



HEADS+UP

CONCUSSION IN HIGH SCHOOL SPORTS

GUIDE FOR COACHES



DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION



⇒ The Facts 1

⇒ Signs and Symptoms 4

⇒ Prevention and Preparation 5

⇒ When a Concussion Occurs 11

⇒ Communicating Effectively
about Concussions 12



The Facts

- A concussion is a **brain injury**.
- All concussions are **serious**.
- Concussions can occur **without** loss of consciousness.
- Concussions can occur **in any sport**.
- Recognition and proper management of concussions when they **first occur** can help prevent further injury or even death.



Concussions are sometimes called mild traumatic brain injuries (MTBI). They are caused by a bump, blow, or jolt to the head. Concussions can occur in any sport, including these:^{1, 2}

Baseball	Gymnastics	Softball
Basketball	Ice Hockey	Volleyball
Field Hockey	Lacrosse	Wrestling
Football	Soccer	

2

The potential for concussions is greatest in athletic environments where collisions are common.³ Environmental factors also can cause injury. For example, a player may collide with an unpadded goalpost or trip on an uneven playing surface.





Sometimes people do not recognize that a bump, blow, or jolt to the head can cause a concussion. As a result, athletes may receive no medical care at the time of the injury, but they may later report symptoms such as headache and dizziness. These symptoms can be a sign of a concussion.⁴

- An estimated 300,000 sports- and recreation-related head injuries of mild to moderate severity occur in the United States each year.⁵ Most can be classified as concussions.
- Collegiate and high school football players who have had at least one concussion are at an increased risk for another concussion.^{6, 7}
- A repeat concussion that occurs before the brain recovers from the first—usually within a short period of time (hours, days, or weeks)—reportedly can result in brain swelling, permanent brain damage, and even death. This condition is called second impact syndrome.^{8, 9}

Signs and Symptoms



One or more of these signs and symptoms may indicate that a concussion has occurred.¹⁰ Remember that concussions can also occur with no obvious signs or symptoms. Any of the symptoms listed in this table should be taken seriously. Athletes who experience these signs or symptoms after a bump, blow, or jolt to the head should be kept from play until cleared by a health care professional.

4

SIGNS OBSERVED BY COACHING STAFF
Appears dazed or stunned
Is confused about assignment
Forgets plays
Is unsure of game, score, or opponent
Moves clumsily
Answers questions slowly
Loses consciousness
Shows behavior or personality changes
Can't recall events prior to hit
Can't recall events after hit

SYMPTOMS REPORTED BY ATHLETE
Headache
Nausea
Balance problems or dizziness
Double or fuzzy vision
Sensitivity to light or noise
Feeling sluggish
Feeling foggy or groggy
Concentration or memory problems
Confusion

Adapted from Lovell et al. 2004.



Prevention and Preparation

As a coach, you can play a key role in preventing concussions and managing them properly when they occur. Here are some steps you can take to ensure the best outcome for your athletes, the team, and the school:

Educate the school community about concussion. Tell athletes, their parents, and other school officials about the dangers and potential long-term consequences of concussion. Make sure athletes, their parents, and school officials:

- Can recognize signs and symptoms of concussion.
- Withhold athletes from play until a health care professional has evaluated and cleared their return.
- Know to take all signs and symptoms of concussion seriously.

- Inform coaching staff if an athlete receives a blow to the head, experiences symptoms of concussion, or behaves out of the ordinary.

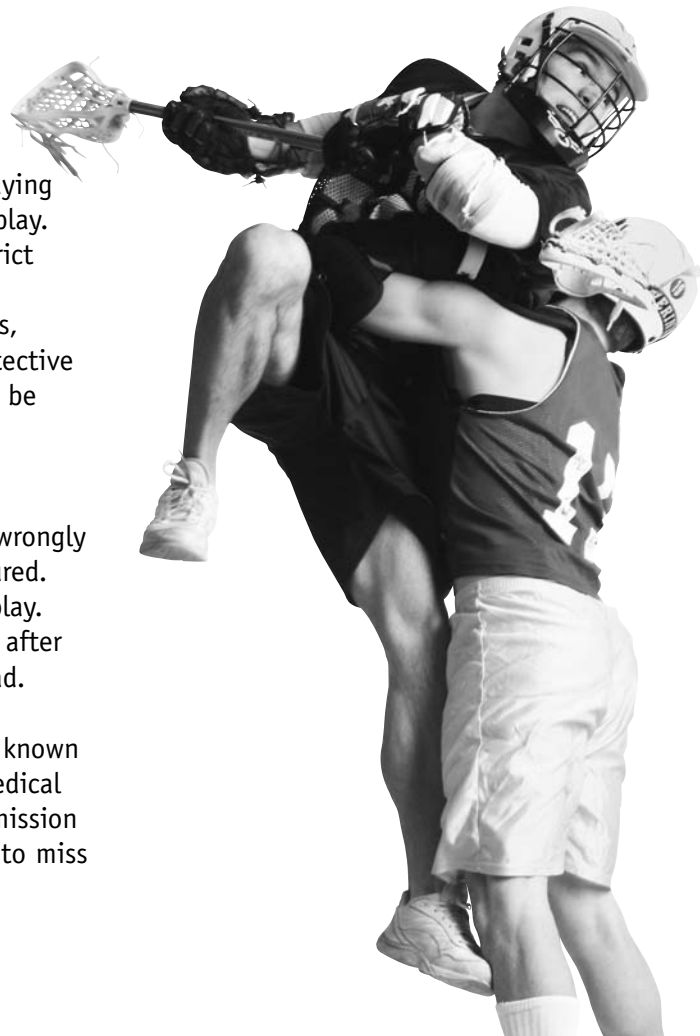
Coordinate with other school officials. Involve other school officials—such as principals, certified athletic trainers, other coaches, school nurses, and parent-teacher associations—to ensure that school rules and policies support concussion prevention and management strategies.

Insist that safety comes first. Teach athletes safe playing techniques and encourage them to follow the rules of play. Discourage all unsportsmanlike conduct and support strict officiating of games. Make sure athletes wear the right protective equipment for their activity (such as helmets, padding, shin guards, and eye and mouth guards). Protective equipment should fit properly, be well maintained, and be worn consistently and correctly.

Teach athletes that it's not smart to play injured.

Sometimes players, parents, and other school officials wrongly believe that it shows strength and courage to play injured. Discourage others from pressuring injured athletes to play. Don't let athletes persuade you that they're "just fine" after they have sustained any bump, blow, or jolt to the head.

Prevent second impact syndrome. Keep athletes with known or suspected concussion from play until appropriate medical personnel have evaluated them and have provided permission for returning to play. Remind your athletes: It's better to miss one game than the whole season.



Prepare for concussions year-round.

There are actions you can take throughout the school year that may help prevent concussions. For example:

Preseason

- Ensure that players are medically evaluated and are in good condition to participate.
 - Establish an action plan for handling concussions that occur. Be sure that other appropriate school officials know about your action plan and have been trained in its use. (See “*Create an Action Plan*,” page 10.)
- Explain your concerns and expectations about concussion and safe play to athletes and school officials.
 - Ask if players have had one or more concussions during the previous season.
 - Remind athletes to tell coaching staff if they suspect that a teammate has a concussion.
 - Determine whether your school would consider conducting preseason baseline testing of brain function (neuropsychological assessment) in athletes.

During season/practice/games

- Monitor sports equipment for safety, fit, and maintenance.
- Enlist other teachers to monitor any decrease in grades that could indicate a concussion.
- Be sure appropriate staff are available for injury assessment and referrals for further medical care.
- Continue emphasizing with players, staff, and parents your concerns and expectations about concussion and safe play.
- Report concussions that occurred during the school year to appropriate school staff. This will help in monitoring injured athletes as they move to the next season's sports.





Postseason

- Work with appropriate staff to review injuries and illnesses that occurred during the season.
- Discuss any need for improvements in your action plan with appropriate health care professionals and school staff.
- Discuss with other staff any needs for better sideline preparations.

CREATE AN

ACTION PLAN

To ensure that concussions are managed correctly, have an action plan in place before the season starts.

- * Identify a health care professional to manage injuries during practice and competition.
- * Fill out the pocket card enclosed in this kit and keep it with you on the field of play so that information about signs, symptoms, and emergency contacts is readily available.
- * Be sure that other appropriate athletic and school staff and health care professionals know about the plan and have been trained in its use.

When a Concussion Occurs



If you suspect that a player has a concussion, implement your action plan by taking the following steps:

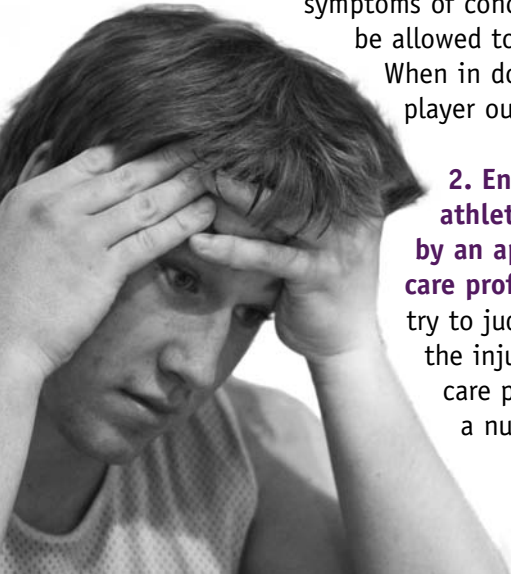
1. Remove the athlete from play. Learn how to recognize the signs and symptoms of concussion in your players. Athletes who experience signs or symptoms of concussion should not be allowed to return to play. When in doubt, keep the player out of play.

2. Ensure that the athlete is evaluated by an appropriate health care professional. Do not try to judge the severity of the injury yourself. Health care professionals have a number of different

methods that they can use to assess the severity of concussion.

3. Inform the athlete's parents or guardians about the known or possible concussion and give them the fact sheet on concussion. Make sure they know that the athlete should be seen by a health care professional.

4. Allow the athlete to return to play only with permission from an appropriate health care professional. Prevent second impact syndrome by delaying the athlete's return to the activity until the player receives appropriate medical evaluation and approval for return to play.



Communicating Effectively about Concussions

It's important to raise awareness about sports-related concussion throughout the school community. To educate athletes, parents, principals, and other school staff about concussion prevention, look for opportunities to make presentations to each group.

Athletes. Show them the video and pass out the concussion fact sheet. Emphasize that you take this issue seriously and that you expect them to do so as well. Consider devoting a regular team meeting to this topic and inviting a health care professional to speak to your team. Use some of the following talking points to guide your discussion with athletes:

- “Every bump, blow, or jolt to the head is a potential concussion.”
- “Signs and symptoms of concussion can appear right away or days or weeks after the injury. Know and look for any signs of a concussion, even if you think the injury was minor.”
- “Tell coaching staff, your parents, or a health care professional if you receive a bump, blow, or jolt to the head or have signs and symptoms of concussion.”
- “Tell your coach if you received a concussion in another sport.”
- “You can get a concussion during drills, practices, and games. Injuries that happen during practice can be just as serious as those that happen during competition.”
- “Do not play through symptoms of concussion. Your risk of having a second concussion and serious injury increases at this time.”
- “It's better to miss one game than the whole season.”



Parents. Send the concussion fact sheet to each athlete’s family during the preseason, and again if a concussion occurs. You might also hold parent forums to let them know about your school’s plans for concussion prevention and management. Consider using some of the following talking points to guide your discussion with parents:

- “We know you care about your teen’s health. That is why it is so important that you talk to them about the potential dangers of concussion.”
- “Every concussion should be taken seriously.”
- “Know and watch for any signs and symptoms of concussion if your teen has any blow to the head. Signs and symptoms can appear right away, or days or weeks after the injury happens.”
- “Discourage your teen from playing when experiencing any signs or symptoms of concussion.”
- “Alert your teen’s coach to any known or suspected concussion. This can help prevent second impact syndrome, which reportedly can happen when an athlete has more than one concussion over a short period of time (hours, days, or weeks).”



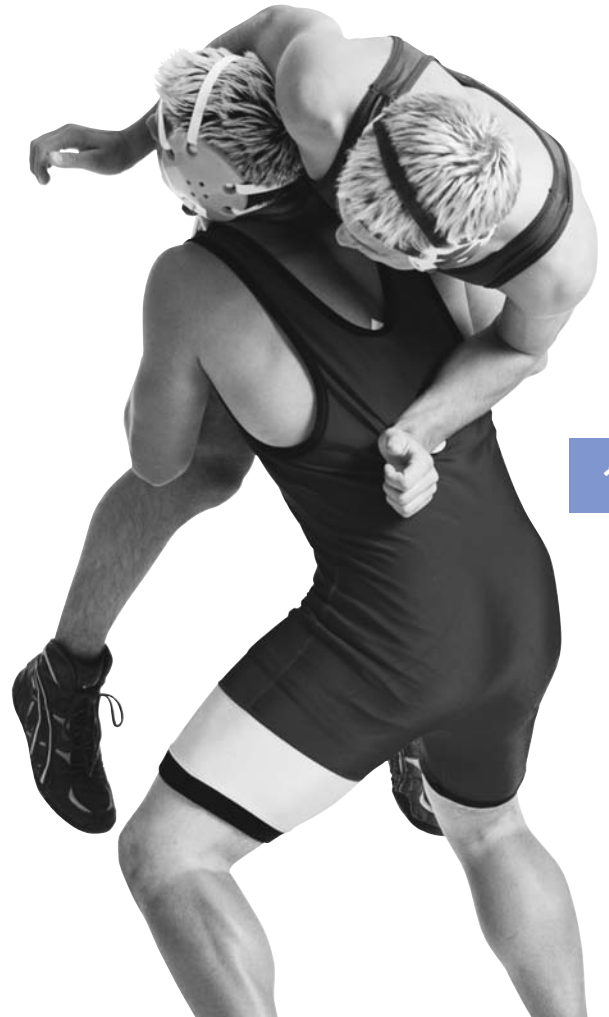
School principal and athletic director. Look for opportunities to meet with your school principal and athletic director. Explain the seriousness of the issue and the impact that concussion in high school sports can have on the athlete, the team, and the school. Describe the action plan and your concussion education efforts and ask for the principal's support. Consider using some of these talking points in your discussion with your principal:

- “Each year more than a million high school athletes are involved in contact sports. Concussions can happen in any sport, including soccer, football, basketball, field hockey, and wrestling.”
- “School staff members, working as a team with health care professionals and parents, are key to preventing or correctly managing concussions.”

CONCUSSION: [Communicating Effectively](#)

- “Keeping students healthy and safe helps protect the reputation of the school and provides a positive and supportive environment for learning.”
- “Sometimes poor grades can be associated with cognitive problems from a concussion.”
- “Sometimes behavior changes in the classroom can be due to an undiagnosed concussion.”
- “It’s ideal to have a health care professional available during athletic activities—both practice and actual competition.”
- “Communication should be established among coaches of different sports so an athlete does not go from one sport to another with a concussion.”
- “Coaches of all relevant sports should be encouraged to distribute educational materials about concussion to athletes and parents.”

CONCUSSION: Communicating Effectively



References

1. Powell JW, Barber-Foss KD. Traumatic brain injury in high school athletes. *Journal of the American Medical Association* 1999;282:958–963.
2. Harmon KG. Assessment and management of concussion in sports. *American Family Physician* 1999 Sep 1;60(3):887–892, 894.
3. Powell JW. Cerebral concussion: causes, effects, and risks in sports. *Journal of Athletic Training* 2001;36(3):307–311.
4. Kushner DS. Mild traumatic brain injury. *Archives of Internal Medicine* 1998;158:1617–1624.
5. Sosin DM, Snizek JE, Thurman DJ. Incidence of mild and moderate brain injury in the United States, 1991. *Brain Injury* 1996;10:47–54.
6. Guskiewicz KM, Weaver N, Padua DA, Garrett WE. Epidemiology of concussion in collegiate and high school football players. *The American Journal of Sports Medicine* 2000;28(5):643–650.
7. Zemper ED. Two-year prospective study of relative risk of a second cerebral concussion. *American Journal of Physical Medicine and Rehabilitation* 2003 Sep;82:653–659.
8. Institute of Medicine (US). *Is soccer bad for children’s heads? Summary of the IOM Workshop on Neuropsychological Consequences of Head Impact in Youth Soccer*. Washington (DC): National Academy Press; 2002.
9. Centers for Disease Control and Prevention (CDC). Sports-related recurrent brain injuries—United States. *Morbidity and Mortality Weekly Report* 1997;46(10):224–227. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/00046702.htm
10. Lovell MR, Collins MW, Iverson GL, Johnston KM, Bradley JP. Grade 1 or “ding” concussions in high school athletes. *The American Journal of Sports Medicine* 2004;32(1):47–54.

Additional Resources

Centers for Disease Control and Prevention

This website has English and Spanish fact sheets and brochures on concussion and traumatic brain injury. www.cdc.gov/ncipc

Brain Injury Association of America

This organization provides information and resources to improve the quality of life for individuals with brain injuries. www.biausa.org

CDC does not endorse the articles, products, or guidelines of other organizations or individuals referenced in these materials. CDC provides this information to raise awareness about the magnitude of concussion in high school sports as a public health issue and to offer a scientific overview of the topic.

Centers for Disease Control and Prevention gratefully acknowledges the following organizations for their participation in this project:

American Academy of Pediatrics

American Association for Health Education

American College of Sports Medicine

American School Health Association

Association of State and Territorial Health Officials

Brain Injury Association of America

Institute for Preventative Sports Medicine

National Association for Sport and Physical Education

National Athletic Trainers' Association

National Federation of State High School Associations

National Safety Council

North American Brain Injury Society

University of Pittsburgh Medical Center

Sports Medicine Concussion Program

U.S. Department of Education