

Medical Awareness Information for Parents and Student Athletes

Sudden Cardiac Arrest (SCA)

Definition: Sudden Cardiac Arrest (SCA) is a potentially fatal condition in which the heart suddenly and unexpectedly stops beating. When this happens, blood stops flowing to the brain and other vital organs. SCA in student athletes is rare; the chance of SCA occurring to any individual student athlete is about one in 100,000. However, student athletes' risk of SCA is nearly four times that of non-athletes due to the increased demands on the heart during exercise.

Causes: SCA is caused by several structural and electrical diseases of the heart. These conditions predispose an individual to have an abnormal rhythm that can be fatal if not treated within a few minutes. Most conditions responsible for SCA in children are inherited, which means the tendency to have these conditions is passed from parents to children through the genes. Other possible causes of SCA are a sudden blunt non-penetrating blow to the chest and the use of recreational or performance-enhancing drugs and/or energy drinks.

Warning Signs of SCA	Emergency Response to SCA
<ul style="list-style-type: none">• SCA strikes immediately.• SCA should be suspected in any athlete who has collapsed and is unresponsive.<ul style="list-style-type: none">○ No response to tapping on shoulders○ Does nothing when asked if he/she is OK• No pulse	<ul style="list-style-type: none">• Act immediately; time is most critical to increase survival rates.• Recognize SCA.• Call 911 immediately and activate EMS.• Administer CPR.• Use Automatic External Defibrillator (AED).

Warning signs of potential heart issues: The following need to be further evaluated by your primary care provider.

- Family history of heart disease/cardiac arrest
- Fainting, a seizure, or convulsions during physical activity
- Fainting or a seizure from emotional excitement, emotional distress, or being startled
- Dizziness or lightheadedness, especially during exertion
- Exercise-induced chest pain
- Palpitations: awareness of the heart beating, especially if associated with other symptoms such as dizziness
- Extreme tiredness or shortness of breath associated with exercise
- History of high blood pressure

Risk of Inaction: Ignoring such symptoms and continuing to play could be catastrophic and result in sudden cardiac death. Taking these warning symptoms seriously and seeking timely appropriate medical care can prevent serious and possibly fatal consequences.

Information used in this document was obtained from the American Heart Association (www.heart.org), Parent Heart Watch (www.parentheartwatch.org), and the Sudden Cardiac Arrest Foundation (www.sca-aware.org). Visit these sites for more information.

Environmental Risk Factors

Exertional Heat Stroke is among the top three causes of death in athletes. It is defined as having a core temperature of greater than 104° to 105°F (40° to 40.5°C) occurs with associated central nervous system dysfunction.

Signs and symptoms may include disorientation, confusion, dizziness, vomiting, diarrhea, loss of balance, staggering, irritability, irrational or unusual behavior, apathy, aggressiveness, hysteria, delirium, collapse, loss of consciousness, coma, and dehydration.

Prevention:

- Giving a good history during physical exam
- Listing all medications
- Keeping a well-balanced diet to assure replenishment of electrolytes
- Proper hydration prior to, during and after activity (Dehydration of as little as 2% of body weight has a negative effect on performance and thermoregulation.)
- Acclimatization
- Following guidelines for activity in hot weather. Athletes always have free access to water.

Exertional Hyponatremia although rare is a potentially fatal condition. It is defined as a serum sodium concentration less than 130mEq/L. To put this simply, the body no longer has enough electrolytes and any fluid at this point can no longer be absorbed or released by the cells.

Signs and symptoms may include over drinking, nausea, vomiting, dizziness, muscle twitching, peripheral tingling or swelling, headache, disorientation, altered mental status, physical exhaustion, pulmonary edema, cerebral edema and seizures.

Prevention:

- Hydration before, during and after exercise. (Hydration includes balancing electrolytes lost as well as fluids.)
- Good nutrition to maintain normal body fluid balance,
- During hot environment exercise sodium may need to be increased in the diet.
- Post exercise hydration should contain water, carbohydrates and electrolytes to speed hydration. (Ideally within 2 hours.)

Exertional Sickling is a medical emergency occurring in athletes carrying the sickle cell trait. When red blood cells change shape (sickle) this causes a buildup of red blood cells in the small vessels, leading to decreased blood flow. The drop in flow leads to a breakdown of muscle tissue and cell death, known as fulminant rhabdomyolysis.

Signs and symptoms may include leg or low back cramping, muscles look and feel normal (rules out heat cramps), muscle weakness, slumping to the ground rather than sudden collapse, difficulty breathing (rapid but normal air movement/rules out asthma), rectal temp less than 103°F (rules out heat stroke) or fatigue.

Prevention:

- Good health history during exam including predisposing factors
- Acclimatization
- Controlled asthma
- Modified drills avoiding timed runs
- Longer periods of rest between repetitions
- Exclusion from performance tests
- Limit activity with any type of illness
- Hydration with readily available water access
- Watch closely when working out in new high altitude environment. Supplemental oxygen should be available.
- Stop activity with any onset of symptoms.

Lightning is one of the most dangerous natural phenomena encountered. It causes more than 60 fatalities and hundreds of injuries annually in the United States.

Prevention of Lightning Injury:

- Be aware of the forecast.
- Go indoors in a substantial building when storms are approaching.
- Follow the directions given to clear areas by school officials.
- The school has county protocols for watching for storms and clearing outdoor events. Be aware of plans ahead of time.
- Stay indoors for at least 30 minute past last lightning strike.

Weight, Nutrition and Hydration

Unsafe weight management practices can compromise athletic performance and negatively affect overall health. Athletes often attempt to lose weight by not eating, limiting caloric or specific nutrients from their diet engaging in pathogenic weight control behaviors and restriction of fluids. These are all unhealthy practices and in the extreme can be fatal. These athletes often respond to pressures of the sport or activity, coaches, peers or parents by adopting negative body images and unsafe practices to maintain an ideal body composition for the activity.

We recommend the following for athletes with regards to weight control.

- Preseason physical is required by all athletes.
- Good balance nutrition and hydration should be maintained by all athletes.
- Reasonable and individualized weight and body composition goals should be identified by appropriately trained health care personnel (e.g., athletic trainer, registered dietitian/nutritionist or physician).
- All weight management and exercise protocols used should be safe and based on the most current evidence.

Information used in this document was obtained from NATA position statements and the Korey Stringer Institute.