



You Can Save a Life



NORTHSIDE HOSPITAL CHEROKEE

Sudden death in young athletes is rare. It is often due to undiscovered heart defects or heart abnormalities. However, millions of students compete yearly without an incident. You can learn the warning signs and talk with your physician about the precautions.

What is sudden cardiac death?

Sudden cardiac death or arrest is sudden interruption of heart function and circulation of blood. This is **not** a heart attack. Heart attacks occur when the blood flow to a part of the heart is blocked, when coronary arteries, which supply oxygen-rich blood to the heart, slowly become thicker and harder from a buildup of plaque.

Whereas, sudden cardiac death occurs when the electrical system to the heart malfunctions and the heart beats dangerously fast. This abnormal heart rhythm is known as ventricular fibrillation. The ventricles (the heart's lower chambers) may flutter or quiver and blood is not delivered to the body. In the first few minutes, the greatest concern is that blood flow to the brain will be reduced so drastically that a person will lose consciousness. Death follows unless emergency treatment is begun immediately.

Are there warning signs to watch for?

Parents, coaches, and others should be on the lookout for those signs that a young person is at risk of sudden cardiac death.

Red flags and indications to watch for include:

- **Unexplained fainting or seizure** during physical activity, or from emotional excitement and/or distress or being startled;
- **Dizziness or lightheadedness**, especially during exertion;
- **Shortness of breath or chest pain** during exercise or at rest;
- **Palpitation** – awareness of the heart beating unusually (skipping, irregular or extra beats);
- **Fatigue or tiring** more quickly than peers;
- **Family history of sudden cardiac death** – one of the major warning signs is a family history of unexplained deaths before the age of 40. If this has occurred in your family, talk with your doctor about screening options.

What can cause sudden cardiac death in young people?

Research suggests that the main cause is loss of proper heart rhythm. This is typically caused by one of several cardiovascular abnormalities and electrical disorders that go unnoticed. Some specific causes of sudden cardiac death in young people include:

Hypertrophic cardiomyopathy (HCM) – the abnormal thickening of the heart muscle. This is usually an inherited condition that develops over the years. The thickened muscle can disrupt the heart's electrical system, leading to fast or irregular heartbeats (arrhythmias), which can lead to sudden cardiac death. HCM, although not usually fatal, is the most common cause of heart-related sudden death in people under 30. It is the most common identifiable cause of sudden death in athletes but HCM often goes undetected.

What are the current screening recommendations for young athletes?

Currently, professional medical societies recommend preparticipation complete personal and family history as well as physical examination alone without additional routine testing. High school or college athletes may be examined by their primary care physicians at least once a year. Other screening tools, when deemed appropriate, are two simple tests:

An **electrocardiogram (ECG)** measures electrical activity in the heart. An ECG has the potential to detect heart conditions that account for up to 60% of sudden deaths in young competitive athletes.

An **echocardiogram (echo)**, an ultrasound of the heart that creates pictures of the heart's chambers, valves, walls and blood vessels attached to your heart. It shows the overall structure, the size, thickness and movement of the heart's walls.

Dilated cardiomyopathy – an enlargement of the heart for unknown reasons.
Myocarditis – which is acute inflammation of the heart muscle, usually due to a virus.

Congenital coronary artery abnormalities – this means that sometimes people are born with the heart arteries (coronary arteries) connected in an abnormal way. The arteries can become compressed during exercise and not provide proper blood flow to the heart.

Heart valves abnormalities – valves connecting chambers of the hearts and large vessels can become narrow or lose resulting in disruption of blood flow and/or electrical disturbances in the heart (specially aortic and mitral valves).

Long QT syndrome – this is another inherited heart rhythm disorder that can cause fast, chaotic heartbeats, often leading to fainting.

Diseases of aorta – aorta is the major artery of the body taking blood from the heart to the entire body. Several diseases of the aorta including genetic disorders can result in rupture or dissection (separation of the layers of the aorta). These include marfan syndrome (generally seen in unusually tall athletes), bicuspid aortic valve (valve with only 2 leaflets instead of 3 leaflets).

Commotio cordis – occurs as the result of a blunt blow to the chest at a critical time in the cycle of a heart beat. It causes a lethal disruption of heart rhythm.