Parent & Athlete Fact Sheet – Exertional Heat Illness

There are multiple types of heat illness that you/your student-athlete may experience during athletic participation. Exercise-Associated Muscle Cramps (commonly, but incorrectly, referred to as Heat Cramps), Heat Syncope, Heat Exhaustion, and Heat Stroke are the most common heat illnesses. The most severe heat illness that can be experienced is Exertional Heat Stroke (EHS). Exertional Heat Stroke is the leading cause of preventable death in high school athletics. This fact sheet will describe each type of Exertional Heat Illness and associated signs and symptoms, environmental and non-environmental risk factors, prevention, and treatment.

	Exercise-Associated Muscle Cramps	Heat Syncope	Heat Exhaustion	Exertional Heat Stroke (EHS)
Definition	*involuntary, painful skeletal muscle contractions during or after exercise	*fainting dizziness that occurs in unfit/unacclimatized persons who spend a prolonged amount of time in the heat; typically occurs during the first 5 days of heat acclimatization	*body thermoregulation failure resulting in the body to overheat while exercising; Core (rectal) temp between 97-104°F; Early warning signs for EHS	*Core (rectal) temp greater than 105°F
Signs/Symptoms	Acute pain; stiffness; visual bulging/knotting of the affected muscle; prolonged muscle soreness.	Fainting; lightheadedness; headache	Headache, dizziness, confusion, disorientation, fatigue, chills/goosebumps, excessive sweating/flushed skin, nausea or vomiting.	Nervous system dysfunction (such as confusion, aggression and loss of consciousness); increased heart rate; hyperventilation; low blood pressure
Treatment	Rest, Passive Static Stretching, Ice, Massage, or Ice Massage; Drinking a beverage containing sodium and carbohydrates	Relocate to shaded area, monitor vital signs, elevate legs above heart, cool the skin, rehydrate	Same as Heat Syncope plus: remove excess clothing and equipment. If condition worsens, activate EMS and obtain rectal temperature (if >105°F, treat for EHS)	Immerse in a cold tub/pool, remove excess clothing/equipment simultaneously with immersion; obtain and monitor rectal temp every 5-10 minutes ****Goal is to lower core temp below 102°F within 30 min of collapse. Length of time Core Temp is >105°F dictates morbidity and risk of death from EHS**
Return to Play	-Monitor condition until Signs/Symptoms are no longer present	-Monitor condition until Signs/Symptoms are no longer present	-Same day return to activity is not recommended.	-Resume modified activity within 1-month w/physician clearance -Patient/Athlete asymptomatic w/normal blood work results (renal and hepatic panels, electrolytes, and muscle enzyme levels) before initiating gradual return to activity

Environmental Risk Factors

1. Environmental Conditions: hot, humid weather; high WBGT*
2. Barriers to Sweating: type of clothing/equipment worn during activity
3. Excessive Clothing/Equipment
4. Weather Conditions from Previous Day: it is possible for the effects of EHI to affect an athlete the next day if the previous days WBGT* was high

*Wet-Bulb Globe Temperature- measures risk associated with exercise based on environmental conditions (ambient temperature, relative humidity, air motion, amount of radiant heat from the sun)

Non-Environmental Risk Factors

1. Heat Acclimatization
2. Exercise Intensity
3. Overzealousness
4. Poor Physical Condition
5. Increased Body Mass Index
6. Dehydration
7. Illness
8. History of EHI
9. Medications, Drugs
10. Electrolyte Imbalance

Prevention:

• Discourage the use of any dietary supplement or other substances that have a dehydrating effect, increase metabolism, or affect body temp and thermoregulation	• Proper Heat Acclimatization • Resting if an athlete is ill • Planned, frequently occurring rest breaks during activity in a cool, shaded environment	• Achieving and maintaining proper hydration • Rest in a cool environment during periods of inactivity • Proper rest (at least 7 hours/night) in a cool environment	• Educating coaches, administrators, athletes, etc. on preventing and recognizing EHI and EHS • Eat a well-balanced diet	• Having a cold-water or ice tub and ice towels available to immerse an athlete suspected of EHI/EHS	• Rectal* Temperature Assessment at the first signs of possible EHI/EHS *obtaining rectal temperature is the CLINICAL GOLD STANDARD for obtaining an accurate core temperature