

HEAT

SAFETY

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Summer has just officially arrived, and with it comes the promise of hotter weather. While many enjoy the warmth of summertime, summer's hot temperatures (and humidity) can lead to potentially dangerous health issues when training and competing.

Exertional Heat Illness is a spectrum of conditions that can run the gamut from dehydration, heat cramps, and heat exhaustion to a potentially life-threatening condition known as *Exertional Heat Stroke (EHS)*. Prevention, as well as knowing the early warning signs of Exertional Heat Illness, is the best way to combat these conditions.

Prevention involves several factors, including heat acclimatization, adequate hydration, and proper training modifications based on monitoring environmental conditions through the *Wet Bulb Globe Temperature (WBGT)*—a more accurate measure of potential heat stress than just temperature alone. The WBGT is a measure of the heat stress in direct sunlight, which takes into account temperature, humidity, wind speed, sun angle, and cloud cover (solar radiation). This differs from the *heat index*, which only takes into consideration temperature and humidity and is calculated for shady areas. There are specific WBGT monitors as well as several phone apps designed to measure the WBGT.

ACCLIMATIZATION

Acclimatization is the body's natural adaptation to exercising in the heat. While there are many recommendations on how to do this, general guidelines include avoiding the hottest part of the day (11am-4pm) for training sessions, if possible, and gradually increasing the amount of time spent training in the heat over the course of a 10-14 day period of time.

HYDRATION

Adequate hydration begins before the training session or competition. Athletes should be regularly hydrating throughout the day and should also plan to drink 12-16 ounces of fluid approximately 30 minutes before getting to the field. During activity, periodic drinking should be enforced even if the athlete

does not "feel" thirsty. It is recommended that every 15-20 minutes during activity, an athlete should consume 5 ounces of fluid for a player weighing 90 lbs or less and 9 ounces of fluid for a player weighing more than 90 lbs. Once the activity is over, an athlete should drink water or a sports drink every 15-20 minutes for the first hour after activity.

TRAINING

Training modifications based on the WBGT include implementing mandatory match play hydration breaks during competition, limiting intensity or duration of training, and possibly delaying training until the WBGT decreases.

WARNING SIGNS

Early warning signs of dehydration and heat illness include increased fatigue, dizziness, nausea, headache, dry lips and tongue, irritability, muscle cramping, red flushed face, and dark yellow urine. If any of these occur, an athlete should be removed from play to a cooler, shaded area, given fluids to drink (water or an electrolyte-containing sports drink), and gently cooled with ice packs or cool wet towels. If the athlete does not rapidly improve or develops an altered mental status such as confusion or extreme lethargy, heat stroke (which is a medical emergency) should be assumed and EMS (911) should be called.

With proper awareness and prevention techniques, most heat-related illness can be avoided or minimized, and athletes can focus on enjoying training and competition during the heat of summer.

For more detailed information, refer to the following resources from which much of the material for this article was obtained:

- [US Soccer Federation 2006 Youth Soccer Heat and Hydration Guidelines](#)
- [US Soccer Heat Guidelines](#)

