



## Heat Illness in Young Athletes: Detection and Prevention

BY: David L. Marshall, MD

With the end of the school year and the beginning of summer, many kids will be spending more time outdoors playing sports. Some kids will be engaged in recreational activities, or free-play, while many others will be competing for a team or club. Still more kids will attend various camps such as cheerleading, basketball, football or marching band, to name a few. Regardless of the sport, outdoor summer activities in the south have one thing in common; the heat.



Heat related illness is responsible for thousands of summertime emergency room visits annually by young athletes. The severity of heat injury ranges from mild heat cramps to heat stroke and death. In fact, heat stroke is the third most common cause of exercise-related death in US high school athletes. But there is one important fact to remember, heat related illness is preventable. With some basic knowledge about thermoregulation and hydration in young athletes, and how to recognize the early signs of heat injury, one can drastically reduce the risk of suffering heat-related illness.

### Differences in Thermoregulation between Children and Adults

- Kids generate more heat during exercise than adults.
- Kids have less blood volume per pound of body weight. Therefore, they have limited ability to shunt blood to the skin for sweating and evaporative cooling, the most efficient way the body cools itself during exercise. This decreased blood or fluid volume also puts kids at increased risk for dehydration.
- Kids initiate sweating later during exercise than adults.
- Kids have a larger surface area to mass ratio and are closer to the ground than adults. Therefore, they more readily absorb radiant heat from the ground and pavement, raising their body temperature faster.

### Hydration Tips for Young Athletes

- **Never** rely on thirst. Thirst is a poor indicator of hydration status. When a young athlete begins to feel thirsty, they are already dehydrated.
- Prehydrate. 30 minutes before activity, drink till you are no longer thirsty **plus another 8 ounces**. For kids weighing less than 90 pounds, drink 5 ounces every 20 minutes of activity. For kids weighing more than 90 pounds, drink 8 ounces every 20 minutes.
- Water is best if the activity lasts one hour or less. For activities lasting more than an hour, you should drink a fluid with carbohydrate (sugar) and electrolytes, such as Gatorade or Powerade. Avoid fruit juices and carbonated sodas as these can cause cramping.
- **Drink it, don't pour it.** Pouring cold water on your head or face may feel great, but it does not improve your hydration status.

### Signs of heat illness:

**Heat cramps** – fatigue, dizziness, leg cramping. The athlete must be removed from the heat and cooled rapidly with ice bags, fans, shade and re-hydrated with an electrolyte containing sports drink.

**Heat exhaustion** – same as heat cramps with chills, vomiting, loss of coordination, and altered mental status. May require transport to ED.

**Heat stroke** – life-threatening condition requiring immediate transport to an emergency department. Kids are unresponsive, and their temperature rised rapidly to above 106 degrees.

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