

Background

The American Academy of Neurology (AAN)—an association of more than 36,000 neurologists and neuroscience professionals dedicated to providing the best possible care for patients with neurologic disorders—advocates for policy measures that promote high quality, safe care of individuals participating in sport and other physical activities. Neurologists specialize in treating disorders of the brain and nervous system. Some neurologists have particular interest and experience caring for athlete brain health. Although neurologists broadly recognize the health benefits of participation in sports, we are also uniquely qualified to manage athletes with a variety of neurologic injuries and disorders, including sports-related concussion.

Description of Issue

Concussion is a form of mild traumatic brain injury (TBI) resulting from a direct or indirect impact to the head or body, and is a common consequence of sport participation. An estimated 1.6 to 3.8 million sports-related concussions occur in the United States each year.¹ While concussions themselves are usually self-limited injuries, they may be associated with catastrophic injuries such as spinal cord injury and skull fracture. Additionally, long-term effects of repetitive head impact exposures without associated clinical manifestations of concussion are unknown. A history of prior concussion is associated with an increased risk for recurrent concussions.²

The effect of concussion on developing brains is of particular concern. Children with concussion, particularly multiple concussions, are at risk for developing chronic or recurring headaches and suffering from impaired memory, cognitive dysfunction, attention deficit disorders, and other behavioral changes.² Symptoms of neurologic and neuro-behavioral disorders such as depression, post-traumatic stress disorder, anxiety, sleep disorder, vestibular dysfunction, cervicgia and oculomotor dysfunction may also be experienced up to six months following a concussion. Unfortunately, an estimated 283,000 children visit emergency departments each year to seek care for sports- and recreation-related TBIs, including concussions.³ Among high school students, 15.1 percent report having at least one concussion related to sports or physical activity.⁴

All fifty states and the District of Columbia have enacted legislation aimed at protecting our nation's youth from potential serious negative outcomes related to sport-related concussion. Most legislation requires education about concussion, removal from play for at least 24 hours in the event of a suspected concussion, and return to play only after evaluation by a qualified healthcare provider and a described return-to-play protocol.

The AAN strongly encourages state and local policymakers to update relevant policies and regulations to ensure youth with sports-related concussions receive appropriate care.

Concussion Policy for Youth and High School Sports

Concussion policies across levels of government and organizations should aim for:

- **Pre-participation Concussion Education to Student-athletes**

The AAN supports strong educational resources such as the Centers for Disease Control and Prevention's *Heads Up: Concussion in Youth Sports* online training course for coaches and parents.⁵ Processes to confirm that both parent or legal guardian and athlete have received and understand the educational information, and consent to participate should be considered.

- **Removal from Play**

The AAN supports removal from participation for any athlete who is exhibiting symptoms or signs of a concussion until they are evaluated by a qualified healthcare provider properly trained in the assessment and management of concussion, such as a neurologist and as defined by state law. This includes sports recognized by high school athletic associations as well as youth and recreational leagues, and other organizations that oversee organized sport.

- **Return to Play**

If a student-athlete is subsequently diagnosed with concussion, they should not return to participation in athletic competition until the signs and symptoms of concussion have resolved, are off of all medications (i.e. related to headache) and have been cleared by a qualified healthcare professional trained in the management of concussion, such as a neurologist. Such a health professional should be adequately trained and recognize other more severe complications that may accompany a concussion, for example spinal injuries, cerebral swelling, and various types of hemorrhages. It is also best practice for the student-athlete to engage in a clinician managed return to play process that includes a graduated exertional protocol to gauge tolerance to increasing amount and complexity of exertion.⁶ Special circumstances, including persistent postconcussive symptoms, warrant a provider specialized in neurologic care.⁷

- **Return to Learn**

Educators should be made aware of any injuries and should strive to provide academic accommodations and support to student athletes recovering from a concussion. Student athletes should be capable of resuming full academic participation before returning to competition.

Further Recommendations

- K-12 schools should consider having caregivers and athletes sign a concussion and head injury information sheet each year before an athlete can practice and compete in their sport.
- Lawmakers and state health departments should continue implementing high-quality sports concussion registries. Registries help health care providers and researchers learn more about the impact of concussions, including how it affects student athlete performance in the classroom. Due to the lack of data standardization across registries, all data collection should be guided by rigorous epidemiological standards to ensure that the information collected is of the highest quality.
- High schools and athletic associations should utilize standardized tools such as the most current version of the Sport Concussion Assessment Tool (SCAT) to aid qualified healthcare providers to screen for the presence of concussion. Athletes diagnosed with concussion should be evaluated and treated by a healthcare provider trained to employ a comprehensive concussion management plan.
- Licensed health care professionals who serve as uncompensated event volunteers should not be held liable for civil damages resulting from an act or omission in the evaluation of persons with possible concussion, except for acts that are out of their scope of practice and constitute gross negligence or willful misconduct. Clinicians providing such volunteer event coverage should be familiar with the details and limitations of their state's Good Samaritan law.
- Ongoing support for longitudinal studies should be prioritized to better understand long-term effects of sports concussion.

Conclusion

The sports community should continue to implement evidence-based and consensus-based policies to ensure youth with sports-related concussions receive appropriate care and reduce an individual's risk for catastrophic outcomes. Neurologists have an important role as a sideline healthcare provider, as they are uniquely trained to identify and manage neurologic injuries, including concussions. Providing appropriate care by a qualified healthcare provider allows for other injuries to be more readily identified, reduces recovery time, and results in overall cost savings.

Position Statement History

Originally drafted in 2010, updated in 2013, updated in 2020 by Sara Austin, MD, FAAN; Javier Cárdenas, MD; Dominic Fee, MD; Jeffrey Kutcher, MD, FAAN; Nicole Reams, MD.

References

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