HEAT-RELATED ILLNESS
AND
STUDENT ATHLETES

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HEAT-RELATED ILLNESS

Objectives:
- Factors that create HRI
- Stages of HRI
- Care – Basic First Aid
- Protecting Student Athletes
WHAT IS HEAT-RELATED ILLNESS?

- It is an accumulation of body heat that results when the body’s ability to cool itself is overwhelming.
- Body heat increases during exertion/exercise naturally and can cool itself through sweat evaporation.
- When the body is unable to cool itself through sweating, serious heat related illness can occur quickly.
HEAT-RELATED ILLNESS

- The risk of developing heat illness significantly increases in hot, humid environmental conditions because the evaporation of sweat is hindered.

- Exercise in these conditions can cause dehydration in as little as 30 minutes.
THREE LEVELS OF HEAT ILLNESS

1. Heat Cramps
2. Heat Exhaustion
3. Heat Stroke
**WHAT ARE HEAT CRAMPS?**

- Painful, involuntary muscle spasms that occur during heavy exercise in hot environments. Inadequate fluid intake is often the cause.

- Muscles most often affected are the calves, quads, arms, abdomen and back.
HEAT CRAMPS: TREATMENT

- Rest and cool down in the shade.
- Drink water or sports drink. Sip!
- Massage and stretch affected area.
- If cramps do not go away in one hour, call a doctor.
- RECOGNITION at this point; it is **critical** to prevent further illness.
WHAT IS HEAT EXHAUSTION?

This is what develops after heat cramps have been left untreated or treated ineffectively.

Symptoms include:

- Extreme thirst
- Feeling faint
- Nausea
- Heavy sweating
- Ashen or grey appearance
- Rapid, weak heart beat
- Low blood pressure
- Cool, moist skin
- Low-grade fever
HEAT EXHAUSTION: TREATMENT

- Get the athlete out of the sun and into a shady or air conditioned location.
- Lay the student down with feet up.
- Remove excessive clothing or equipment.
- Drink small amounts of water often.
- Cool the student by spraying or sponging with cool water.
- MONITOR CAREFULLY!! Heat exhaustion can quickly become **Heat Stroke**, when in doubt, call 911.
WHAT IS HEAT STROKE?

Like heat cramps and heat exhaustion, Heat Stroke is often caused from overexertion in hot, humid environments, usually from inadequate fluid intake. It is an elevated core temperature above 104 degrees F with rectal thermometer and altered mental status.

The difference is thermoregulatory capacity is exceeded, and extreme metabolic stresses produce tissue damage, and physiological dysfunction that can result in

- Kidney damage
- Brain damage
- Death
HEAT STROKE SYMPTOMS

- Dry, hot, red skin
- Rapid heart beat, shallow breathing
- Dizziness, nausea
- Loss of coordination
- Irritability, belligerence
- Seizures
- Coma

Remember, your heart is a muscle.

This is a medical emergency, Call 911
HEAT STROKE TREATMENT

While you are waiting for EMS:

- Get athlete in a cool place or shade.
- Remove unnecessary clothing and shoes.
- Rapid cooling such as ice towels or ice packs on neck, groin and head or ice water immersion.
- Monitor ABC’s
  - Airway
  - Breathing
  - Circulation
PREVENTION IS KEY

- Stress to athletes they have to come to practice or games already well hydrated.
- Have water available within arms reach
- Drink every 15 minutes.
- Take frequent breaks.
- Dress for the weather.

COACHES – allow for acclimation to conditions; know medical conditions, medications and history of your athletes
While much of the prevention and treatment of heat related illness falls on the Coaches, parents can help keep their athletes safe by notifying the Coaches if their student-athlete has medical issues such as heart problems, sickle-cell disease, which can increase their risk of heat stroke.

Student-athletes should never practice or play if they are sick, especially with a fever, vomiting or diarrhea as it can put them at increased risk for heat illness.
Fluid Replacement

- 20 oz. of fluid per pound of weight loss within two hours of exercise. (Coaches – weigh athletes before and after practices, when the temperature is above 80 degrees F.
- Encourage athletes to drink water, or sports drinks, when they are at home and not soft drinks or tea.
**WATER VS SPORTS DRINKS**

**Water**
- Hydrates, but some believe it “washes out electrolytes”.
- Hyponatremia

**Sports Drinks**
- Hydrates, but some believe they have too much sugar that can cause nausea and diarrhea
- Fast electrolyte replacement

**Recommendation: USE BOTH!**
CONDITIONS FOR HEAT-RELATED ILLNESS

- Strenuous activities outside on a hot day
- Exerting in a hot room with little air circulation
- Not enough fluid intake while exerting
- Exerting in a building where cooling system fails
- Humid conditions combined with mild to hot temps
- Note: Exertion Heatstroke can occur when the air temperature is as low as 41 degrees and often occurs during the early morning.
# Heat Index Chart

## Relative Humidity (%)

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## Heat Index (Apparent Temperature)

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<th>With Prolonged Exposure and/or Physical Activity</th>
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<tr>
<td>Extreme Danger</td>
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<td>Heat stroke or sunstroke highly likely</td>
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<td>Danger</td>
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<td>Sunstroke, muscle cramps, and/or heat exhaustion likely</td>
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<td>Extreme Caution</td>
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<tr>
<td>Sunstroke, muscle cramps, and/or heat exhaustion possible</td>
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<td>Caution</td>
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<td>Fatigue possible</td>
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AT RISK FACTORS

- Age
- Prior heat related illness
- Not physically fit
- Certain medications
- Certain medical conditions
Heat Stress Factors

Environmental:
- Temperature
- Humidity
- Radiant Heat
- Air velocity

Personal Characteristics:
- Age
- Weight
- Fitness level
- Medical condition
- Heat acclimatization
Stages and Treatment of Heat Related Illnesses

- **Heat Rash**
  - Mild rash/blisters
  - Skin is exposed to humid heat and stays wet
  - Clean dry skin and clothes

- **Heat Cramps**
  - Muscle spasms – extremities or abdominal
  - Loss of electrolytes from sweating
  - Give electrolytes

- **Heat Exhaustion**
  - Fatigue, headache, nausea, giddiness, clammy skin, rapid pulse, fainting
  - Dehydration, out of shape
  - Keep cool, give water or electrolytes

- **Heat Stroke**
  - Hot dry skin, confusion, convulsions, no sweating, unconsciousness
  - Severe dehydration
  - Immediate cooling, treat for shock, begin CPR/AED, call 911!
PROTECTIVE FACTORS

- Educate and train athletes and coaches often
- Teams and schools should have a plan to help players slowly get used to practicing in hot or humid weather - athletes are most at risk during the first days of practice
- Control the environment - practice in an indoor air conditioned building, or in early morning or evening if possible
- Wear light weight and light colored clothing
- Hydrate with plenty of water, never restrict the amount kids may drink during games or practice
RESOURCES

- National Athletic Trainers Association
- American Association of Pediatrics
- Center for Disease Control and Prevention (CDC)
- PA Athletic Trainers Society (PATS)
THANK YOU

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