



NOCSAE®

National Operating Committee on Standards for Athletic Equipment

NOCSAE is an independent nonprofit standards development body with the sole mission to enhance athletic safety through scientific research and the creation of performance standards for athletic equipment.

Performance Standard to Protect Against Commotio Cordis

October 2021

NOCSAE Performance Standard to Protect Against Commotio Cordis

NOCSAE funded groundbreaking research to develop the world's first performance standard to protect against commotio cordis, one of the leading causes of sudden cardiac death in young athletes. The performance standard applies to [baseball](#) and [lacrosse](#) and compliance with the standard is expected to significantly reduce the risk of injury and death. A current list of products that meet these standards is available through the [Safety Equipment Institute](#).

About Commotio Cordis

Commotio cordis is a heart rhythm disruption caused by a blow to the chest. Although infrequent, it is one of the leading causes of sudden cardiac death in athletes. The condition is an episode of ventricular fibrillation induced by a direct blow to the chest over the heart during a specific portion of the heart's electrical cycle. It can be caused by a direct hit from an object such as a baseball or lacrosse ball, a lacrosse stick or even a collision with another player. The impact doesn't have to be hard or high velocity.

It's estimated that approximately 15 to 25 athletes die every year from this event. Most of these deaths are youth under the age of 18, many of whom were wearing a non-certified form of chest protection that wasn't designed to address this risk. Commotio cordis deaths have been recorded in baseball, lacrosse, football, soccer, martial arts and other recreational activities.

Requirements by Sports Governing Bodies for Lacrosse and Baseball

USA Lacrosse was the first governing body to take action to mandate this standard. Today, USA Lacrosse, the National Federation of State High School Associations ([NFHS](#)) and [NCAA](#) require all goalies in girls' and boys' lacrosse to wear protectors that meet the standard. USA Lacrosse, NFHS and NCAA will extend this requirement to all field players in boys' lacrosse in 2022.

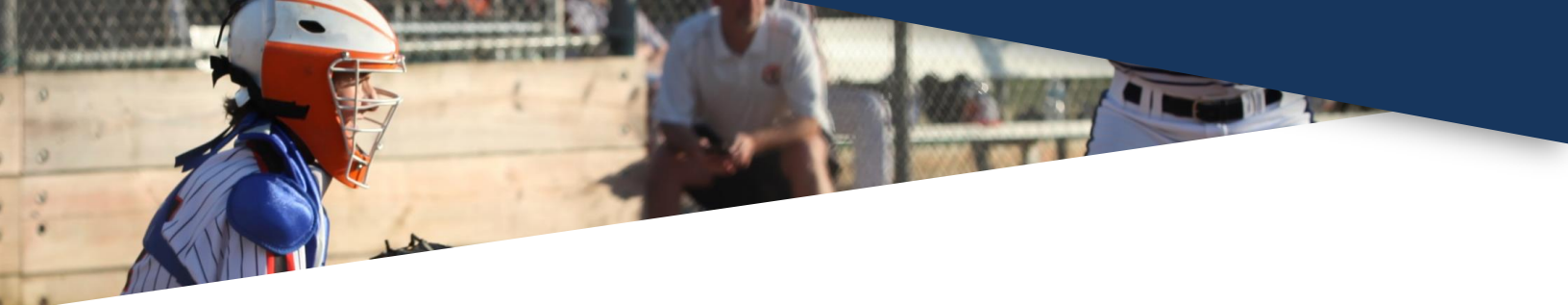
For baseball, NFHS and NCAA require all catchers to wear protectors that meet the standard.



Visit [Safety Equipment Institute](#) for a current list of products that meet these standards.



Visit [USA Lacrosse](#) for more information about requirements for this standard.



**NOCSAE
FUNDED OVER
\$2M
IN RESEARCH**

NOCSAE's Role

In conjunction with research efforts by the [Louis J. Acompora Memorial Foundation](#), NOCSAE funded more than \$2 million in research to discover the precise cause of commotio cordis and then determine how to protect against it. Through a series of NOCSAE funded studies, Dr. Mark Link, M.D, was able to pinpoint the exact cause of commotio cordis, including the critical moment of occurrence in the cardiac cycle. With funding from NOCSAE, research engineers Cynthia Bir, Ph.D., and Nathan Dau, Ph.D., at Wayne State University were able to develop a mechanical chest surrogate that mimics the response of the human chest and heart to testing impacts.

With the identification of an injury prevention threshold by Dr. Link and laboratory validation of the mechanical chest surrogate, NOCSAE was able to develop the world's first performance standard to protect against commotio cordis.

Products that meet the NOCSAE ND200 performance standard

The NOCSAE performance standard to protect against commotio cordis applies to both [baseball](#) and [lacrosse](#).

Certified products can include a traditional style chest protector but may also include smaller products such as compression shirts and coverings more suited for positions that traditionally do not wear a chest protector.

For a complete list of current products that meet the standard, visit [Safety Equipment Institute](#), which is the only entity that certifies equipment to NOCSAE standards.

Importance of AED's

Even the best protective equipment cannot prevent all such injuries, so it is important for coaches, parents, players and bystanders to be able to recognize the danger if an athlete is struck in the chest and collapses. Without immediate efforts to resuscitate the victim with an automated external defibrillator (AED), death can occur within just a few minutes. Commotio cordis can be fatal, and it is not related to an existing heart condition.

Younger athletes, typically under the age of 18, are more vulnerable to commotio cordis. Coaches, parents and athletes who have access to an AED and training in CPR will help prevent tragic outcomes from commotio cordis. When an AED is used within three minutes of a collapse, survival rates are as high as 89%.

RESOURCES FOR COMMOTIO CORDIS



[Louis J. Acompora
Memorial Foundation](#)



[USA Lacrosse](#)



[American Heart Association
Dr. Mark S. Link:
Commotio Cordis](#)



[American Heart
Association/American College of
Cardiology Scientific Statement](#)



[Kory Stringer
Institute](#)