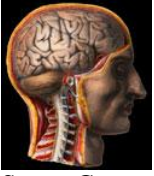


SLOCUM CENTER



Sports Concussion
Program

Slocum Sports Concussion Program Recommended Concussion Management Guidelines

A concussion is a mild traumatic brain injury that interferes with normal brain function. The Center for Disease Control and Prevention estimates there are 300,000 sports concussions among children and adolescents each year in the United States. It is usually caused by a blow to the head, but may occur with a whiplash injury, or when the head strikes the ground. Only about 5-10% of people are knocked unconscious with a concussion. Most are confused, dazed, or complain of a headache.

The past decade has seen a revolution in the management of sports-related concussions. What was once considered a relatively benign condition is now recognized as an injury to the brain with the potential for permanent complications. Having one's "bell rung" or being "dinged" has far more serious consequences than were previously suspected. Until recently, there were more than 20 different protocols physicians could use to evaluate and manage concussions. In 2004, an international conference on sports concussions was held in Prague. The aim of the symposium was to provide recommendations that would improve the care for athletes who sustained concussions through participation in sports. The delegates attending the conference redefined concussion, and established guidelines for the evaluation, treatment, management and prevention of the injury.

Each concussion is unique and may cause multiple symptoms. Some symptoms will appear immediately, while others may develop over the following days or weeks. Symptoms may be subtle and are often difficult to fully recognize. Common symptoms of concussion include:

- headache
- fogginess
- difficulty concentrating
- easily confused
- slowed thought processes
- difficulty with memory
- nausea
- lack of energy, tiredness
- dizziness, poor balance, lightheaded
- blurred vision
- sensitive to light and sounds
- poor sleep
- mood changes- irritable, anxious, or tearful

Education

It is incumbent upon sports medicine professionals to educate athletes, coaches, administrators, parents and fellow health care providers about the signs, symptoms and dangers of concussions. These educational opportunities may include formal lectures, brief interactions, and "teachable moments."

Prevention

While not all concussions can be prevented, simple interventions such as proper tackling technique and correct helmet fitting can decrease the risk of concussion in football. Similarly, enforcing the rules to eliminate rough play on the soccer field may also diminish concussion risk. Proper spotting techniques and adherence to rules regarding pyramids and stunting will result in a dramatic decrease in head and neck injuries in cheerleaders.

Preseason Evaluation

What is ImPACT?



ImPACT is currently the most widely utilized computerized concussion management program in the world and has been implemented effectively for high school, collegiate, and professional athletes. This program was developed through research by neuropsychologists, neurologists and physicians at the University of Pittsburgh Medical Center (UPMC).

ImPACT stands for **I**mmEDIATE **P**ost-concussion **A**ssessment and **C**ognitive **T**est. It is a sophisticated software program developed to help sports-medicine clinicians evaluate recovery following concussion. ImPACT is a computer test that evaluates multiple aspects of neurocognitive functioning including memory, brain processing speed, reaction time and post-concussive symptoms.

We recommend that all athletes participating in football, soccer, basketball, lacrosse, and wrestling be prioritized to receive pre-season baseline ImPACT screening upon entry into high school. While these are the sports that should be prioritized, a baseline ImPACT test can certainly be obtained on all students participating in athletics. Ideally, baseline testing should be repeated 2 years after the initial evaluation to account for further development of the adolescent brain.

While balance testing such as the Balance Error Scoring System (BESS) and measures such as the Sports Concussion Assessment Tool (SCAT) and the Standard Assessment of Concussion (SAC) can be useful in sideline concussion assessment, we do not recommend attaining baseline scores on athletes during the preseason. Deviations from baseline scores on these measures have not been well established for the diagnosis of a concussion.

Sideline Evaluation

Any athlete suspected of having sustained a concussion will be evaluated by the Certified Athletic Trainer (ATC) as soon as possible. This may be during competition, practice, recreational activity, or after the athlete has returned from an away event. Initial evaluation will include Post-Concussion Symptom Scale (PCSS), and a sideline concussion evaluation testing things such as memory, balance, co-ordination, cognition, cranial nerve function and awareness.

If symptoms of a concussion are present the athlete will be withheld from activity and closely monitored. An athlete will be referred to the nearest hospital the same day of injury if any of the following signs, symptoms, or situations are present:

- "Prolonged" LOC
- Persistent vomiting
- GCS of 14 or less (see below)
- Worsening symptoms
- Neurological deficit on physical exam
- Signs of a basilar skull fracture
- *Social situation- considerations include if parent/guardian will be at home, language barriers, etc.*
- *Travel considerations- distance to be traveled to return "home" may be factored into decision to send an athlete to the hospital.*

Fig. 2

Glasgow Coma Scale for
Head Injury

Glasgow Coma Scale,

Eye opening

Spontaneous	4
To loud voice	3
To pain	2
None	1

Verbal response

Oriented	5
Confused, disoriented	4
Inappropriate words	3
Incomprehensible sounds	2
None	1

Best motor response

Obeys	6
Localizes	5
Withdraws (flexion)	4
Abnormal flexion posturing	3
Extension posturing	2
None	1

Management and Return to Play Guidelines

Cognitive Rest

We are now recognizing the importance of decreasing the amount of stimuli the brain must process following a concussion. It is essential that an athlete who has suffered a concussion “rest” his or her brain in the days following the injury. It is especially important to avoid intense stimuli like loud noises and bright or flashing lights. Thus, concussed athletes should spend the days following a concussion staying away from activity such as attending sporting events, dances, and limit time watching TV, playing video games, or using the computer.

Concussed athletes with persistent symptoms, particularly symptoms worsened by auditory and /or visual stimuli, should be kept from returning to school, or have a modified school schedule early on after a concussion. The importance of cognitive rest must be stressed to the athlete, parents, and teachers.

ImPACT Testing

ImPACT testing should be conducted within 24-72 hours following a suspected concussion. Subsequent ImPACT testing should be directed by the treating physician. Testing will likely be no more frequent than every week as the resolution of symptoms is followed.

Referral to a “Concussion Specialist”

Athletes should be referred to a physician who specializes in sports-related concussion management in the following circumstances:

1. Post-concussion symptoms persist longer than 2 weeks.
2. The athlete has suffered multiple past concussions.
3. The athlete has any two ImPACT composite scores less than the 5th percentile.
4. The athlete has an ImPACT reaction time composite score of greater than 0.9 seconds.
5. Parent or guardian requests “specialty” care.

It is important to recognize that concussion management no longer consists of “just waiting” to get better. Through education, school accommodations, activity modification, and the use of certain medications it is possible to shorten the symptom period and return the athlete to activity.

Return to Activity Plan

Introduction

The Return to Activity Plan must be coordinated between the treating physician and the Certified Athletic Trainer. In schools without athletic trainers, the physician must work closely with parents, coaches, and teachers.

Post Concussion Symptoms

In order to begin the Return to Activity Plan the athlete must have no post concussion symptoms and be cleared by a physician. As we discussed, post concussion symptoms include:

- headache
- foginess
- difficulty concentrating
- easily confused
- slowed thought processes
- difficulty with memory
- nausea
- lack of energy, tiredness
- dizziness, poor balance, lightheaded
- blurred vision
- sensitive to light and sounds
- poor sleep
- mood changes- irritable, anxious, or tearful

Seven Steps to a Safe Return

Step 1. Complete cognitive rest. This may include staying home from school or limiting school hours (and studying) for several days. Activities requiring concentration and attention may worsen symptoms and delay recovery.

Step 2. Return to school full-time.

Step 3. Light exercise. This step cannot begin until the athlete is cleared by the treating physician for further activity. At this point the athlete may begin walking or riding an exercise bike. No weight-lifting.

Step 4. Running in the gym or on the field. No helmet or other equipment.

Step 5. Non-contact training drills in full equipment. Weight-training can begin.

Step 6. Full contact practice or training.

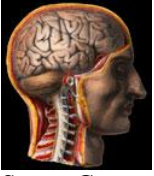
Step 7. Play in game. Must be cleared by your physician before returning to play.

The athlete may spend 1 to 2 days at each step before advancing to the next. **If post concussion symptoms occur at any step, activity must stop.**

Any questions about the information contained in this document should be directed to:

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Post-Concussion Symptom Scale

Patient Name: _____ Date of Evaluation: _____

How do you feel? Please score yourself according to how you have felt over the past few days.

Symptoms	Severity						
	None			Moderate		Severe	
Headache	0	1	2	3	4	5	6
“Pressure in head”	0	1	2	3	4	5	6
Neck pain	0	1	2	3	4	5	6
Balance problems or dizzy	0	1	2	3	4	5	6
Nausea or vomiting	0	1	2	3	4	5	6
Vision problems	0	1	2	3	4	5	6
Hearing problems/ringing	0	1	2	3	4	5	6
“Don’t feel right”	0	1	2	3	4	5	6
Feeling “dinged” or “dazed”	0	1	2	3	4	5	6
Confusion	0	1	2	3	4	5	6
Feeling slowed down	0	1	2	3	4	5	6
Feeling like “in a fog”	0	1	2	3	4	5	6
Drowsiness	0	1	2	3	4	5	6
Fatigue or low energy	0	1	2	3	4	5	6
More emotional than usual	0	1	2	3	4	5	6
Irritability	0	1	2	3	4	5	6
Difficulty concentrating	0	1	2	3	4	5	6
Difficulty remembering	0	1	2	3	4	5	6
Sadness	0	1	2	3	4	5	6
Nervous or anxious	0	1	2	3	4	5	6
Trouble falling asleep	0	1	2	3	4	5	6
Sleeping more than usual	0	1	2	3	4	5	6
Sensitivity to light	0	1	2	3	4	5	6
Sensitivity to noise	0	1	2	3	4	5	6

Total Score _____