



# CONCUSSION AT PLAY

Opportunities to Reshape the  
Culture Around Concussion

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Across the country, growing attention on concussion has led to numerous efforts aimed at protecting young athletes. While progress has been made, research suggests that too many young athletes still do not report their concussion symptoms, are not removed from play and continue to play with symptoms, or return to play too soon.<sup>1-7</sup>

Building from the work of the Institute of Medicine report *Sports-Related Concussions in Youth: Improving the Science, Changing the Culture*, this document provides a snapshot of current research on concussion knowledge, awareness, attitudes, and behaviors among athletes, coaches, parents, health care providers, and school professionals. Based on these findings, potential strategies to help keep athletes safe are provided.<sup>8</sup>

## All Concussions Are Serious

Each day, hundreds of thousands of young athletes practice and compete in a wide variety of sports. Physical activity, sports participation, and play in general are great ways for children and teens to build and maintain healthy bones and muscles, lower their chances for depression and chronic diseases (such as diabetes), learn leadership and teamwork skills, and do well in school.<sup>9,10</sup> However, research shows that when it comes to concussion, young athletes are at risk.

A concussion is a type of traumatic brain injury—or TBI—caused by a bump, blow, or jolt to the head or body that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging the brain cells.

Most children and teens with a concussion feel better within a couple of weeks. However, for some, symptoms may last for months or longer and can lead to short- and long-term problems affecting how a young person thinks, acts, learns, and feels. Parents, coaches, health care providers, and school professionals all play an important role in supporting young athletes so that they can thrive on the playing field, at school, and in all parts of their lives.



Many groups help create a sports culture for athletes.



Research from separate studies shows that **too many athletes:**

**Do not report** their concussion symptoms.

Are **not removed** from play and continue to play with symptoms.

**Return** to play **too soon**.

# Concussion Knowledge and Awareness

## On the Rise

Along with the rise in the number of educational efforts on concussion, research over the last 5 years shows that the level of awareness and knowledge about concussion among these groups has grown. For example:

- The majority of youth (ages 13–18) have heard about concussion and understand the dangers of this injury.<sup>1,11</sup>
- Most parents view concussions as a serious injury and know that continuing to play with a concussion could cause further injury or even death.<sup>11,12</sup>
- Many coaches are aware of general concussion symptoms and understand that an athlete does not need to lose consciousness to have a concussion.<sup>1,13,14</sup>
- Health care providers in many areas are aware of and have access to referral networks for patients with concussion.<sup>15</sup>

## Gaps Still Remain

Even though knowledge and awareness of concussion is growing, research shows that there are still important gaps to be filled.

- Some parents are not familiar with state concussion laws or school or league protocols on children returning to learn and play.<sup>12,16</sup>
- Coaches may not be able to identify subtle concussion symptoms and may not be aware of the importance of managing cognitive activities following a concussion.<sup>1,14,17</sup>
- Some health care providers do not feel they have adequate training on concussion, and the use of evidence-based and standardized assessment tools and guidelines is limited.<sup>18–22</sup>
- While similar research about school professionals' knowledge and awareness of concussion is not currently available, the important role that school professionals play in concussion identification and management is clear.<sup>23,24</sup>



# Concussion Attitudes and Behaviors

## Too Many Young Athletes Do Not Report Concussion Symptoms

Reporting a possible concussion is the most important action young athletes can take to bring their injury to light. Reporting symptoms will facilitate an athlete being properly assessed, monitored, and treated and taking needed time to heal. Yet, research shows that too many young athletes do not take this critical first step.<sup>1,2</sup>

In one study, researchers interviewed a group of almost 800 high school athletes during the course of a season and found that:

- Sixty-nine percent of athletes with a possible concussion played with concussion symptoms.
- Forty percent of those athletes said that their coaches were not aware that they had a possible concussion.<sup>2</sup>

In a different study, 50 female and male high school athletes were asked what they would do if they thought they had a concussion:

- They most commonly answered, "I would keep playing and see how I felt" or "I would take a little break and return to play."
- None said that they would stop playing entirely if they experienced concussion symptoms.<sup>1</sup>

## After a Concussion, Young Athletes Are Returning to Play Too Soon

Young athletes should never return to play the same day of the injury. In addition, they should not return to play until an appropriate health care provider says it is okay. However, many young athletes are returning to play too soon following a concussion.<sup>6,7</sup>

In a study of 150 young patients seen in an emergency department for concussion, many did not take time to heal fully before returning to their usual activities:

- Thirty-nine percent reported returning to play on the same day of their concussion.<sup>6</sup>
- More than half (58 percent) returned to play without medical clearance.<sup>6</sup>

Out of nearly **800** high school athletes interviewed,



**69%** of athletes with a possible concussion **played with concussion symptoms.**<sup>2</sup>



Out of those athletes, **40%** said their **coaches were unaware** that they had a possible concussion.<sup>2</sup>



# Opportunities to Reshape the Culture Around Concussion

## The Way Coaches Talk About Concussion Influences Young Athletes' Decisions to Report Concussion Symptoms

Young athletes depend on their coaches for guidance and need to feel comfortable in order to report their symptoms to their coaches, athletic trainers, teammates, and parents.<sup>1,25</sup> In fact, young athletes' beliefs about their coaches' expectations on reporting may trump their own knowledge or intention to report a possible concussion.<sup>1,26</sup>

The way coaches talk about concussion affects young athletes' behaviors around reporting symptoms:

- Young athletes who receive negative messages from their coaches, or who are insulted by their coaches for reporting an injury, may feel pressured to keep playing with concussion symptoms.<sup>1</sup>
- On the other hand, young athletes who receive positive messages from their coach and are praised for symptom reporting are more likely to report their concussion symptoms.<sup>1</sup>

## Young Athletes May Feel Pressure to Hide Their Concussion Symptoms

Research shows that despite the importance of reporting their concussion symptoms, many young athletes are unaware that they have a concussion or may not report a possible concussion because they:<sup>3</sup>

- Do not think a concussion is serious.<sup>1,3</sup>
- Are worried about losing their position on the team or do not want to stop playing.<sup>1,3</sup>
- Do not want to let their coach or teammates down.<sup>3,26</sup>
- Are concerned about jeopardizing their future sports career or about what their coach or teammates might think of them.<sup>26</sup>

✓ **ACTION STEP:** Coaches should foster an environment where young athletes feel comfortable reporting a concussion. Before and during the season, coaches should talk about concussion and ask young athletes to share and discuss their concerns about reporting a concussion.


**WHY THIS IS IMPORTANT:** Young athletes are more likely to report concussion symptoms accurately when they receive positive messages about reporting from their coach.<sup>1</sup>

✓ **ACTION STEP:** Coaches should keep a list of concussion signs and symptoms and a concussion action plan on hand and visibly posted where young athletes play games and practice. Coaches should review this list frequently with their athletes.

**WHY THIS IS IMPORTANT:** Most young athletes understand the potentially dangerous consequences of a concussion, such as long-term disability and death.<sup>1</sup> Yet young athletes may be unable to identify some symptoms, like a ringing in the ears or fatigue caused by a concussion.<sup>1,3</sup>

Coaches also may have difficulty identifying some subtle concussion signs and symptoms, such as vision problems, sensitivity to light and noise, and problems with sleep.<sup>4,14,18</sup>



 **ACTION STEP:** Parents and coaches need to communicate to athletes that a concussion should be reported no matter how important the game or event seems. Athletes should know that health and safety always come first.

**WHY THIS IS IMPORTANT:** Parents and coaches greatly influence how athletes think about sports, such as their motivation to play, enjoyment of the sport, goals, and decision-making.<sup>29,30,31</sup> Young athletes may not report their symptoms because they feel pressure from or worry about letting down their coach, parent(s), or teammates.<sup>3</sup>

## Young Athletes Are More Likely to Play With a Concussion During a Big Game

Young athletes may be more reluctant to tell a coach or athletic trainer about a possible concussion in a championship game compared to a regular game.<sup>27</sup> Researchers presented the following situation to 58 young athletes: “During a championship game, you develop an injury that does not significantly hinder your ability to play, but could result in severe or permanent injury if you continue to play. Do you tell your coach or athletic trainer, or do you say nothing and continue to play?”

- Fifty-two percent of young athletes said they would always report an injury during a championship game or event.<sup>27</sup>
- Thirty-six percent of young athletes said that they would sometimes tell their coach or athletic trainer, while 7 percent said they would never tell their coach or athletic trainer about the injury.<sup>27</sup>

Similarly, the same researchers asked a group of 314 coaches if they would remove a young athlete from play with concussion symptoms in different scenarios:


- Ninety-two percent of coaches reported they would remove the young athlete from play when the importance of the game or event was not included in the scenario.<sup>28</sup>
- When the scenario included a championship game, 17–20 percent of coaches indicated that they would allow a concussed athlete to keep playing.<sup>28</sup>



## Health Care Providers and School Professionals Can Help Young Athletes Successfully Return to Learn and Play

As many as a third of young athletes do not receive clear discharge instructions after going to an emergency department with concussion symptoms.<sup>32,33</sup> When discharge instructions are provided, health care providers often give instructions on return to play but not on return to learn.<sup>32,34</sup>

There is limited research about school professionals' knowledge of concussion, yet the most important action that school professionals can take is to support young athletes during their recovery process as they return to learn. A student's quality of care is improved when school professionals across the school setting work in collaboration to achieve positive school outcomes.<sup>35</sup> Health care providers and school professionals can guide young athletes and their parents as they return to activity in the classroom and on the playing field.

 **ACTION STEP:** Parents should receive written instructions from health care providers on return to learn and return to play strategies. This information needs to be given to an athlete's coach and school.

**WHY THIS IS IMPORTANT:** Youth athletes and their parents need guidance to support them as they return to learn and play. Coaches and school professionals will benefit from these written instructions as well. Young athletes also need to take time to heal before returning to school since thinking and learning can be difficult when the brain is still healing. In one study, 30 percent of students reported a decline in school performance or attendance after a concussion.<sup>34</sup>

### Creating a Safe Sport Culture. Athletes thrive when they:



Have fun playing their sport.



Receive positive messages and praise from their coaches for concussion symptom reporting.



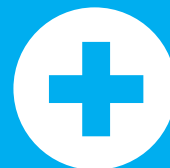
Have parents who talk with them about concussion and model and expect safe play.



Feel comfortable reporting symptoms of a possible concussion to coaches.



Support their teammates sitting out of play if they have concussion.



Get written instructions from a health care provider on when to return to school and play.



✓ **ACTION STEP:** Educate young athletes and coaches on the importance of concussion throughout the season using materials that have been evaluated and shown to be effective. Education efforts should be coupled with programmatic and league policy activities.

**WHY THIS IS IMPORTANT:** Educational efforts should be tailored to meet the needs of and address the main concerns reported by athletes.<sup>38</sup> Improving coaches' and young athletes' knowledge alone may not always result in increased concussion reporting by athletes.<sup>1,2</sup> A pilot study implemented in 40 high schools that included standardized protocols for schools and medical providers, education and training, and coordination among the key stakeholders led to an increase in the number of concussions identified, reported, and treated.<sup>39</sup>

## Education Efforts Help Play a Role in Concussion Safety

Participation in concussion education may support increased symptom reporting by athletes.<sup>26,27</sup> A survey of almost 170 high school athletes in six sports found that young athletes who were more knowledgeable about concussion were more likely to report a concussion during practice.<sup>3</sup>

Another study of high school athletes who received concussion education from any source were more likely to report concussion symptoms to a coach or athletic trainer compared to athletes with no education. Specifically:

- Seventy-two percent of athletes who had received concussion education indicated that they would always notify their coach of concussion symptoms.<sup>27</sup>
- Only 12 percent of athletes who had no history of concussion education stated they would always report their concussion symptoms to their coach.<sup>27</sup>

Similarly, coaches who receive coaching education are more likely to correctly recognize concussion signs and symptoms and feel comfortable deciding whether an athlete needs to be evaluated for a possible concussion.<sup>4,36,37</sup>

## Young Athletes Look to Parents and Coaches to Understand the Culture of Safety

A young athlete's views and actions on the sports field are influenced by those of their parents, coaches, teammates, and even spectators.<sup>29,30,40,41</sup> Together, these groups shape a "sports culture."

### Action Steps: Expect Safe Play. Model Safe Play. Reinforce Safe Play.



#### Expect Safe Play.

**Why this is important:** While not risk-free, sports are a great way for children and teens to stay healthy and can help them do well in school.<sup>9,10</sup> Young athletes look to their coaches and parents to learn which actions are okay in the "team's culture" and how to follow safe play and the rules of the sport.<sup>29,42</sup>



#### Model Safe Play.

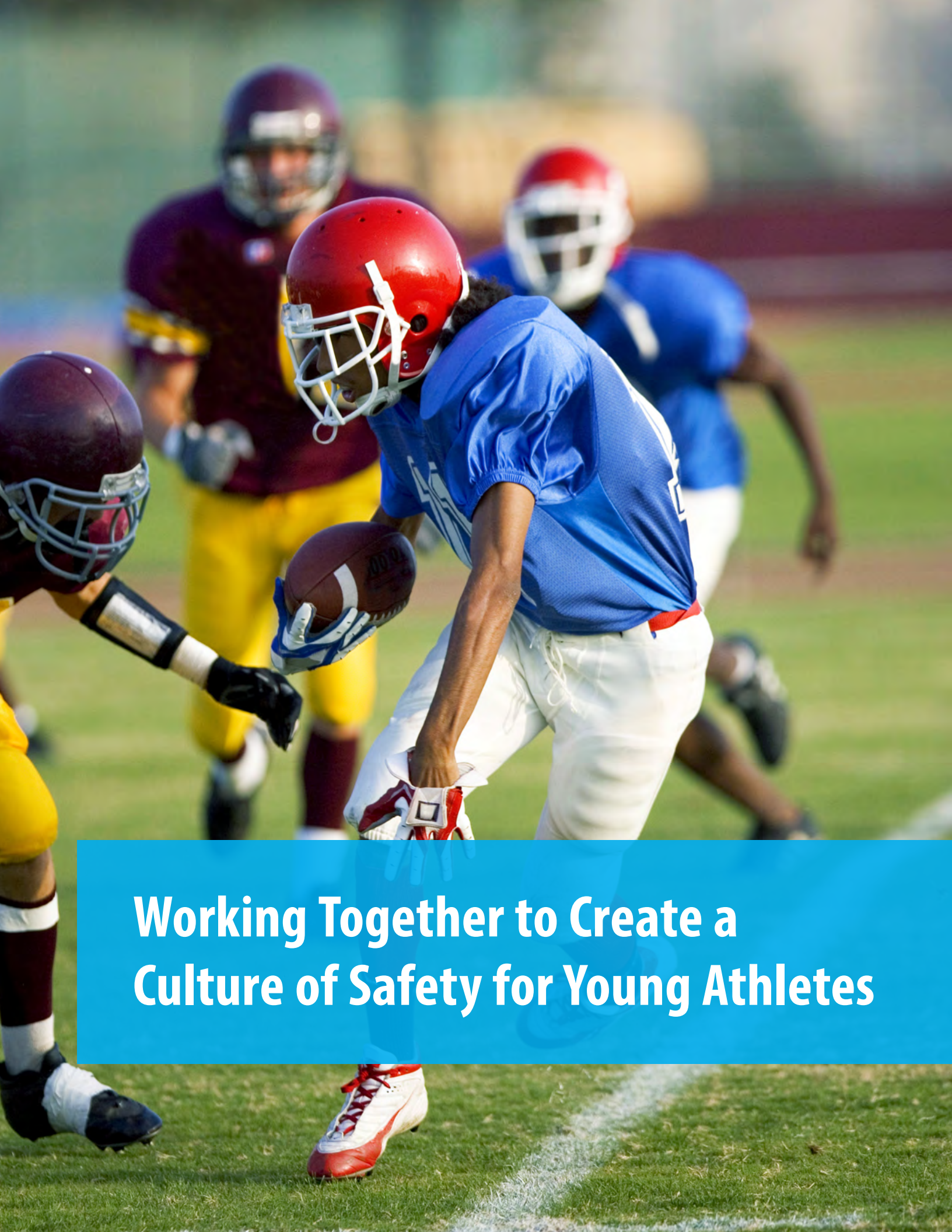
**Why this is important:** Children and teens learn from what they see their parents doing. In a study of parents and their children who ski and snowboard:

- Ninety-six percent of children who wore a helmet said that their parents also wore a ski or snowboard helmet.
- Among parents who did not wear a helmet, only 17 percent of their children wore one.<sup>43</sup>



#### Reinforce Safe Play.

**Why this is important:** As many as 25 percent of the concussions reported among high school athletes result from aggressive or illegal play activity.<sup>44</sup> A culture that supports aggressive or unsportsmanlike behavior among young athletes can increase their chances of getting a concussion or other serious injury. Such an atmosphere also encourages athletes to hide concussion symptoms and keep playing when they are hurt.



**Working Together to Create a  
Culture of Safety for Young Athletes**

We need to build a culture in sports where athletes take steps to lower their chances of getting a concussion and recognize and report concussion symptoms so that they can seek care and take time to recover.<sup>8</sup> This involves moving beyond general knowledge of concussion and changing the way we talk about and respond to concussion so that athletes know they cannot play with a concussion or hide their symptoms. While research is ongoing to help identify the best approach to changing the culture of concussion in sports, there are action steps that coaches, parents, health care providers, and school professionals can take now to help keep young athletes safe and supported as they pursue the sports they love to play.

## Athletes:

- Learn concussion signs and symptoms and why it is important to take care of your brain.
- Always report symptoms of a possible concussion to your coach right away. Do not forget, all concussions are serious. It is better to miss one game than the whole season.
- Help your teammates by looking out for signs and symptoms among friends who may have had a possible concussion.

## Coaches:

- Educate your athletes about concussion throughout the season and teach ways to lower an athlete's chances of getting a concussion.
- Tell your athletes that you want them to always report concussion symptoms, no matter how important the game or event seems.
- Keep a list of concussion signs and symptoms and a concussion action plan with you at practices and games. It is helpful to have the information handy when you need it.

## Parents:

- Talk with your children about why it is important to report a possible concussion and that you expect them to report their concussion symptoms to you and their coach right away. Let them know that their safety comes first by modeling and reinforcing safe play and good sportsmanship.
- Ask your child's health care provider for written instructions related to returning to learn and returning to play. Give this information to the coach and your child's school.

- Talk with a health care provider if your child's concussion symptoms do not go away or if they get worse after your child returns to regular activities. Make sure that you know how to support your child through this phase of recovery.

## Health Care Providers:

- Incorporate evidence-based tools and guidelines in your practice or health care system and coordinate with schools and sports organizations.
- Educate young athletes about the risks of hiding symptoms and returning to play too soon. Reassure them that taking the time to heal is the best way to get back in the game, and you are here to help them with this healing process.
- Give young athletes and their parents written instructions to share with their school and coach to help them know how to return to learn and play.

## School Professionals:

- Develop school policies and standard practices for preventing, identifying, and managing concussion at school events and in practice.
- Coordinate a school-based team to support athletes as they return to learn that is built in collaboration with local health care providers or systems.
- Teach other school professionals about the important role they play in helping students slowly return to learn at a pace that works for them. Be sure to offer your students breaks and support as needed.



## A strong focus on health and safety in sports can help keep young athletes safe.

Athletes, coaches, parents, health care providers, and school professionals are well positioned to improve the culture of concussion. Each of these groups plays a critical role in empowering young athletes to report their symptoms and take the steps necessary to give their brain time to heal after a concussion. Our young athletes deserve to play sports in a culture that celebrates their hard work, dedication, and teamwork, and in programs that seek to create a safe environment—especially when it comes to concussion.

**Together, athletes, coaches, parents, health care providers, and school professionals should:**



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**Talk** about concussion.

**Learn** how to spot a concussion and what to do if a concussion is suspected.

**Model**, expect, and reinforce safe play.

**Support** the return to learn and play processes.



Download CDC's **HEADS UP** materials and learn more about how you can help keep young athletes safe from concussion at [www.cdc.gov/HEADSUP](http://www.cdc.gov/HEADSUP).

# References

1. Chrisman SP, Quitiquit C, Rivara FP. (2013). Qualitative study of barriers to concussive symptom reporting in high school athletics. *J Adolesc Health*, 52(3):330-335.
2. Rivara FP, Schiff MA, Chrisman SP, Chung SK, Ellenbogen RG, Herring SA. (2014). The effect of coach education on reporting of concussions among high school athletes after passage of a concussion law. *Amer J Sports Med*, May, 2014, 42(5):1197-1203.
3. Register-Mihalik JK, Guskiewicz KM, McLeod TC, Linnan LA, Mueller FO, Marshall SW. (2013a). Knowledge, attitude, and concussion-reporting behaviors among high school athletes: A preliminary study. *J Athl Train*, July 12, 2013.
4. McLeod TCV, Schwartz C, Bay RC. (2007). Sport-related concussion misunderstanding among youth coaches. *Clin J Sport Med*, March, 2007, 17(2):140-141.
5. O'Kane JW, Spieker A, Levy MR, Neradilek M, Polissar NL, Schiff MA. (2014). Concussion among female middle-school soccer players. *JAMA Pediatr*, 168:258-264.
6. Hwang V, Trickey AW, Lormel C, Bradford, et al. (2014). Are pediatric concussion patients compliant with discharge instructions? *J Trauma Acute Care Surg*, 77(1):117-122.
7. Yard EE, Comstock RD. (2009). Compliance with return to play guidelines following concussion in US high school athletes, 2005–2008. *Brain Inj*, October, 2009, 23(11):888-898.
8. Institute of Medicine and National Research Council. (2014). *Sports-related concussions in youth: Improving the science, changing the culture*. Washington, DC: The National Academies Press.
9. Centers for Disease Control and Prevention. (2010). *The Association Between School-Based Physical Activity, Including Physical Education, and Academic Performance*. Atlanta, GA: U.S. Department of Health and Human Services.
10. U.S. Department of Health and Human Services. (2008). *Physical Activity Guidelines Advisory Committee report, 2008*. Washington, DC: U.S. Department of Health and Human Services.
11. Bloodgood B, Inokuchi D, Shawver W, et al. (2013). Exploration of awareness, knowledge, and perceptions of traumatic brain injury among American youth athletes and their parents. *J Adolesc Health*, July, 2013, 53(1):34-39.
12. Shenouda C, Hendrickson P, Davenport K, Barber J, Bell KR. (2012). The effects of concussion legislation one year later—What have we learned: A descriptive pilot survey of youth soccer player associates. *PM R*, June, 2012, 4(6):427-435.
13. Mrazik M, Bawani F, Krol AL. (2011). Sport-related concussions: Knowledge translation among minor hockey coaches. *Clin J Sport Med*, July, 2011, 21(4):315-319.
14. Naftel KG, Yust EM, Nichols MH, King WD, Davis D. (2014). Knowledge and management of sports concussions among coaches and certified athletic trainers in Alabama. *Southern Med J*, 52(3):418-423.
15. Kinnaman et al. (2014). Management of Pediatric Patients with concussion by emergency medicine physicians. *Pediatr Emerg Care*, 30(7):458-461.
16. C. S. Mott Children's Hospital. (2010). Concussions in school sports: Parents ill-prepared for role in reducing kid's risks. National Poll on Children's Health, 10(1):2.
17. Faure CE, Pemberton, C. (2011). An examination of Idaho high school football coaches' general understanding of concussion. *Sport J*, 14.
18. Kaye AJ, Gallagher R, Callahan JM, Nance ML. (2010). Mild traumatic brain injury in the pediatric population: the role of the pediatrician in routine follow-up. *J Trauma*. 2010 Jun;68(6):1396-1400.
19. Giebel S, Kothari R, Koestner A, Mohney G, Baker R. (2011). Factors influencing emergency medicine physicians' management of sports-related concussions: A community-wide study. *J Emerg Med*, December, 2011, 41(6):649-654.
20. Zonfrillo MR, Master CL, Grady MF, Winston FK, Callahan JM, Arbogast KB. (2012). Pediatric providers' self-reported knowledge, practices, and attitudes about concussion. *Pediatrics*, December, 2012, 130(6):1120-1125.
21. Broshek DK, Samples H, Beard J, Goodkin HP. (2012). Current practices of the child neurologist in managing sports concussion. *J Child Neurol*, November 8, 2012.
22. Carl RL, Kinsella SB. (2014). Pediatrician's knowledge of current sports concussion legislation and guidelines and comfort with sports concussion management: A cross-sectional study. *Clin Pediatr*, 1-9.
23. Halstead ME, McAvoy K, Devore CD, Carl R, Lee M, Logan K. (2013). Returning to learning following a concussion. *Pediatrics*, 2013, 948-957.
24. Davies SC. (2011). Concussion awareness: Getting school psychologists into the game. *NASP Communique*, May, 2011, 39(7).
25. Harmon K, Drezner J, Gammons M, et al. (2013). American Medical Society for Sports Medicine position statement: Concussion in sport. *Clin J Sport Med*, 23:1-18.
26. Register-Mihalik JK, Linnan LA, Marshall SW, Valovich McLeod TC, Mueller FO, Guskiewicz KM. (2013). Using theory to understand high school aged athletes' intentions to report sport-related concussion: Implications for concussion education initiatives. *Brain Inj*, 27:878-886.
27. Bramley H, Patrick K, Lehman E, Silvis M. (2012). High school soccer players with concussion education are more likely to notify their coach of a suspected concussion. (2012). *Clin Pediatr* (Phila), 2012 April, 51(4):332-336.
28. Bramley H, Kroft C, Polk D, Newberry T, Silvis M. (2012). Do youth hockey coaches allow players with a known concussion to participate in a game? *Clin Pediatr* (Phila), March, 2012, 51(3):283-287.
29. Shields DL, LaVoi NM, Bredemeier BL, Power FC. (2007). Predictors of poor sportspersonship in youth sports: Personal attitudes and social influences. *J Sport Exerc Psychol*, 2007, 29, 747-762.
30. LaVoi NM, Stellino MB. (2008). The relation between perceived parent-created sport climate and competitive male youth hockey players' good and poor sport behaviors. *J Psychol*, September, 2008, 142(5):471-495. Doi:10.3200/JRLP.142.5.471-496.
31. Dorsch TE, Smith AL, McDonough MH. (2009). Parents' perceptions of child-to-parent socialization in organized youth sport. *J Sport Exerc Psychol*. 2009 Aug;31(4):444-68.
32. Upchurch C, Morgan C, Umfress A, Yang G, Riederer, M. (2014). Discharge instructions for youth sports-related concussions in the emergency department, 2004 to 2012. *Clin J Sports Med*, June 20, 2014.
33. De Maio VJ, Joseph DO, Tibbo-Valeriotte H, et al. (2014). Variability in discharge instructions and activity restrictions for patients in a children's ED postconcussion. *Pediatr Emerg Care*, 2014 January, 30(1):20-25.
34. Arbogast KB, McGinley AD, Master CL, Grady MF, Robinson RL, Zonfrillo MR. (2013). Cognitive rest and school-based recommendations following pediatric concussion: The need for primary care support tools. *Clin Pediatr* (Phila.), May, 2013, 52(5):397-402.
35. Hossler P, McAvoy K, Rossen E, Schoessler S, Thompson P. (2014). A comprehensive team approach to treating concussions in student athletes. *Principal's Research Review*, May 2014, 9(3).
36. Saunders E, Burdette T, Metzler J, Joyner AB, Buckley T. (2013). Knowledge of coaching education students regarding sport-related concussions. *Athl Train Sports Health Care*, (5):1:1-19.
37. Chrisman SP, Schiff MA, Chung SK, Herring SA, Rivara, FP. (2014). Implementation of concussion legislation and extent of concussion education for athletes, parents, and coaches in Washington State. *Am J Sports Med*, 42(5):1190-1196. Doi:10.1177/0363546513519073.
38. Kroshus E, Kubzansky LD, Goldman RE, Austin SB. (2014). Norms, Athletic identity, and concussion symptom under-reporting among male collegiate ice hockey players: A prospective cohort study. *Ann Behav Med*. 2014 Sep 19.
39. Hotz G, Quintero A, Crittenden R, Baker L, Goldstein D, Nedd K. (2014). A countywide program to manage concussions in high school sports. *The Sport Journal*. March 7, 2014.
40. Shields DL, Bredemeier BL, LaVoi NM, Power FC. (2005). The sport behavior of youth, parents, and coaches—The good, the bad, and the ugly. *J Research Charac Educ*, 3(1), 2005, 43-59.
41. Omli J, Wiese-Bjornstal DM. (2011). Kids speak: preferred parental behavior at youth sport events. *Res Q Exerc Sport*. 2011 Dec;82(4):702-11.
42. Chow GM, Murray KE, Feltz DL. (2009). Individual, team, and coach predictors of players' likelihood to aggress in youth soccer. *J Sport Exerc Psychol*, 31:425-443.
43. Provance AJ, Engelman GH, Carry PM. (2012). Implications of parental influence on child/adolescent helmet use in snow sports. *Clin J Sport Med*, May, 2012, 22(3):240-243.
44. Collins CL, Fields SK, Comstock RD. (2008). When the rules of the game are broken: What proportion of high school sports-related injuries are related to illegal activity? *Inj Prev*, 14(1):34-38.



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