



Sports Shorts

GUIDELINES FOR PHYSICIANS

Concussions

Concussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces. Furthermore, a concussion is a mild traumatic brain injury (TBI), defined by any alteration in consciousness due to a blow or strong force to the head or to the neck and body with an “impulsive” force transmitted to the head. It results in a variety of symptoms and may or may not include memory problems or loss of consciousness.

SIGNS & SYMPTOMS OF A HEAD INJURY

The signs and symptoms of concussion fall into four categories: physical, cognitive, emotional, and sleep.

TYPICAL SYMPTOMS:

- **Physical:** Headache, nausea, vomiting, balance problems, dizziness, visual problems, fatigue, sensitivity to light/noise, numbness/tingling, dazed/stunned
- **Cognitive:** Feeling mentally foggy, feeling slowed down, difficulty concentrating/remembering, forgetful of recent information and conversations, confused about recent events, answers questions slowly, repeats questions
- **Emotional:** Irritable, sadness, more emotional, nervousness
- **Sleep:** Drowsiness, sleep more or less than usual, difficulty falling asleep

The assessment of concussion is challenging because it may involve several or only one of the signs and symptoms listed above. These signs and symptoms alone can be subtle. Concussions in athletes with pre-existing mental health disorders may exacerbate their symptoms and make them more difficult to control. (Halstead 2010)

MANAGING THE CONCUSSION

When concussion symptoms are present:

- Player should be medically evaluated with standard emergency management practices with special attention to excluding cervical spine injury.
- Player should not be left alone and should be monitored.
- **Player should not be allowed to return to play that day.**
- “When in doubt, sit them out.” (McCrory et al. 2005)
- Routine imaging using computed tomography (CT) or MRI contributes little to concussion evaluation and management.
Use only with suspicion of intracranial structural lesion (prolonged disturbance of consciousness, focal neurological deficit, worsening symptoms) (McCrory et al. 2009)

SIDELINE/ON SITE ASSESSMENT

- **SCAT/SCAT2** (Sports Concussion Assessment Tool)
- **SAC** (Sideline Assessment of Concussion)

OFFICE ASSESSMENT

- 1) Subjective symptom scale
- 2) Neurological exam
- 3) Head and neck exam
- 4) Balance testing: BESS, Romberg, tandem gait
- 5) Neuropsychological assessment (computerized testing)
- 6) Exertional trial once asymptomatic

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TREATMENT

Physical and Cognitive Rest:

- Physical – remove from all sports and exertional activities
- Cognitive – remove from loud activities, “screen time” (video games, TV/movies, computers, texting), and even school if unable to tolerate work load and atmosphere

THE FACTS (PART 1)

- For 80% of youth athletes, concussion symptoms usually resolve within 3 weeks (Collins et al. 2006)
- It is widely accepted that youth athletes tend to take longer to recover and tend to be more symptomatic than adults. (McCrory 2009)
- Evidence indicates that females may be at a greater risk for concussion than their male counterparts possibly due to weaker neck muscles and smaller head mass. (Halstead et al. 2010)

RETURN TO PLAY

Begin to progress the athlete through the following stages **after they become asymptomatic at rest**. Any medication previously used, must be stopped and athlete asymptomatic while off medication (McCrory et al., 2009)

- Stage 1:** No activity, complete physical and mental rest
- Stage 2:** Light aerobic exercise (walking or stationary cycling) to increase HR to 70% their maximum. No resistance training
- Stage 3:** Sport-specific training, no head impact activities
- Stage 4:** Non-contact training drills (light resistance training)
- Stage 5:** Full-contact training after medical clearance
- Stage 6:** Return to play

There should be a minimum of 24 hours for each stage. If symptoms arise, the athlete should return to previous asymptomatic stage once asymptomatic for 24 hrs.

COMPLICATIONS

- **An athlete with first concussion is 4-6 times more likely to have another** (Guskiewicz et al., 2003)
- Second impact syndrome/brain damage/death
- Post-concussion syndrome
- Chronic headache
- Learning disability/cognitive impairment or morbidity
- Chronic depression
- Vestibular/vertigo symptoms
- Migraine syndrome

THE FACTS (PART II)

- In the past 10 years, the number of 8-13 y/o with sport-related concussions has doubled, while the number of 14-19 y/o seeking treatment for head injuries has increased by 200%. (Bakhos et al., 2010)
- The CDC estimates that 1.6-3.8 million sports-related concussions occur annually in the U.S. (Langlois et al. 2006)
- Personal protective equipment has not yet shown a role in concussion reduction (Harmon et al., 2013)

SUMMARY

- 1) **NEVER LET A SYMPTOMATIC ATHLETE RETURN TO PLAY**
- 2) Normal CT scan/MRI does not rule in/out concussion
- 3) Most concussions occur without loss of consciousness
- 4) Many concussions are not brief/transient – may last weeks, months
- 5) Neuropsychological/baseline testing best performed preseason
- 6) Educate all parties involved: coaches, parents, trainers, teachers etc.