

SUDDEN CARDIAC ARREST

Sudden cardiac arrest is the leading cause of sudden death in athletes. One out of three cardiac arrests occur in athletes, and over half of sudden cardiac arrests in active populations result in sudden death. The incidence of sudden cardiac arrest varies by sex, race, sport, and level of competition. Those who are male, Black, and collegiate athletes have higher incidences of sudden cardiac arrest.¹ Prompt recognition and early resuscitation/defibrillation are critical steps to optimize survival.

TRIGGERS

Vigorous activity for those who don't exercise regularly and alcohol misuse.

Severe emotional stress and influenza infection in the past month.

Triggering events are more common in people who have underlying risk factors.³

RISK FACTORS

Young individuals; genetic and structural heart changes (28% of all cases).⁴

Collegiate and professional athletes: cardiac myopathies.⁴



COVID-19

COVID-19 illness can cause significant cardiovascular morbidity and mortality in individuals with and without a history of cardiovascular disease.²

PREVENTION

Pre-participation examinations: [American Heart Association 14-point health history](#) should be done annually.

Electrocardiogram (ECG): No current recommendations to include ECG during initial screening but should be done as a follow-up if any positive signs in the health history screening.¹

Gradual Return to Play after COVID infection.^{4,5}

RESOURCES

Infographics

COVID Return to Play [Infographic and Other Guidance](#)

American Heart Association: [Cardiac Arrest vs Heart Attack](#)

Sudden Cardiac Arrest Foundation: [Infographic](#)

NATA: [Sudden Cardiac Arrest](#)

Position Statements

[Preparticipation Physical Examinations and Disqualifying Conditions](#)

[Preventing Sudden Death in Sports](#)

Other Resources

National Center for Catastrophic Sport Injury Research [Annual Reports](#)

Medical Timeout Downloadable [Template](#)

HEALTH CARE ACCESSIBILITY AND INEQUITIES

Black Americans are more likely to experience sudden cardiac arrest/death.¹ Socioeconomic status and access to/quality of healthcare strongly influences the racial disparities seen in sudden cardiac death.⁶

AED Grant Programs exist and can help cover or offset the costs and improve access to life-saving equipment. Helpful information about AED Grants can be found [here](#).

AED Grant Programs: [Firehouse](#), [Firefighters Charitable Foundation](#), [Target](#)

highlights FREE COMMUNICATIONS PROGRAM

Reduced Ejection Fraction in a Collegiate Basketball Player Following COVID-19. ([Clark et al. 2022](#)). [S-136](#).

from RECENT ARTICLES

Incidence of and Survival from Sudden Cardiac Arrest

Of 132 sudden cardiac arrest cases identified in the 2-year study period, overall survival was 48%, with survival being higher in white non-Hispanic/Latino compared to all other athletes. Percentage of cases resulting in survival with an on-site athletic trainer involved in resuscitation was 83%. 89% of athletes survived when an on-site automated external defibrillator was used during resuscitation. [Drezner et al. 2019, Sports Health, Survival After Exercise-Related Sudden Cardiac Arrest in Young Athletes: Can We Do Better?](#)

Over half of the sudden cardiac arrest cases reviewed during the study period resulted in fatalities, highlighting the need for improved prevention efforts. Regarding causes of sudden cardiac arrest incidents, cardiomyopathies accounted for almost half of cases in collegiate and professional athletes, whereas coronary artery anomalies were more common in middle school athletes. Of all sudden cardiac arrest/death cases included (n=331), hypertrophic cardiomyopathy was the leading cause (n=43, 20.6%). [Peterson et al. 2021, British Journal of Sports Medicine, Aetiology and Incidence of Sudden Cardiac Arrest and Death in Young Competitive Athletes in the USA: a 4-Year Prospective Study](#).

COVID-19 Involvement

Of 3,675 collegiate athletes, 21 (0.6%) were diagnosed with definite or probable SARS-CoV-2 myocardial or myopericardial involvement. The prevalence of cardiac events after SARS-CoV-2 infection is low for athletes with a normal workup and for athletes who were temporarily restricted from exercise due to cardiac imaging abnormalities. The authors recommend cardiac magnetic resonance imaging for athletes with symptoms consistent with myocarditis and one or more abnormal cardiovascular tests. [Petek et al. 2022, Circulation, Cardiovascular Outcomes in Collegiate Athletes After SARS-CoV-2 Infection: 1-Year Follow-Up From the Outcomes Registry for Cardiac Conditions in Athletes](#).



Importance of Emergency Action Plans, Prompt CPR and AED application

Immediate compressions and early defibrillation are key to survival for individuals experiencing sudden cardiac arrest. Initiating CPR within 3 minutes (7 of 29 cases) or within 3-5 minutes of collapse (1 of 29 cases) and early defibrillation within 3 minutes of collapse were associated with 100% survival. [Panhuizen-Goedkoop et al. 2021, Sports Medicine - Open, Immediate Bystander Cardiopulmonary Resuscitation to Sudden Cardiac Arrest During Sports is Associated with Improved Survival - a Video Analysis](#).

AEDs should be strategically placed so collapse to first shock can be achieved in under 3 minutes. This paper also highlights key components of an emergency action plan for sudden cardiac arrest, including AED access and maintenance, personnel training, and medical timeouts. [Pelto & Drezner 2020, Journal of Cardiovascular Translational Research, Design and Implementation of an Emergency Action Plan for Sudden Cardiac Arrest in Sport](#).

References

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