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California Interscholastic Federation

SPORTS MEDICINE BULLETIN

IDENTIFICATION AND TREATMENT OF HEAT ILLNESS

Exercise produces heat within the body and can increase the player's body temperature. Add to this a hot or humid day and any barriers to heat loss such as padding and equipment, and the temperature of the individual can become dangerously high.

Heat Illness occurs when metabolically produced heat combines with that gained from the environment to exceed the heat and large sweat losses. Young athletes should be pre-screened at their pre-participation physical exam for medication/supplement use, cardiac disease, history of sickle cell trait, and previous heat injury. Athletes with any of these factors should be supervised closely during strenuous activities in a hot climate. Fatal heat stroke occurs most frequently among obese high school middle linemen.

Much of one's body heat is eliminated by sweat. Once this water leaves the body, it must be replaced. Along with water loss, many other minerals are lost in the sweat. Most of the commercial drinks now available contain these minerals, such as Gatorade, etc., but just plain water is all that is really required because the athlete will replace the lost minerals with his/her normal diet.

PROBLEMS

HEAT STROKE:

Dysfunction or shutdown of body systems due to elevated body temperature which cannot be controlled. This occurs with a body-core temperature greater than 107 degrees Fahrenheit.

Warning Symptoms:

- Dizziness
- Drowsiness, loss of consciousness
- Seizures
- Staggering, disorientation
- Behavioral/cognitive changes (confusion, irritability, aggressiveness, hysteria, emotional instability)
- Weakness
- Hot and wet or dry skin
- Rapid heartbeat, low blood pressure
- Hyperventilation
- Vomiting, diarrhea

This is a MEDICAL EMERGENCY. Death may result if not treated properly and rapidly.

Treatment: Stop exercise, Call 911, remove from heat, remove clothing, immerse athlete in cold water for aggressive, rapid cooling (if immersion is not possible, cool the athlete as described for heat exhaustion), monitor vital signs until paramedics arrive.

HEAT EXHAUSTION:

Inability to continue exercise due to heat-induced symptoms. Occurs with an elevated body-core temperature between 97 and 104 degrees Fahrenheit.

Warning Symptoms:

- Dizziness, lightheadedness, weakness
- Headache
- Nausea
- Diarrhea, urge to defecate
- Pallor, chills
- Profuse sweating
- Cool, clammy skin
- Hyperventilation
- Decreased urine output

Treatment: Stop exercise, move player to a cool place, remove excess clothing, give fluids if conscious, COOL BODY: fans, cold water, ice towels, or ice packs. Fluid replacement should occur as soon as possible. The athlete should be referred to a hospital emergency if recovery is not rapid. When in doubt, CALL 911. Athletes with heat exhaustion should be assessed by a physician as soon as possible in all cases.

HEAT SYNCOPE:

Dizziness or fainting due to high temperatures. It often occurs after standing for long periods of time, immediately following cessation of activity, or rapidly standing after resting or sitting.

Warning Symptoms:

- Fatigue
- Tunnel vision
- Pale or sweaty skin
- Dizziness
- Lightheadedness, fainting

Treatment: Move the athlete to a cool, shaded area, elevate the legs and rehydrate. Remove excess clothing and cool the athlete with wet towels or ice bags.

EXERTIONAL HYPONATREMIA:

A rare condition of bodily dysfunction due to inadequate sodium levels. This occurs because of the ingestion of too much water.

Warning Symptoms:

- Disorientation, altered consciousness, lethargy
- Headache
- Vomiting
- Swelling of hands and feet
- Seizures

Treatment: Stop exercise, call 911, monitor athlete until paramedics arrive. Athletes who may have hyponatremia should not be given fluids until a physician is consulted.

HEAT CRAMPS:

Acute, painful, involuntary muscle contractions that occur during or after intense exercise sessions.

Warning Symptoms:

- Muscle cramps
- Sweating, thirst, fatigue

Treatment: Gently stretch the cramping muscle. Ice or gentle muscle massage may also help to stop the cramp. The athlete should drink fluids, especially with electrolytes if possible.

Salt tablets are still controversial. Athletes can use greater amounts of salt on their food by instinct and can get additional salt from sports drinks with electrolytes.

GENERAL TREATMENT GUIDELINES

Adequate medical personnel should be on-site to handle any heat illnesses/emergencies. Equipment for treating heat illnesses (cooling equipment such as fans, ice, tub of cold water, thermometers, etc) should be readily available for use in the event of a problem. Coaches and medical personnel should be aware of and familiar with procedures for handling any emergencies due to heat illness.

GENERAL PREVENTION REMINDERS

Heat illnesses can often be prevented through proper, adequate hydration and safe practice guidelines. For information on prevention of heat illness, see Bulletins 15.

Source:

Binkley HM et al. National Athletic Trainers' Association Position Statement: Exertional Heat Illnesses. J Athl Train. 2002 Sep;37(3):329-343.