

Recognizing and Managing a Sports Concussion

This reference card is provided to help you understand how to recognize concussion in injured athletes. Neurologists from the American Academy of Neurology (AAN) are doctors who identify and treat diseases of the brain and nervous system. The following information is provided by doctors with expertise in diagnosing and treating concussion.

What is a concussion?

A concussion is a brain injury that happens when:

- The head hits an object or a moving object strikes the head
- The head experiences a sudden force without being hit directly

A concussion can lead to:

- A bad headache
- Impaired reflexes, balance, and coordination
- Changes in memory, judgment, speech, and sleep
- Loss of consciousness/blackout (in a minority of cases)

Usually, full recovery is possible. But some concussions can be serious. These can lead to continued symptoms and other health problems.

How can I recognize a concussion?

Recognizing a concussion can be a challenge. The source of injury is not always clear.

- Many sports involve physical impact
- Concussion in athletes is not always reported accurately

TIP: If for any reason you suspect an athlete has a concussion:

- Remove the athlete from play for the rest of the day
- Be sure the athlete is carefully evaluated by a person trained in concussion management

For common signs and symptoms of a concussion, see Table 1.

Table 1. Common Signs and Symptoms of Concussion	
Signs— Things You Can Observe	Memory loss of event before, during, or after injury
	Behavior or personality change
	False/imagined memory
	Delayed spoken or physical responses
	Balance problems
	Disorientation (confused about time, date, location)
	Trouble controlling emotions
	Loss of consciousness (blackouts)
	Slurred/unclear speech
	Empty stare
Symptoms— Things the Athlete Tells You	Blurry vision/double vision
	Confusion
	Dizziness
	Feeling very drowsy, having sleep problems
	Feeling hazy, foggy, or groggy
	Headache
	Inability to focus, concentrate
	Nausea (stomach upset) and/or vomiting
	Not feeling right
	Sensitivity to light or sound

What should I do if a team member has a head injury during a game?

1. Immediately address safety concerns. If the person is unconscious (knocked out), check his or her **A**irway, **B**reathing, and **C**irculation (ABCs).

- Check that the mouth and throat are not blocked
- Be sure the person is breathing normally
- Check that the person's heart is beating regularly

TIP: If you suspect the person may have a neck injury or if the person is unconscious:

- Do not move the head, neck, or spine. This could worsen any spinal injury to the neck
- Contact emergency medical services with any concern about breathing, circulation, or spinal injury
- Do not let the athlete return to play until examined by a doctor

2. If a concussion is suspected, remove the athlete from play. If a concussion is diagnosed, the athlete should not return to play for the rest of the day.

- Monitor the athlete for the next three to four hours
- Notify the doctor if the person's condition gets worse
- Do not let the athlete return to play until rechecked by a doctor trained in concussion management

TIP: Refer to the gradual return-to-play guidelines (see Table 2). Athletes should not advance to the next activity level if they have any concussion symptoms.

Table 2. Graduated Return-to-Play Protocol

Rehabilitation Stage	Functional Exercise at Each Stage of Rehabilitation	Objective of Each Stage
(1) No activity	Complete physical and cognitive rest	Recovery
(2) Light aerobic exercise	Walking, swimming, stationary bike	Increase heart rate
(3) Sport-specific exercise	Running drills in soccer, skating drills in hockey, etc.	Add movement
(4) Noncontact drills	More complex training drills, may start resistance training	Coordination and cognitive load
(5) Full-contact practice	With medical clearance, participate in normal training activities	Restore confidence and assess functional skills by coaching staff
(6) Return to play	Normal game play	

Adapted with permission from McCrory P, Meeuwisse W, Johnston K, et al. Consensus statement on Concussion in Sport 3rd International Conference on Concussion in Sport held in Zurich, November 2008. Clin J Sport Med 2009;19(3):185–200.

When is it OK for the athlete to return to the game?

Get approval from a doctor trained in concussion management before allowing the athlete to return to play. The doctor will:

- Advise the athlete to return to physical activity slowly
- Explain the process for this clearly
- Tell the athlete to increase activity levels carefully, step by step

Remember, if the person has any concussion symptoms, he or she should not advance to the next activity level. The final activity level should imitate game conditions as much as possible.

TIP: Take extreme care when returning younger athletes to the game.

- Rushing this part of the process may lead to a serious setback or worsen the injury
- Some US states have passed laws on managing concussion. Be sure to learn about and follow any concussion law(s) in your state

This statement is provided as an educational service of the American Academy of Neurology. It is based on current clinical information. It is not intended to include all possible proper methods of care for a particular neurologic problem or all legitimate criteria for choosing to use a specific procedure. It is also not intended to exclude any reasonable alternative methodologies. The AAN recognizes that specific patient care decisions are the prerogative of the patient and the physician caring for the patient, based on all of the circumstances involved.

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