

New Guidelines on Concussions

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Recently, the Centers for Disease Control and Prevention (CDC) published its *Guideline on the Diagnosis and Management of Mild Traumatic Brain Injury Among Children* while the American Academy of Pediatrics released a clinical report on Sport-Related Concussion in Children and Adolescents. The purpose of this article is to highlight some of the recommendations put forth in these 2 pieces.

Diagnosis

Concussion is a clinical diagnosis, meaning that health care providers use history and physical exam to diagnose such a condition. Therefore imaging studies such as CT scans or w should not routinely be used while assessing concussions unless signs or symptoms of a more serious head injury are present.

These include:

- Severe or worsening headache
- Seizure
- Focal neurologic deficit
- Loss of consciousness > 30 seconds
- Significant mental status impairment or irritability
- Repeated vomiting
- Concern for skull fracture

Your doctor may use a symptom checklist and a physical exam to help figure out what type of problems your child is dealing with after a suspected concussion. Additionally, balance testing and tests of neurocognitive function (including computerized testing), evaluating things like reaction time, processing speed and short term memory may be used when evaluating a concussion.

Management

Any athlete suspected of having a concussion should be removed from play immediately and not be allowed to return the same day. The athlete should

then be evaluated by a health care professional trained in concussion management. In the past, complete physical and mental rest was thought to be the best treatment for a concussion until symptoms had improved. While physical and mental rest may be helpful in the first few days after a concussion, recent research has shown that prolonged restriction of activity may actually lead to longer recovery times.

Cognitive Activity

The goal of activity should be to not make symptoms worse. Complete avoidance of technology at home is not necessary, however athletes should be mindful of activities that make them feel worse and limit or avoid them as much as possible. When using electronics it may be helpful to take frequent breaks, turn down the brightness of the screen, or increase font size to make it easier to read.

Prolonged absence from school after a concussion should be discouraged. In order to facilitate a return to the classroom following concussion, it is beneficial for the student to receive accommodations to minimize symptoms and decrease overall workload. These accommodations should be individualized based on the type and severity of symptoms and the student's progress should be closely monitored by the student, family, school personnel and the health care provider.

Examples of accommodations following concussion include:

- Half-days of school
- Reduced workload
- Extra time to complete assignments
- Allowing mental rest breaks from activity
- Delayed or untimed tests
- Wearing a hat or sunglasses
- Avoiding noisy environments
- Extra help/tutoring

Physical Activity

Avoiding complete inactivity, by engaging in light exercise such as brisk walking, is probably the best approach to physical activity following a concussion. Exercise should not provoke or increase symptoms. Athletes may perform this exercise on their own or it may be monitored by an athletic trainer or physical therapist. Symptoms should be closely monitored to make sure they are not increasing. Athletes should not return to contact or collision sports, or other high-risk activity, until all concussion symptoms have resolved and they have completed a graduated, stepwise, return-to-sport progression. Premature return to contact increases the risk of more severe injury.

Recovery

Athletes and parents should be counseled up front that each individual recovers at their own rate. While most pediatric and adolescent athletes will recover, on average, in between 1 and 4 weeks, it is difficult to predict recovery time at the time of injury. Factors such as a previous history of concussion or co-existing neurological or psychiatric disorders may predict a longer recovery time.

Prevention

Unfortunately, the effectiveness of protective equipment, such as mouth guards, helmets and headgear, in decreasing concussions has yet to be proven. However, mouth guards are important in preventing facial and dental trauma while helmets are effective in reducing skull fractures and bleeds in the brain. Neck strengthening and rule changes in sports, on the other hand, appear to show more promise as preventative tools, although more research is needed on these topics before specific recommendations can be made.

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Concussion is a clinical diagnosis and therefore imaging studies such as CT or MRI should not routinely be used in assessing concussions unless signs or symptoms of a more serious head injury are present.

These include:

- Severe or worsening headache
- Seizure
- Focal neurologic deficit
- Loss of consciousness > 30 seconds
- Significant mental status impairment or irritability
- Repeated vomiting
- Clinical suspicion for skull fracture

Use of a validated, age-appropriate symptom checklist is helpful in eliciting symptoms after a suspected concussion. Additional aids in assessment include physical exam, neurocognitive testing (including computerized testing), and balance testing.

Management

Any athlete suspected to have sustained a concussion should be removed from play immediately and not be allowed to return the same day. The athlete should then be evaluated by a health care professional trained in concussion management. Education of the patient and family is an important initial step in the

treatment of concussion. While physical and mental rest may be helpful in the first few days after a concussion, prolonged restriction of activity can actually be detrimental in an athlete's recovery.

Cognitive Activity

The goal of activity should be to not exacerbate symptoms. Complete avoidance of technology at home is not necessary, however athletes should be cognizant of activities that make them feel worse and limit or avoid them as much as possible. When using electronics it may be beneficial to take frequent breaks, turn down the brightness of the screen, or increase font size to make it easier to read.

Prolonged absence from school after a concussion should be discouraged. In order to facilitate a return to the classroom following concussion, it is helpful for the student to receive accommodations to minimize symptoms and decrease overall workload. These accommodations should be individualized based on the breadth and severity of symptoms and the student's progress should be closely monitored by the student, family, school personnel and the health care provider.

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- Extra help/tutoring

Physical Activity

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be subsymptom threshold, meaning it should not provoke or increase symptoms. Athletes may perform this exercise on their own or it may be monitored by an athletic trainer or physical therapist. Symptoms should be closely monitored to make sure they are not increasing. Athletes should not return to contact or collision sports, or other high-risk activity, until all concussion symptoms have resolved and they have completed a graduated, stepwise, return-to-sport progression. Premature return to contact increases the risk of more severe injury.

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Prevention

Unfortunately, the effectiveness of protective equipment, such as mouth guards, helmets and headgear, in decreasing concussions has yet to be proven. However, mouth guards are important in preventing facial and dental trauma while helmets are effective in reducing skull fractures and intracranial hemorrhage. Neck strengthening and rule changes in sports, on the other hand, appear to show more promise as preventative tools, although more research is needed on these topics before definitive recommendations can be made.

References:

Lumba-Brown A, et al. Centers for Disease Control and Prevention Guideline on the Diagnosis and Management of Mild Traumatic Brain Injury Among Children. *JAMA Pediatr.* 2018 Nov 1;172(11)

Halstead ME, Walter KD, Moffatt K; COUNCIL ON SPORTS MEDICINE AND FITNESS. Sport-Related Concussion in Children and Adolescents. *Pediatrics.* 2018 Dec;142(6)