

## Exertional heat illness: A hidden hazard

Written by John Tomberlin

Sunday, 31 July 2011 17:33 - Last Updated Monday, 01 August 2011 16:48

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This week high school athletes begin battling one another for starting positions on their football teams during two-a-day practice sessions. They'll also be taking on a more subtle but extremely dangerous opponent – the summer heat.

Research indicates that the subtle signs and symptoms associated with exertional heat illness are often overlooked. This may result in potentially more serious problems for athletes than most of us realize.

Because there are several types of exertional heat illness, including muscle cramps, heat syncope, heat exhaustion, heat stroke and hyponatremia, I will define each type and briefly discuss treatment guidelines.

### **Exercise-associated muscle cramps:**

**Definition:** These painful muscle cramps (especially in the legs) occur during or after exercise and are thought to be associated with dehydration, electrolyte imbalance and fatigue.

**Treatment:** Activity should be stopped and fluid replacement started immediately. This should include water and sport drinks that contain sodium and other electrolytes. Your athletic trainer should provide these on site for all practices and in the training room after practice.

A recumbent position will help distribute the fluids to your legs. As the cramping eases, light massage and gentle stretching can be started.

### **Heat syncope:**

**Definition:** In this case, athletes may experience sudden tunnel vision and dizziness or fainting

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after participating in sports while exposed to high environmental temperatures. It is associated with a sudden cessation in activity in standing. Or it can occur after being seated or lying down and then standing quickly. The athlete may exhibit a slowed pulse rate.

**Treatment:** The legs should be elevated above the heart in a recumbent position with the athlete in a shady area out of the sun. Rehydration or fluid replacement should be started immediately as listed above, and pulse rate should be monitored.

### **Exercise heat exhaustion:**

**Definition:** This is the inability for an athlete to continue exercise, especially in hot and humid conditions. It is associated with heavy sweating, dehydration, sodium loss and energy depletion. Athletes also may complain of diarrhea, fainting, headaches, muscle cramps and low urine output.

The athlete will exhibit an elevated core temperature, ranging from 99 to 104 degrees Fahrenheit. (Rectal temperature measurement is recommended as the most accurate in an overheated athlete).

**Treatment:** The athlete should be moved to a cool, shady area, and excessive clothing should be removed to allow cooling to take place quickly. Ice bags can be placed around the athlete to accelerate the cooling if fans are not readily available in the training room. Rehydration (fluid replacement) should begin immediately, and core temperature should be monitored.

If the temperature comes down quickly and the athlete does not feel better, take the athlete to a physician to begin intravenous fluids and monitoring of vital signs.

### **Exertional heat stroke:**

**Definition:** When exercise in a high-temperature environment results in the core temperature exceeding 104 degrees Fahrenheit because the body's temperature regulation system is overwhelmed. This is a life-threatening condition. Typical signs include: altered mental state with disorientation, confusion and irrational behavior, vomiting, diarrhea, hyperventilation, increased pulse rate, low blood pressure, seizure and loss of consciousness.

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**Treatment:** The emergency medical system should be activated (911). Vitals should be monitored, and all attempts to perform rapid cooling should be made until the emergency transport team arrives. Rapid cooling by immersion in a whirlpool of cold water (between 37 to 59 degrees) could be performed on site, especially if a physician is present to monitor vitals. Intravenous fluid replacement should be initiated as soon as possible.

### **Exertional hyponatremia:**

**Definition:** This is a rare and life-threatening condition. It usually occurs with sport activity that is more than four hours' duration and is thought to be due to a combination of excessive water intake (water intoxication) and low sodium levels (excessive sweating) without replacement. Disorientation occurs, along with headache, vomiting and severe fatigue; the telltale sign is swelling in the hands and feet. Core temperature is less than 104 degrees Fahrenheit. This condition can be fatal if not treated properly.

**Treatment:** The emergency medical system should be activated (911). Fluid replacement should not begin until a physician is consulted; intravenous fluids will need to be initiated by medical personnel as soon as possible.

**PREVENTION** is the best advice with heat illness; staying hydrated while alternating water and sports drinks (containing sodium and electrolytes) is vital. Athletes should also be counseled to monitor their urine flow (little to no output is dangerous), paying particular attention to color. Clear to light yellow means you are hydrated; dark yellow to amber is a definite sign of dehydration (Mayo Clinic guidelines).

Stay cool!

*(EDITOR'S NOTE: John Tomberlin is a physical therapist and certified strength/conditioning specialist. He has worked with high school athletes in the Cedar Rapids Metro area since 1995).*