



Sudden Cardiac Arrest in Football

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ABSTRACT

Background: Sudden Cardiac Arrest (SCA) is defined as the abrupt loss of heart function as an occurrence without physical contact (absent *commotio cordis*). SCA's morbidity ratio is 1:50,000 of all deaths. The published estimates on SCA suggest that 11% of all victims have a normal heart. Current screening investigations include electrocardiography (ECG), echography, 24-hour ECG monitoring, eliciting stress history, and cardiac Magnetic Resonance Imaging. Some cardiac pathologies screened have never been detected. Athletes who experienced SCA had a survival rate of 50-60% over 30-days, and this rate might reach up to 80-89% in some cohort studies. The survival factors are based on regular and thorough screening checks, and better observation that enables quicker pickups. Players vary in cardiopulmonary resuscitation (CPR) performance and are emotionally involved, as was reported recently with footballer Christian Eriksen in the 2021 European Championship¹. However, anyone trained in CPR, not just medical professionals, can assist in resuscitation (Figure 1). Evidence-based studies show that Basic Cardiac Life Support (BCLS) is more effective on the sports field than Advanced Cardiac Life Support². The objective of this literature review is to make recommendations to effectively respond to SCA during football tournaments.

Methods: PubMed database was used to retrieve articles published in English between 2018 and 2021 related to SCA during football games.

Results: There are limited publications in this specific domain. Reports from 67 countries account for 617 players (mean age 34 ± 16 years, 96% men) suffering from SCA or traumatic sudden death during football activities between 2014 - 2018, of whom 142 players (23%) survived¹. CPR resulted in a survival rate of 85% with the use of an automated external defibrillator (AED) compared to 35% without.

Conclusion: Key recommendations from this literature review are listed in Table 1. These are important steps needed to improve survival chance from SCA³. Qatar, hosting the Football World Cup 2022, can put in place additional measures to promote effective SCA resuscitation and ensure the safety of all players.

Keywords: Sudden cardiac arrest, football, world cup, Basic Life Support, BLS

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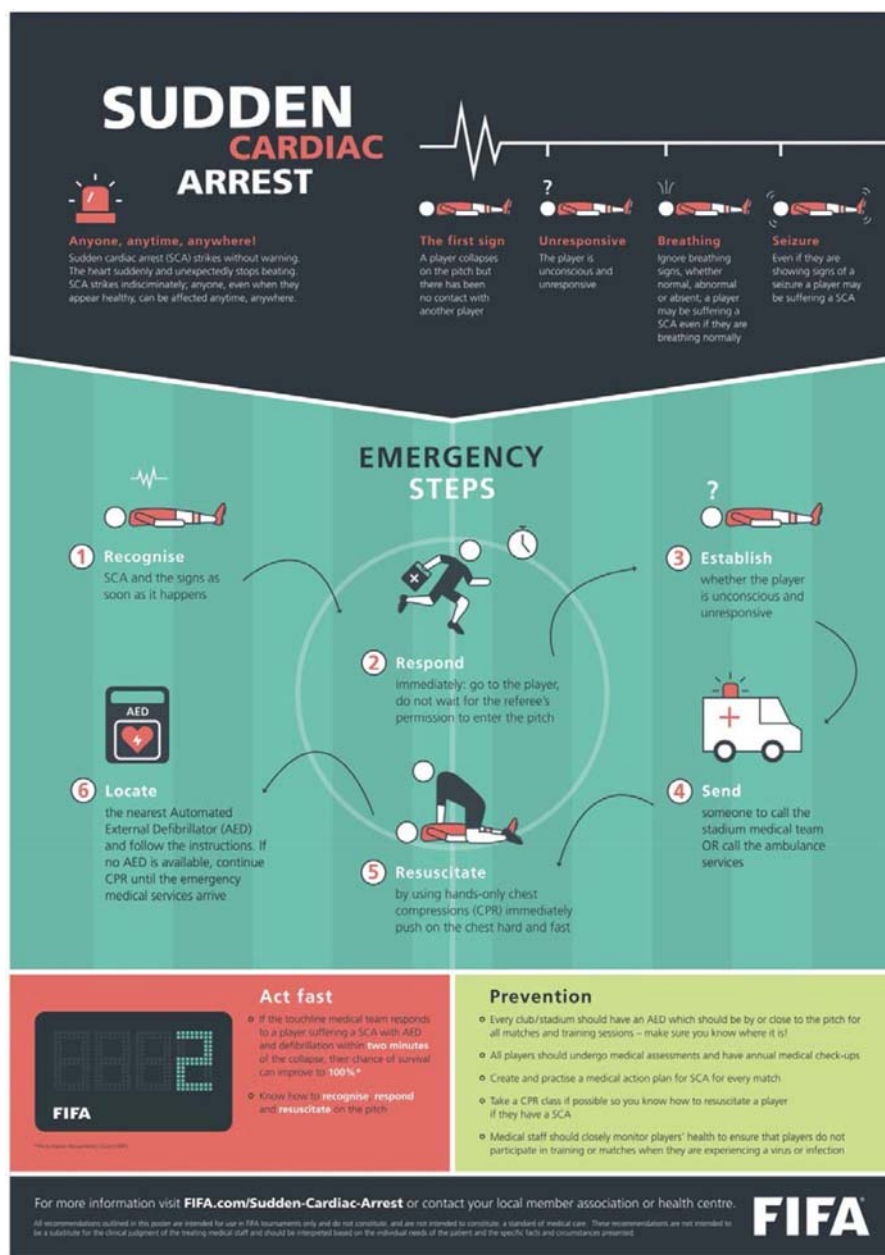


Figure 1. Sudden Cardiac Arrest – FIFA Algorithm
(<https://digitalhub.fifa.com/m/7e4d6dcf1339ed55/original/lkwi4rqouhosv7mxicyv.pdf>)

Table 1. Key recommendations concerning Sudden Cardiac Arrest in football.

<ul style="list-style-type: none"> - CPR training for players, coaches, and other staff members. - Widespread and immediate access to AEDs at training and competition venues, including all four corners of football pitches. - Medical personnel permitted onto the pitch during matches in play without a referee's consent when witnessing an SCA. - Dedicated personnel present for the careful observation of all players during matches, not only where the ball is being played.
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REFERENCES

- [1] Peterson DF, Siebert DM, Kucera KL, Thomas LC, Maleszewski JJ, Lopez-Anderson M, et al. Etiology of Sudden Cardiac Arrest and Death in US Competitive Athletes. *Clin J Sport Med [Internet]*. 2018 Apr 9; Publish Ah. Available from: <https://journals.lww.com/00042752-900000000-99312>
- [2] Egger F, Scharhag J, Kästner A, Dvořák J, Bohm P, Meyer T. FIFA Sudden Death Registry (FIFA-SDR): a prospective, observational study of sudden death in worldwide football from 2014 to 2018. *Br J Sports Med [Internet]*. 2020 Dec 23;bjsports-2020-102368. Available from: <https://bjsm.bmj.com/lookup/doi/10.1136/bjsports-2020-102368>
- [3] Vancini, Nikolaidis, Lira, Vancini-Campanharo, Viana, dos Santos Andrade, et al. Prevention of Sudden Death Related to Sport: The Science of Basic Life Support—from Theory to Practice. *J Clin Med [Internet]*. 2019 Apr 24;8(4):556. Available from: <https://www.mdpi.com/2077-0383/8/4/556>