

Tips for Hydration and Heat Preparedness

[JohnEric Smith](#), Ph.D., Senior Scientist at the Gatorade Sports Science Institute and a member of USA Football's [Football and Wellness Committee](#), has some advice for youth coaches and players on how to best prepare for taking the field.

What are the signs and symptoms of dehydration that coaches should be aware of?

The first sign of dehydration is thirst and general discomfort. Then as dehydration becomes more severe, flushed skin, general fatigue and possibly the onset of muscle cramping can occur. As players continue to dehydrate, they can become dizzy, have a headache, vomit, and/or have chills. Similar to other things, there's a progressive physical decline as you become more and more dehydrated.

When is it most important for athletes to consume the most liquids - before or during exercise?

Hydration needs to be a focus for athletes throughout the day. Because all athletes are different, it is impossible to make general hydration guidelines. When not practicing or competing, remember to drink fluids when you are thirsty throughout the day. Monitor your urine output and urine color. The color of your urine should be similar to lemonade. If your urine is darker than lemonade you should be drinking more, if your urine is clear you may need to drink less.

Athletes should be sure to drink something two to three hours before their game/practice. Monitor urine volume and color and have that direct you in consuming more fluids before exercising. During exercise, drink to match what your body is losing.

What are the differences and benefits between drinking water and sports drinks?

Number one, sports drink will encourage you to drink because of the salt, flavor and taste. Salt and carbohydrates help for faster absorption of the fluid and the salt replenishes the electrolytes lost through sweat. The body primarily uses carbohydrates for fuel during exercise and your body has limited stores of carbohydrates available, so it's important to provide an external source that your body can use during exercise as opposed to relying solely on what your body has stored.

What is taking place in the body when an athlete is dehydrated during practice or a game?

In a warm, humid environment, about 80 percent of heat loss is done through sweating. Not balancing fluid intake with fluid losses from sweat is the primary reason athletes get dehydrated during activity.

What can occur as a result of these symptoms?

One impact of dehydration is a rise in core temperature as someone becomes dehydrated. As body temperature increases, you begin to increase the risk of heat illness and heat injuries. To help protect against the negative effects of increasing body temperature, fluid is lost in the form of sweat to help maintain a close to normal body temperature.

The heart is going to work harder to pump blood because it's going to become thicker making it more difficult to move through the body. Because the heart is working harder, heart rate generally goes up three to five beats per minute.

Another negative impact of dehydration is an increase in the perception of effort to do the same task.

What are some general hydration tips for youth athletes to follow?

One of the most important points to remember is to think about your hydration throughout the day and not solely center it around your activity. You want to make sure you're drinking enough, but also not drinking too much. Both under hydrating and over hydrating have harmful medical consequences.