



Concussion Assessment, Management, and Return to Play Guidelines

The following policy and procedures on neurocognitive baseline testing and subsequent assessment and management of concussions as well as return to play guidelines has been developed following the guidelines outlined by the Zurich Consensus in Sports Concussion, NATA Sports Concussion Position Statement. This Protocol is designed in accordance with the Seattle Sports Concussion Program and Zackery Lystedt Law to provide quality healthcare services and assure the well-being of each student-athlete.

PURPOSE:

The Seattle Sports Concussion Program (SSCP) recognizes that sport induced concussions pose a significant health risk for those student-athletes participating in athletics. With this in mind, Seattle Children's Department of Sports Medicine has implemented policies and procedures to assess and identify those student-athletes who have suffered a concussion. The Sports Medicine Department also recognizes that baseline neurocognitive testing on student-athletes who participate in those sports which have been identified as collision and or contact sports and will provide significant data for sound return to competition decisions. This baseline data along with physical examination, and/or further diagnostic testing will be used in conjunction in determining when it is safe for a student athlete to return to competition.

CONCUSSION DEFINITION:

Concussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces. Several common features that incorporate clinical, pathologic and biomechanical injury constructs that may be utilized in defining the nature of a concussive head injury

INCLUDE:

- Concussion may be caused either by a direct blow to the head, face, neck or elsewhere on the body with an "impulsive" force transmitted to the head.
- Concussion typically results in the rapid onset of short lived impairment of neurologic function that resolves spontaneously.
- Concussion may result in neuropathological changes but the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury.
- Concussion results in a graded set of clinical symptoms that may or may not involve loss of consciousness. Resolution of the clinical and cognitive symptoms typically follows a sequential course however it is important to note that in a small percentage of cases however, post-concussive symptoms may be prolonged.
- No abnormality on standard structural neuroimaging studies are seen in concussion.



SIGNS AND SYMPTOMS OF CONCUSSION:

Diagnosis of acute concussion involves the assessment of a range of domains including clinical symptoms, physical signs, behavior, balance, sleep and cognition.

Signs Observed	Signs Reported
Appears dazed or stunned	Headache
Is confused about assignment	Nausea
Forgets plays	Balance problems or dizziness
Is unsure of game, score or opponent	Double or fuzzy vision
Moves Clumsily	Sensitivity to light or noise
Answers questions slowly	Feeling sluggish
Loses consciousness	Feeling foggy or sluggish
Shows behavior or personality changes	Concentration or memory problems
Can't recall events prior to injury	Confusion
Can't recall events after injury	

Physical Symptoms	Cognitive Symptoms	Emotional symptoms
Headache	Memory Loss	Irritability
Vision Difficulty	Attention Disorders	Sadness
Nausea	Reasoning difficulty	Nervousness
Dizziness		Sleep Disturbances
Balance Difficulties		

BASELINE ASSESSMENT:

All incoming freshman or those first time entering into the program who are participating in those sports which have been identified as a contact or collision sport will have a baseline neurocognitive test performed as part of their athletic medical screening. Currently the Seattle Children's Hospital Sports Medicine Department is implementing the **ImPACT™** concussion management system. The **ImPACT™** system is an online computerized test which consists of 10 modules designed to test cognitive functioning.

The **SSCP Modified SCAT2** is a series of questions testing: Orientation, Immediate Memory, Concentration, and Delayed Memory to measure the immediate neurocognitive effects of a student-athlete with a suspected concussion.

The sports which will undergo baseline neurocognitive testing are as follows.

Fall	Winter	Spring
Football	Wrestling	Boy's Soccer
Girl's Soccer	Girl's/Boy's Basketball	



CONCUSSION MANAGEMENT AND RETURN TO PLAY GUIDELINES

In any circumstance where a concussion is suspected in an athlete, the first priority is to remove the athlete from further participation until a thorough sideline assessment can be made. If there is a question about the state of mental clearing, it is best to error in the direction of conservative assessment and with-hold the athlete from further competition until further assessment can be arranged. Furthermore, as stated in the Zackery Lystedt Law: If concussive signs/symptoms are present any athlete under the age of 18 must be removed from participation for the remainder of the day.

The recommendations in this document for the management of concussion are based on review of the medical literature including, but not limited to, Zurich Consensus Statement on Concussions in Sport; NATA Position Statement on the Management of Sport-Related Concussion.

SIDELINE MANAGEMENT OF CONCUSSIONS

In all situations where a concussion is suspected, the first step is to remove the athlete from further participation. If at anytime the athlete is believed to have sustained a concussion or concussive symptoms are present they will forego the remainder of the day's athletic activities and enter into the holding pattern noted in stage one of the SSCP Concussion Management Protocol. All athletes will be subject to SSCP's Sideline Concussion Evaluation. The athlete should be assessed every 5 minutes or as necessary based on individual situations. If the athlete's parent/guardians are present the athlete will be evaluated using the SSCP Modified SCAT2 and may be released to their care with the "home care sheet" and contact information exchanged. If they are not immediately available, following the end of the day's athletic activities the athlete will be SSCP Modified SCAT2 tested and their parent/guardians will be updated on the student-athlete's injury and verbally informed of the home care protocol. The athlete will not be released to an unreliable minor or to drive themselves home.

Any athlete with a documented loss of consciousness or remains unconscious will undergo cervical spin immobilization and will be transported to the nearest emergency department. Any athlete experiencing focal neurologic deficit, significant-alteration or deterioration of mental status, or un-improving post concussive confusion lasting 2 hours will be transported to the nearest emergency department with spine injury precautions.

The Department of Sports Medicine recognizes that it may not be possible for neurocognitive testing to take place within a 24 hour time frame due to availability. With that in mind, it is necessary to plan for neurocognitive testing as soon as possible for the student-athlete, when they return to school.

RETURN TO PLAY GUIDELINES:

If an athlete is removed from participation due to concussive signs or symptoms they will immediately enter into the holding pattern noted in stage one of the SSCP Concussion Management Protocol. The athlete will be subjected to SSCP Modified SCAT2 test immediately following the completion of that day's athletic events. This will serve as their first injury exam document. The athlete will be re-evaluated in 48hours with SSCP Modified SCAT2, which will serve to document the progression of the athlete's recovery. If the athlete scores are worse then the first injury exam the athlete should be referred to an



appropriate medical physician skilled in the evaluation and management of concussions. If for any reason the student-athlete is still symptomatic or their scores have not returned to baseline levels within 5 days following injury, they will be referred to the appropriate physician skilled in the evaluation and management of concussions. It is important to note that this timeline could last over a period of days to weeks or months, and could lead to potential medical disqualification from athletics. All cases will be handled on a case-by-case basis. All decisions for return to participation that do not abide by above mentioned consensus will be reviewed by the medical director.

SUMMARY:

The Seattle Sports Concussion Program is committed to providing quality health care services for all athletes. As such, the Seattle Children's Sports Medicine department is very proactive in the assessment and management of concussions. Doing so limits the risks of concussions associated with athletics, and the potential catastrophic and long-term complications from said concussions.



SSCP Concussion Evaluation and Management Guidelines

Certified Athletic Trainer will evaluate concussive athletes as follows-

Baseline Testing-

- a) Neuropsychological Assessment - ImPACT

Time of Injury-

- a) SSCP Sideline Concussion Evaluation
- b) SSCP Modified SCAT2

Note-

- If the student-athlete is symptomatic under normal conditions and/or with exertional test, he/she **CAN NOT** return to participation until cleared through the procedures outlined below.

Post- Concussion Follow-Up: (24-48 hours post-injury)-

- a) SSCP Modified SCAT2 Post Concussion Symptom Scale

Note-

The SSCP Modified SCAT2 Post Concussion Symptom Scale will be repeated every day until the student-athlete Self-Reports Asymptomatic (SRA), at which time the student-athlete will begin with Day 1 SRA Procedures.

- *If for any reason the student-athlete is still symptomatic or their scores have not returned to baseline levels within 5 days following injury, they will be referred to the appropriate physician skilled in the evaluation and management of concussions.*

Day 1 Self-Report Asymptomatic (SRA)

- a) SSCP Modified SCAT2
- b) Neuropsychological Assessment - ImPACT
 - All ImPACT Scores with brief injury history will be forwarded to the appropriate physicians and/or neuropsychologists (Dr. Breiger, Dr. Copple) for further evaluation and clearance.
 - a) breiger@u.washington.edu; dcoppel@u.washington.edu
 - Anticipate reply within three business days from date of test/email.
 - a) The reply from Dr. Breiger/Dr. Copple will be similar to
 1. Their impact score looks good, continue on with the concussion protocol.
 2. Their impact score does not look good, wait with the progression, test them again.
 3. This athlete needs further neurocognitive evaluation
- c) Continue resting for approximately 24hrs



Day 2 Self-Report Asymptomatic (SRA): w/ no increase in symptoms

- a) Cardiovascular exercise in controlled setting-
 - o Mode, duration and intensity dependant upon sport
 - o *Light aerobic activity- walking, stationary bike, no resistance training*

Day 3-4 Self-Report Asymptomatic (SRA): w/ no increase in symptoms

- a) Exertional Functional Activity w/o Contact in Controlled Setting
 - o Mode, duration and intensity dependant upon sport
 - o *Day 3: Sport-specific exercise(push-ups & sit-ups)*
 - o *Day 4: Non-contact training drills*
- b) Weight Training (under the direct supervision of a certified athletic trainer)
 - o Mode, duration and intensity dependant upon sport
 - o If Day 4 does not fall within the student-athlete's scheduled weight lifting schedule, the student-athlete should still perform weight training exercises under the direction of a certified athletic trainer.

Day 5-6 Self-Report Asymptomatic (SRA): w/ no increase in symptoms

- a) Exertional Functional Activity w/ contact
 - o Mode, duration and intensity dependant upon sport
 - o *Day 5: Full contact training after medical clearance*
 - o *Day 6: Competition Ready*

Note-

- If the student-athlete is symptomatic during and/or after any of the tests, return him/her to the concussed state / procedures until SRA and consult with the appropriate Physician and/or neuropsychologists for further evaluation.