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# NOCSAE®

National Operating Committee on Standards for Athletic Equipment

Commissioning research and establishing standards for athletic equipment, where feasible, and encouraging dissemination of research findings on athletic equipment and sports injuries



## What Players, Parents and Coaches Need to Know About Football Helmets

### No Football Helmet Completely Prevents Concussions

That is the most important, fundamental fact every athlete and parent of an athlete needs to know. A seal on the back of a football helmet that reads, “Meets NOCSAE Standard” means the helmet has passed the most rigorous science-based performance standards in the world. It also means the performance and compliance with the NOCSAE standards has been independently certified by Safety Equipment Institute (SEI), which is an ANSI/ISO internationally accredited certifying body.



NOCSAE, the National Operating Committee on Standards for Athletic Equipment, is an independent and nonprofit standards development body with the primary mission to enhance athletic safety through the creation of performance standards for athletic equipment based on consensus scientific research.

NOCSAE cautions parents, coaches and athletes against relying on any individual data point, rating or measurement when making decisions about helmets. Doing so could lead to inaccurate conclusions or even a false sense of security that one helmet brand or model guarantees a measurably higher level of concussion protection than another for a particular athlete, and to ignore other more effective steps to reduce the risk of concussion.

### Football Helmet Performance Standards

NOCSAE has established the most rigorous standards for football helmets in the world. Created in 1973, NOCSAE regularly reviews and updates its football helmet performance and testing standards – applying the latest research to better protect the athlete. All NOCSAE standards, including the football helmet standard, are subject to review and revision at any time.

- NOCSAE football helmet performance standards are based on athlete size, not age or category of play. The smallest players will wear helmets that are tested on the NOCSAE small headform which represents a 10-year-old male in the 50<sup>th</sup> percentile of head mass and shape. As helmet sizes get larger, headforms with more mass are used in the testing protocol. The largest headform used to test the largest helmets represents the 95<sup>th</sup> percentile adult male for head mass and shape.
- NOCSAE's standards require testing football helmet performance across many levels of impact. Helmets either pass or fail the standard based on an impact energy evaluation called the Severity Index (SI) which is a measure of g's (head accelerations) and the duration in milliseconds of the head acceleration.
- To be certified as meeting the NOCSAE standard, helmets must score less than 1200 SI on 29 impacts at seven different impact locations, including three random impact locations, four lower-level impacts, and four impacts at high temperatures. The SI threshold is based on years of scientific research. Once the threshold is met, there is no data to support that lower SI scores reduce injury risk, especially the risk for a concussion.
- Because the NOCSAE standards also mandate evidence of compliance to a very high level of statistical proof, helmets will typically test far below 1200 SI in order to meet the standard.
- Although not concussion specific, the current NOCSAE standard in effect directly addresses linear forces that are involved in many concussive events, and a helmet that passes the NOCSAE standard provides a level of protection against concussions.
- In January 2017, the NOCSAE Standards Committee finalized revisions to its existing football helmet standard that limits maximum rotational forces involved in many concussions. The new football helmet performance standard incorporates rotational accelerations in the pass/fail specifications. Rotational accelerations are thought by the majority of neuroscientists to be more injurious to the brain than linear accelerations. This standard incorporates the pneumatic ram test standard revised in 2014 and again in February 2018, which includes provisions for adjusted pneumatic ram impact velocities for youth helmets that manufacturers may use if they choose to obtain certification for youth helmets. Manufacturers will be required to meet the new football helmet performance standard beginning in 2019.

**The Centers for Disease Control (CDC) makes excellent information available to parents, coaches and leagues on concussion:**

- Recognition
- Response
- Prevention
- Additional resources

**Materials can be requested or downloaded, free of charge.**

<http://cdcfoundation.org/HeadsUp>

## Protecting Against Concussions

Even though helmets have to meet demanding testing and performance standards, concussions will still occur in any helmet. More scientific data is necessary to learn how helmets can better protect athletes against concussions without increasing the risk for other injuries. Since 1995, NOCSAE has devoted more than \$8 million toward concussion-specific research by the foremost experts in sports medicine and science to find the answer to that question.

While football helmets play an incredibly important role in protecting athletes in the field of play, they are only part of the protection against concussion. Learning to avoid unnecessary head impacts, reducing the opportunity for head impacts through proper practice structure, tackling techniques and field awareness will provide the most direct and effective protection against concussions. In addition, players must accept the responsibility to report concussion symptoms; give honest responses to coaches, training staff, parents and others when asked about concussion symptoms; and where a concussion is diagnosed, strictly follow medically supervised return-to-play programs.

### Quick Facts

#### Know Your Helmet

- No helmet can prevent all head injuries. Helmets do not protect against neck injuries.
- Read and understand the warning labels on your helmet. If you were not provided with hang tags and literature with a new football helmet certified to the NOCSAE standard, contact the manufacturer.
- The certification statement on the back of each football helmet that states, "Meets NOCSAE Standard," and the presence of the NOCSAE football helmet logo mean that helmet model has passed a very tough and comprehensive impact testing protocol using state-of-the-art equipment and methodology. Even with that certification and compliance, no football helmet standard, including the NOCSAE standard, can address all the factors that combine to cause a concussion.
- Advertising or other media claims that a particular helmet or helmet add-on product is anti-concussion or will prevent concussions are not scientifically supported statements and can be misleading and dangerous.

#### Maintain Your Helmet

- A helmet older than two years should be reconditioned and recertified to the NOCSAE standard. Helmets that have been recertified will have a recertification statement and label inside the helmet indicating the name of the recertifying company and the date of recertification. There may also be a label on the outside of the helmet indicating the year of recertification along with the NOCSAE football helmet logo. If you have doubts, ask your coach or school administrator about their policy for reconditioning and recertifying football helmets.

- Inspect your helmet regularly for damage. Don't use any helmet that is cracked or has missing padding/fitting pieces.
- Be aware that add-on accessories can modify mass, change the center of gravity, and potentially interfere with the performance of the shell in dispersing impact energies. If the add-on product has not been tested with a specific helmet model, a manufacturer and SEI have the right, under the NOCSAE standards, to declare the certification void if its product is altered in any way.

## Prioritize Safe Play

- Football helmets certified to the NOCSAE standard will provide the highest level of head protection available, but head/helmet contact with another player or with the ground may result in a concussion or brain injury which no helmet can prevent. For concussion protection to be truly effective, actions must be taken on and off the field by athletes, parents and coaches.
- According to the [CDC Foundation's Heads Up to Parents](#) program, making sure equipment fits properly, ensuring young athletes are taught proper blocking and tackling techniques, and demanding enforcement of rules that prohibit players from leading with their helmets to hit other players are important ways to reduce concussion risk. Visit [www.cdcfoundation.org/HeadsUp](http://www.cdcfoundation.org/HeadsUp) for more information.
- Do not use the helmet to hit or strike an opponent. Such actions violate rules of play and substantially increase the chance of incurring a concussion, other serious head injury or a neck injury. These injuries could result in permanent paralysis and even death.
- Become familiar with the signs and symptoms of concussions – which can include headache, nausea, confusion, dizziness and memory difficulties – and encourage all athletes to report symptoms. If a concussion has been diagnosed, do not return to play until cleared by medically trained experts following published return-to-play guidelines. Remember – if in doubt, sit it out.