



## Sudden Cardiac Arrest (SCA) Information for Parents and Student Athletes

**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.

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

**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](http://www.heart.org)), Parent Heart Watch ([www.parenheartwatch.org](http://www.parenheartwatch.org)), and the Sudden Cardiac Arrest Foundation ([www.sca-aware.org](http://www.sca-aware.org)). Visit these sites for more information.

## Frequently Asked Questions about Sudden Cardiac Arrest (SCA)

### What are the most common causes of Sudden Cardiac Arrest (SCA) in a student athlete?

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. Some of these conditions are listed below.

1. *Hypertrophic cardiomyopathy (HCM)*: HCM involves an abnormal thickening of the heart muscle and it is the most common cause of SCA in an athlete.
2. Coronary artery anomalies: The second most common cause is congenital (present at birth) abnormalities of coronary arteries, the blood vessels that supply blood to the heart.
3. Other possible causes of SCA are:
  - a. *Myocarditis*: an acute inflammation of the heart muscle (usually due to a virus).
  - b. Disorders of heart electrical activity such as:
    - i. *Long QT syndrome*.
    - ii. *Wolff-Parkinson-White (WPW) syndrome*.
    - iii. *Catecholaminergic Polymorphic Ventricular Tachycardia (CPVT)*.
  - c. *Marfan syndrome*: a condition that affects heart valves, walls of major arteries, eyes, and the skeleton.
  - d. Congenital aortic valve abnormalities.
4. *Commotio Cordis*: concussion of the heart from **sudden blunt non-penetrating blow** to the chest
5. Use of recreational, **performance-enhancing** drugs, and **energy drinks** can also bring on SCA.

### How can we minimize the risk of SCA and improve outcomes?

The risk of SCA in student athletes can be minimized by providing appropriate prevention, recognition, and treatment strategies. One important strategy is the requirement for a yearly pre-participation screening evaluation, often called a sports physical, performed by the athlete's medical provider.

1. It is very important that you **carefully and accurately complete the personal history and family history section** of the "Pre-Participation Physical Evaluation Form" available at <http://www.mpssaa.org/HealthandSafety/Forms.asp>.
2. Since the majority of these conditions are inherited, **be aware of your family history**, especially if any close family member:
  - a. had sudden unexplained and unexpected death before the age of 50.
  - b. was diagnosed with any of the heart conditions listed above.
  - c. died suddenly /unexpectedly during physical activity, during a seizure, from Sudden Infant Death Syndrome (SIDS) or from drowning.
3. **Take seriously the warning signs and symptoms of SCA**. Athletes should notify their parents, coaches, or school nurses if they experience any of these warning signs or symptoms.
4. Schools in Maryland have AED policies and emergency preparedness plans to address SCA and other emergencies in schools. Be aware of your school's various preventive measures.
5. If a cardiovascular disorder is suspected or diagnosed based on the comprehensive pre-participation screening evaluation, a referral to a child heart specialist or pediatric cardiologist is crucial. Such athletes will be excluded from sports pending further evaluation and clearance by their medical providers.