



# Concussion in Sports

This palm card provides information and tools to help you and your staff with the on-field recognition and management of concussion.

Concussion Signs and Symptoms <sup>1</sup>	
Signs Observed by Medical Staff	Symptoms Reported by Athlete
Appears dazed or stunned	Headache or pressure in head
Is confused about assignment	Nausea
Forgets sports plays	Balance problems or dizziness
Is unsure of name of opponent	Double or fuzzy vision
Moves clumsily	Sensitivity to light
Answers questions slowly	Sensitivity to noise
Loses consciousness (even briefly)	Feeling sluggish or slowed down
Shows behavior or personality changes	Feeling foggy or groggy
Can't recall events prior to hit or fall (retrograde amnesia)	Does not "feel right"
Can't recall events after hit or fall (anterograde amnesia)	

This palm card is part of the "Heads Up: Brain Injury in Your Practice" tool kit developed by the Centers for Disease Control and Prevention (CDC). For more information, visit [www.cdc.gov/nur](http://www.cdc.gov/nur).

### Signs of Deteriorating Neurological Function<sup>1</sup>

An athlete should be taken to the emergency department if any of the following signs and/or symptoms are present:

- Headaches that worsen
- Seizures
- Focal neurologic signs
- Looks very drowsy or can't be awakened
- Repeated vomiting
- Slurred speech
- Can't recognize people or places
- Increasing confusion or irritability
- Weakness or numbness in arms or legs
- Neck or pain
- Unusual behavior change
- Significant irritability
- Any loss of consciousness greater than 30 seconds or longer. (Brief loss of consciousness (under 30 seconds) should be taken seriously and the athlete should be seen by a medical professional.)

# On-Field Mental Status Evaluation

(This instrument is recommended for high school age athletes and older. Any inability of the athlete to respond correctly to the questions below should be considered abnormal.)

<p><b>Orientation</b> What period/quarter/interval was this? What stadium/venue was this? What city is this? Who is the opposing team? Who scored last? What team did we play last?</p>
<p><b>Anterograde Amnesia</b> Ask the athlete to repeat the following words: Sid, Dan, Green.</p>
<p><b>Retrograde Amnesia</b> Ask the athlete the following: Do you remember the hit? What happened in the play leading to the hit? What happened in the quarter/period prior to the hit? What was the score of the game prior to the hit?</p>
<p><b>Concentration</b> Ask the athlete to do the following: Repeat the days of the week backwards (starting with today) Repeat the months of the year backward (starting with December) Repeat these numbers backward 63 (36), 419 (914), 6294 (4926)</p>
<p><b>Word List Memory</b> Ask the athlete to repeat the three words in the earlier list: Sid, Dan, Green</p>

## No Return to Play

Any athlete who exhibits signs and symptoms of concussion should be removed from play and should not participate in games or practices until they have been evaluated and given permission by an appropriate health care provider. Research indicates that high school athletes with loss of consciousness or on-field symptoms exhibited deficits on formal neuropsychological testing and re-emergence of cognitive symptoms, lasting up to one week post-injury.<sup>2</sup>

## Exertion

Symptoms will typically worsen or re-emerge with exertion. If the athlete is symptom-free, provoking with exertion is recommended (e.g., 50 yard sprint, 40 yard sprint).

Return to play should occur gradually. Individuals who experience symptoms should be referred to a health care provider for symptoms and cognitive function carefully during each stage of increased exertion.

## Repeated Evaluation

On-field, follow-up evaluation (e.g. every 5 minutes) is important, as signs and symptoms of concussion may evolve over time.

## Off-Field Management

The physician should provide information to parents/caregivers regarding the athlete's condition. For example, the athlete:

- Should not operate a motor vehicle or participate in activities such as sports, PE class, riding a bicycle, riding carnival rides, etc.
- May experience cognitive/behavioral difficulties. It is necessary to reduce physical and cognitive exertion (e.g. exercising, lifting weights, intensive studying) until fully recovered.
- Should receive follow-up medical and neuropsychological evaluation, both for managing injury and determining return to sports.

<sup>1</sup>Adapted from: Lovell MR, Collins MW, Iverson GL, Johnson AM, Pflum KM, Bradley JR, et al. Concussions in high school athletes. *The American Journal of Sports Medicine* 2004;32(1):47-54.

<sup>2</sup>Lovell MR, Collins MW, Bradley J. Return to play following sports-related concussion. *Clinics in Sports Medicine* 2007;26:1-11.