

St. Louis University High School  
Athletic Department Protocol and Procedures for  
Management of Sports-Related Concussion

Medical management of sports-related concussion is evolving. In recent years, there has been a significant amount of research into sports-related concussion in high school athletes. SLUH has established this protocol to provide education about concussion for the athletic department staff and other school personnel. This protocol outlines procedures for staff to follow in managing head injuries, and outlines school policy as it pertains to return to play issues after concussion.

SLUH seeks to provide a safe return to activity for all athletes after injury, particularly after a concussion. In order to effectively and consistently manage these injuries, procedures have been developed to aid in ensuring that concussed athletes are identified, treated and referred appropriately, receive appropriate follow-up medical care during the school day, including academic assistance, and are fully recovered prior to returning to activity.

In addition to recent research, two (2) primary documents were consulted in developing this protocol. The “Summary and Agreement Statement of the 2<sup>nd</sup> International Conference on Concussion in Sport, Prague 2004” [1](referred to in this document as the Prague Statement), and the “National Athletic Trainers’ Association Position Statement: Management of Sport-Related Concussion” [2](referred to in this document as the NATA Statement).

This protocol will be reviewed on a yearly basis by the SLUH medical staff. Any changes or modifications will be reviewed and given to athletic department staff and appropriate school personnel in writing.

All athletic department staff will attend an annual meeting in which procedures for managing sports-related concussion are discussed.

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## I. Recognition of concussion

### A. Common signs and symptoms of sports-related concussion

1. Signs (observed by others):

- Athlete appears dazed or stunned
- Confusion (about assignment, plays, etc.)
- Forgets plays
- Unsure about game, score, opponent
- Moves clumsily (altered coordination)
- Balance problems
- Personality change
- Responds slowly to questions
- Forgets events prior to hit
- Forgets events after the hit
- Loss of consciousness (any duration)

2. Symptoms (reported by athlete):

- Headache
- Fatigue
- Nausea or vomiting
- Double vision, blurry vision
- Sensitive to light or noise
- Feels sluggish
- Feels “foggy”
- Problems concentrating
- Problems remembering

3. These signs and symptoms are indicative of probable concussion. Other causes for symptoms should also be considered.

### B. Cognitive impairment (altered or diminished cognitive function)

1. General cognitive status can be determined by simple sideline cognitive testing.

- a. Medical staff may utilize SCAT (Sports Concussion Assessment Tool)[3], SAC, sideline ImpACT, or other standard tool for sideline cognitive testing.
- b. Coaches should utilize the basic UPMC cognitive testing form (will provide) when medical staff cannot be reached or is not available.

## II. ImPACT neuropsychological testing requirements

- A. ImPACT (Immediate Post-Concussion Assessment and Cognitive Testing) is a research-based software tool utilized to evaluate recovery after concussion. It was developed at the University of Pittsburgh Medical Center (UPMC). ImPACT evaluates multiple aspects of neurocognitive function, including memory, attention, brain processing speed, reaction time, and post-concussion symptoms.
  - Neuropsychological testing is utilized to help determine recovery after concussion.
- B. All athletes participating in contact sports at SLUH will be required to take a baseline ImPACT test prior to participation in sports at SLUH (usually freshmen and junior years).
- C. Athletes in collision and contact sports (as defined by the American Academy of Pediatrics classifications) are required to take a “new” baseline test every 2 years.

## III. Management and Referral Guidelines for All Staff

- A. Suggested Guidelines for Management of Sports-Related Concussion[4]
  - 1. Any athlete with a witnessed loss of consciousness (LOC) of any duration should be spine boarded and transported immediately to nearest emergency department via emergency vehicle.
  - 2. Any athlete who has symptoms of a concussion, and who is not stable (i.e., condition is changing or deteriorating), is to be transported immediately to the nearest emergency department via emergency vehicle.
  - 3. An athlete who exhibits any of the following symptoms should be transported immediately to the nearest emergency department, via emergency vehicle.
    - a. deterioration of neurological function
    - b. decreasing level of consciousness
    - c. decrease or irregularity in respirations
    - d. decrease or irregularity in pulse
    - e. unequal, dilated, or unreactive pupils
    - f. any signs or symptoms of associated injuries, spine or skull fracture, or bleeding
    - g. mental status changes: lethargy, difficulty maintaining arousal, confusion/agitation
    - h. seizure activity
    - i. cranial nerve deficits

4. An athlete who is symptomatic but stable, may be transported by his or her parents. The parents should be advised to contact the athlete's primary care physician, or seek care at the nearest emergency department, on the day of the injury.

- ALWAYS give parents the option of emergency transportation, even if you do not feel it is necessary.

### **III. Procedures for the Certified Athletic Trainer (AT)**

A. The AT will assess the injury, or provide guidance to the coach if unable to personally attend to the athlete.

1. Immediate referral to the athlete's primary care physician or to the hospital will be made when medically appropriate (see section II).

2. The AT will perform serial assessments following recommendations in the NATA Statement, and utilize the SCAT (Sport Concussion Assessment Tool) or sideline ImPACT, if available.

- The AT will notify the athlete's parents and give written and/or verbal home and follow-up care instructions.

B. The AT will notify the school nurse of the injury, prior to the next school day, so that the school RN can initiate appropriate follow-up in school immediately upon the athlete's return to school.

1. The AT will continue to provide coordinated care with the school RN, for the duration of the injury.

2. The AT will communicate with the athlete's guidance counselor regarding the athlete's neurocognitive and recovery status, if needed.

C. The AT is responsible for administering post-concussion ImPACT testing.

1. The initial post-concussion test will be administered when athlete is symptom free (unless recommended earlier by doctor).

- Repeat post-concussion tests will be given at appropriate intervals, dependent upon clinical presentation.

2. The AT will review post-concussion test data with the athlete and parents, when requested

3. The AT will forward testing results to the athlete's treating physician, with parental permission.
4. The AT or the athlete's parent may request that a neuropsychological consultant review the test data. The athlete's parents will be responsible for charges associated with the consultation.
5. The AT will monitor the athlete, and keep the School Nurse informed of the individual's symptomatology and neurocognitive status, for the purposes of developing or modifying an appropriate health care plan for the student-athlete.
6. The AT is responsible for monitoring recovery & coordinating the appropriate return to play activity progression.
7. The AT will maintain appropriate documentation regarding assessment and management of the injury.

#### IV. Guidelines and procedures for coaches: **RECOGNIZE, REMOVE, REFER**

##### A. **Recognize** concussion

1. All coaches should become familiar with the signs and symptoms of concussion that are described in section I.
2. Very basic cognitive testing should be performed to determine cognitive deficits.

##### B. **Remove** from activity

1. If a coach suspects the athlete has sustained a concussion, the athlete should be removed from activity until evaluated medically.
  - **Any athlete who exhibits signs or symptoms of a concussion should be removed immediately, assessed, and should not be allowed to return to activity for a minimum of 24 hours.**

##### C. **Refer** the athlete for medical evaluation

1. Coaches should report all head injuries to the SLUH Certified Athletic Trainer (AT), as soon as possible, for medical assessment and management, and for coordination of home instructions and follow-up care.
  - a. The AT can be reached at: 618-304-6328 (Kim Bruhn) 314-809-8519 (Jon McCutchen)

- b. The AT will be responsible for contacting the athlete's parents and providing follow-up instructions.
2. If at an away contest, coaches should seek assistance from the host site AT.
3. If the SLUH AT is unavailable, or the athlete is injured at an away event, the coach is responsible for notifying the athlete's parents of the injury.
  - a. Contact the parents to inform them of the injury and make arrangements for them to pick the athlete up at school.
  - b. Contact the AT at the above number, with the athlete's name and home phone number, so that follow-up can be initiated.
  - c. Remind the athlete to report directly to the school nurse before school starts, on the day he or she returns to school after the injury.
4. In the event that an athlete's parents cannot be reached, and the athlete is able to be sent home (rather than directly to MD):
  - a. The Coach or AT should insure that the athlete will be with a responsible individual, who is capable of monitoring the athlete and understanding the home care instructions, before allowing the athlete to go home.
  - b. The Coach or AT should continue efforts to reach the parent.
  - c. If there is any question about the status of the athlete, or if the athlete is not able to be monitored appropriately, the athlete should be referred to the emergency department for evaluation. A coach or AT should accompany the athlete and remain with the athlete until the parents arrive.
  - d. Athletes with suspected head injuries should not be permitted to drive home.

## **V. FOLLOW-UP CARE OF THE ATHLETE DURING THE SCHOOL DAY**

- A. Responsibilities of the school nurse after notification of student's concussion
  1. The athlete will be instructed to report to the school nurse upon his or her return to school. At that point, the school nurse will:
    - a. re-evaluate the athlete utilizing a graded symptom checklist.
    - b. provide an individualized healthcare plan based on both the athlete's current condition, and initial injury information provided by the AT or parent.
  2. Notify the student's guidance counselor of the injury immediately.

3. Notify the student's P.E. teacher immediately that the athlete is restricted from all physical activity until further notice.
4. If the school RN receives notification of a student-athlete who has sustained a concussion from someone other than the AT (athlete's parent, athlete, physician note), the AT should be notified as soon as possible, so that an appointment for ImPACT testing can be made.
5. Monitor the athlete on a regular basis during the school day.

**B. Responsibilities of the student's guidance counselor**

The school counselor is the ideal lead staff person to inform teachers of needed learning accommodations while the student is symptomatic. They can provide information needed for making decisions about return to activity, can work with the student's teachers to ensure appropriate classroom accommodations, and can refer the student to more formalized learning plan.

If counselor receives any documentation from student regarding a concussion the student received outside of a SLUH sponsored event, they will make a copy and send the student with documentation directly to the nurse's office for follow up.

Upon the student returning to school, the counselor will:

1. Inform the student's teachers and anyone else in the school that needs to know of the concussion and any accommodations that might be needed.
2. Monitor the student closely and recommend appropriate academic accommodations for students who are exhibiting symptoms of post-concussion syndrome.
3. Meet with the student suffering from concussion upon returning to school to assist with classroom modifications, transition to academics, and advocacy for injured student.
4. Provide referrals for educational support or tutoring as necessary.
5. Maintain communication with parents, nursing, and teachers regarding student's progress.

## VI. RETURN TO PLAY (RTP) PROCEDURES AFTER CONCUSSION

### A. "When in doubt, hold them out."

1. As previously discussed in this document, an athlete who exhibits signs or symptoms of concussion, or has abnormal cognitive testing, should not be permitted to return to play on the day of the injury.
2. Any athlete who denies symptoms but has abnormal sideline cognitive testing or abnormal actions should be held out of activity.

### B. Return to play after concussion

1. The athlete must meet all of the following criteria in order to progress to activity:
  - a. Asymptomatic at rest and with mental exertion at school  
AND:
  - b. Within normal range of baseline on post-concussion ImpACT testing  
AND:
  - c. Have written clearance from primary care physician or specialist (athlete must be cleared for progression to activity by a physician other than an Emergency Room/Urgent Care physician. Also can not be a parent physician).  
AND:
  - d. Cleared by AT employed by or contracted by SLUH to begin the return to play progression.
2. Once the above criteria are met, the athlete will be progressed back to full activity following a stepwise process, (as recommended by both the Prague and NATA Statements), under the supervision of the AT.
3. Progression is individualized, and will be determined on a case by case basis. Factors that may affect the rate of progression include: previous history of concussion, duration and type of symptoms, age of the athlete, and sport/activity in which the athlete participates. An athlete with a prior history of concussion, one who has had an extended duration of symptoms, or one who is participating in a collision or contact sport should be progressed more slowly.
4. Stepwise progression as described in the Prague Statement:
  - a. No activity – do not progress to next step until asymptomatic and cleared by doctor to begin activity.
  - b. Light aerobic exercise – walking, stationary bike



- c. Sport-specific training (e.g., skating in hockey, running in soccer)
- d. Non-contact training drills. Weight lifting can begin.
- e. Full-contact training after medical clearance
- f. Game play

Note: If the athlete experiences post-concussion symptoms during any phase, the athlete should drop back to the previous asymptomatic level and resume the progression after 24 hours.

- 5. The AT and athlete will discuss appropriate activities for the day. The athlete will be given verbal and written instructions regarding permitted activities.
- 6. The athlete should see the AT daily for re-assessment and instructions until he has progressed to unrestricted activity, and been given a written report to that effect, from the AT.

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[1] McCrory P, et al. Summary and Agreement Statement of the 2nd International Conference on Concussion

in Sport, Prague 2004. *Clin J Sports Med.* 2005; 15(2):48-55.

[2] Guskiewicz KM, et al. National Athletic Trainers' Association Position Statement: Management of Sport-

Related Concussion. *J Athl Train.* 2004;39(3):280-297.

[3] McCrory P, et al

[4] Guskiewicz KM, et al