What is Sudden Cardiac Arrest?
- The heart suddenly and unexpectedly stops beating due to an irregular heart rhythm
- Occurs suddenly and without warning
- An electrical malfunction (short-circuit) causes the bottom chambers of the heart (ventricles) to beat dangerously fast (ventricular tachycardia or fibrillation) and disrupts the pumping ability of the heart
- The heart cannot pump blood to the brain, lungs and other organs of the body
- The person loses consciousness (passes out) and has no pulse
- Death occurs within minutes if not treated immediately

What causes Sudden Cardiac Arrest?
- Conditions present at birth:
  - Inherited (passed on from parents/relatives) conditions of the heart muscle:
    - Hypertrophic Cardiomyopathy – hypertrophy (thickening) of the left ventricle; the most common cause of sudden cardiac arrest in athletes in the U.S.
    - Arrhythmogenic Right Ventricular Cardiomyopathy – replacement of part of the right ventricle by fat and scar; the most common cause of sudden cardiac arrest in Italy
    - Marfan Syndrome – a disorder of the structure of blood vessels that makes them prone to rupture; often associated with very long arms and unusually flexible joints.
  - Inherited conditions of the electrical system:
    - Long QT Syndrome – abnormality in the ion channels (electrical system) of the heart
    - Catecholaminergic Polymorphic Ventricular Tachycardia and Brugada Syndrome – other types of electrical abnormalities that are rare but run in families
  - Non-inherited (not passed on from the family, but still present at birth) conditions:
    - Coronary Artery Abnormalities – abnormality of the blood vessels that supply blood to the heart muscle. The second most common cause of sudden cardiac arrest in athletes in the U.S.
    - Aortic valve abnormalities – failure of the aortic valve (the valve between the heart and the aorta) to develop properly; usually causes a loud heart murmur
    - Non-compaction Cardiomyopathy – a condition where the heart muscle does not develop normally
    - Wolff-Parkinson-White Syndrome – an extra conducting fiber is present in the heart’s electrical system and can increase the risk of arrhythmias
- Conditions not present at birth but acquired later in life:
  - **Commotio Cordis** – concussion of the heart that can occur from being hit in the chest by a ball, puck, or fist
  - **Myocarditis** – infection/inflammation of the heart, usually caused by a virus
  - **Recreational/Performance-Enhancing drug use**

- **Idiopathic**: Sometimes the underlying cause of Sudden Cardiac Arrest is unknown, even after autopsy

What are the symptoms/warning signs of Sudden Cardiac Arrest?
- Fainting/blackouts (especially during exercise)
- Dizziness
- Unusual fatigue/weakness
- Chest pain
- Shortness of breath
- Nausea/vomiting
- Palpitations (heart is beating unusually fast or skipping beats)
- Family history of sudden cardiac arrest at less than 50 years of age

ANY of these symptoms/warning signs that occur while exercising may necessitate further evaluation from your physician before returning to practice or a game.

What is the treatment for Sudden Cardiac Arrest?
- CALL 911
- Begin CPR
- Use an Automated External Defibrillator (AED)
- Time is critical and immediate response is vital

What are ways to screen for Sudden Cardiac Arrest?
- The American Heart Association recommends a pre-participation history and physical including 12 important cardiac elements
- Additional screening using an electrocardiogram and/or an echocardiogram may be necessary if there are any warning signs of Sudden Cardiac Arrest

Where can one find information on additional screening?
- American Heart Association ([www.heart.org](http://www.heart.org))
- August Heart ([www.augustheart.org](http://www.augustheart.org))
- Championship Hearts Foundation ([www.championshipheartsfoundation.org](http://www.championshipheartsfoundation.org))
- Cypress ECG Project ([www.cypressecgproject.org](http://www.cypressecgproject.org))
- Parent Heart Watch ([www.parentheartwatch.com](http://www.parentheartwatch.com))