maintenance or restoration of plasma volume during exercise and recovery. The consumption of sports drinks containing sodium helps retain water in the body and aids in hydration by increasing the absorption of fluid from the intestines into the muscles. Recent research has suggested that a 6-8 percent carbohydrate sport drink with at least 110 mg of sodium per 8oz serving empties from the stomach just as fast as plain water. Endurance activities lasting longer than 3 hours may require as much as 175 mg of sodium per 8oz serving.

There has been concern by parents, coaches, and athletes that sports drinks may contain too much sodium. However, many fluid replacement drinks are low in sodium. An 8oz serving of a fluid replacement drink can have a sodium content similar to that of a cup of reduced fat milk. Most Americans consume too much sodium through processed and convenience foods, not through fluid replacement drinks.

What is an Ideal Fluid Replacement Drink?

The ideal fluid replacement beverage is one that tastes good, does not cause GI discomfort or distress when consumed in large volumes, promotes rapid absorption and maintenance of body fluid, and provides energy to working muscles during intense training and competition.

Guidelines for Fluid Replacement

The following guidelines for maintaining body fluid balance, improving performance in the heat, and preventing heat-related illness appear to be prudent based on current scientific knowledge:

- For intense training and long workouts, a fluid replacement drink containing carbohydrates may provide an important source of energy. A six to eight percent carbohydrate beverage is typically most effective in maintaining fluid balance while supplying the muscles with fuel.
- The fluid consumed during activity should contain a small amount of sodium and electrolytes. The sodium may be beneficial for quicker absorption and replacement of sweat loss.
- The beverage should be palatable and taste good.
- Athletes should drink 10-16 ounces of cold fluid about 15-30 minutes before workouts. If the workout is prolonged, add carbohydrates to the beverage at a six to eight percent concentration.
- Drink four to eight ounces of cold fluid during exercise at around 15-minute intervals.

- Start drinking early in the workout because thirst does not develop until two percent of body weight has been lost, by which time performance may have begun to decline.
- Avoid carbonated drinks, which can cause GI distress and may decrease the volume of fluid consumed.
- Avoid beverages containing caffeine, alcohol, and those promoted as energy drinks.
- If you have never had a sports drink, don't drink one for the first time on competition day. Practice consuming fluids while you train. Use a trial and error approach until you discover the fluids that work well for you and encourage hydration.

**This is part of an informational series to help you or help your athlete get on the right nutritional track. Note that the information to follow is intended for athletes who are working/competing at a high-energy output daily. This information is NOT recommended for the average person who exercises on a purely recreational level.

**All information presented here was compiled by True Sport and the USADA presented and distributed at the 2017 USA Swimming National Select Camp by Alicia Kendig USA swimming and US track and field dietician. The following info can also be found at www.usada.org.