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 in accordance with the goal of the Athletic Training Department at Saint Michael’s College (SMC) to provide quality healthcare services and assure the well-being of each student-athlete.

Purpose

The Saint Michael’s College Athletic Training Department recognizes that head injuries, particularly sport-induced concussions, pose a significant health risk for student-athletes participating in intercollegiate athletics at the College. Therefore, the Athletic Training Department has implemented policies and procedures to assess and identify those student-athletes who have suffered a concussion.

Our goal is to limit the potential catastrophic and long term risks associated with sustaining a concussion. The SMC Athletic Training Department also recognizes the importance of baseline testing on student-athletes who participate in sports which are recognized as contact or collision and/or who have a history of concussions upon entering athletic participation at SMC. Baseline data along with physical exam, diagnostic testing, symptom scaling, follow up testing and a gradual RTP protocol will all be used in conjunction with sound clinical judgment.

What is a Concussion?

Concussions are the most common form of head injury suffered by athletes. Due to the complexity of the injury and ever-growing research, a unanimous definition of “concussion” does not exist. A concussion can be caused by a direct or indirect hit to the head or body and can result in a disturbance and/or impairment in neurologic function. When an athlete suffers a concussion, the brain suddenly shifts or shakes inside the skull and can knock against the skull’s bony surface. A hard hit to the body can result in an acceleration and/or deceleration injury when the brain brushes against bony protuberances inside the skull. The exact recovery period from this trauma is unclear and will vary from individual to individual.

Following a concussion, the athlete may experience a variety of symptoms. Most concussions occur without a loss of consciousness. It is important to remember that some symptoms may appear right away and some may be delayed. Symptoms, as well as symptom severity, may differ between individuals; however, a combination of symptoms classically occurs.

Mild Traumatic Brain Injury (mTBI) – All concussions are a form of mTBI, however not all mTBI’s are concussions. The terms mTBI and concussion should NOT be used interchangeably.

Post Concussion Syndrome – A set of symptoms which may last for weeks, months, or years following a concussion.
Second Impact Syndrome – Rare condition when an athlete sustains a second head injury before symptoms from the first have resolved, and is often fatal.

**Signs and Symptoms of Concussion**

Certified Athletic Trainers need to be aware of the potential signs and symptoms of concussion in order to properly diagnose the injury and begin formal management. Symptoms can take seconds to hours to develop following a concussive injury.

Signs and Symptoms of Concussion may include:

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<th>Physical</th>
<th>Cognitive</th>
<th>Emotional</th>
<th>Sleep</th>
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<tbody>
<tr>
<td>Headache</td>
<td>Difficulty remembering</td>
<td>Behavioral changes</td>
<td>Sleep more than usual</td>
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<tr>
<td>Fatigue</td>
<td>Difficulty concentrating</td>
<td>Irritability</td>
<td>Sleep less than usual</td>
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<tr>
<td>Dizziness</td>
<td>Feeling slowed down</td>
<td>Sadness</td>
<td>Drowsiness</td>
</tr>
<tr>
<td>Photophobia</td>
<td>Feeling in a fog</td>
<td>Feeling emotional</td>
<td>Trouble falling asleep</td>
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<td>Sensitivity to noise</td>
<td>Slowed reaction times</td>
<td>Nervousness</td>
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<td>Nausea</td>
<td>Altered attention</td>
<td>Anxiety</td>
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<td>LOC</td>
<td>Amnesia</td>
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<td>Vision difficulty</td>
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**Notification of Injury/Symptoms:**

Due to the serious nature of this injury and potential dangerous results of returning to activity, concussions need to be recognized and diagnosed as soon as possible. It is required that student-athletes be truthful and forthcoming about their symptoms as soon as they are present. If/when he or she is diagnosed with a concussion, the student-athlete must report symptoms each day until he or she is cleared for full activity by the Team Physician or designee.

**Concussion Education:**

In accordance with NCAA recommendations, student-athletes will be annually presented with educational materials that provide information about the mechanisms of head injury, as well as the signs and symptoms of a concussion. Subsequently, it will be required that all student-athletes sign the Saint Michael’s College Student-Athlete Concussion Statement, a statement accepting the responsibility for truthfully reporting of his or her injuries and illnesses, including signs and symptoms of a concussion. Additionally, each coach (including volunteer coaches) at Saint Michael's College will undergo concussion education.

Due to the severe nature of a concussion, Saint Michael’s College believes in a conservative approach for treatment. This includes the student-athlete self-reporting his or her symptoms after suffering a concussion. Self-reporting of symptoms plays an integral role in tracking the severity and subsequent recovery of a concussion. Therefore, the student-athlete is responsible for reporting his or her signs and symptoms.
symptoms completely and honestly to the staff Certified Athletic Trainer and/or Team Physician as soon as they present and each day following the injury.

**Baseline Assessment**

All first year student-athletes (transfer, freshman) entering SMC who are participating in those sports identified as collision or contact and/or who have had previous concussions identified by their health history will have a baseline neurocognitive test performed as part of their athletic medical screening. Currently the SMC Athletic Training Department utilizes the ImPACT concussion management system (impacttest.com). The ImPACT system is a user friendly computer based program which has 10 modules which are designed to test multiple aspects of cognitive functioning. In addition to the baseline ImPACT test ALL student-athletes will complete a standardized assessment of concussion (SAC) test their first year of enrollment at SMC.

*The sports which currently undergo baseline ImPACT testing include:*

Men’s & Women’s Soccer, Field Hockey, Volleyball, Alpine Skiing, Men’s & Women’s Diving, Men’s & Women’s Basketball, Men’s & Women’s Ice Hockey, Men’s & Women’s Lacrosse, Softball, and Baseball.

**Management**

1. In any circumstance where a concussion is suspected, the first priority is to remove the athlete from further participation until a thorough sideline exam can be performed. Furthermore if there is a concern of the mental state of clearing, the athletic trainer should err on the side of conservative assessment until the athlete can be examined further or by a physician.

2. Any student athlete suspected of sustaining a concussion will be fully evaluated by an ATC. In accordance with the NATA Position Statement on Sport Related Concussion the ATC will document the following:
   a. Mechanism of Injury
   b. Initial Signs and Symptoms
   c. State of Consciousness
   d. SCAT3 Assessment
   e. Findings with Postural/Stability Tests
   f. Instruction Given to the Athlete and/or Parent (See take home instructions)
   g. Recommendations by Physician (if applicable)
   h. Date and Time of Athletes’ Return to Participation
   i. Any Relevant Information on Player’s History of Prior Concussion
3. If the athlete has undergone baseline testing the athlete should be re-evaluated using the same testing methods and scores should be compared.

**On Field / Sideline Evaluation**

1. In all cases in which a concussion is suspected the athlete should be removed from athletic participation and a formal evaluation should take place.
   a. Athlete removed from field utilizing c-spine precautions and transported to emergency department if presents with:
      i. Prolonged LOC and/or
      ii. Focal neurologic defect and/or
      iii. Significant alteration or deterioration in mental status.
   b. Athlete conscious and alert will be removed to sideline for evaluation

2. Sideline evaluation
   a. Injury history (Hx), date/time, previous concussion Hx recorded, etc.
   b. Verbal symptom checklist
   c. SCAT3 Assessment
      i. Glasgow Coma Score (GCS)
      ii. Maddocks Score
      iii. Cognitive Assessment – Standardized assessment of Concussion (SAC)
   d. Neck Exam
   e. Balance Exam
   f. Coordination Exam
   g. SAC Delayed Recall
   d. Neurologic exam
      i. Cranial Nerve Assessment
      ii. Upper and lower quarter screening
   e. Gait coordination
      i. Tandem walk

3. Following the sideline evaluation, continuing serial monitoring every 5 minutes until symptoms stabilize or improve. Hold helmet (if applicable).

4. At the 15 minute mark, repeat examination.
   a. If athlete reports asymptomatic and passes neurologic, neurocognitive, balance and coordination tests
      i. Perform provocative maneuvers/exertional exercises and reassess symptoms
      ii. If asymptomatic use clinical judgment on an individualized basis for RTP
      iii. Rarely will this be the case, the athletic trainer and/or physician should err on the side of conservative management when dealing with concussions
   b. If athlete has symptoms and/or does not pass any portion of sideline evaluation, the athlete is to remain out from participation for follow-up clinic evaluation
If athlete reports an increase and/or prolonged altered mental status and/or focal neurological deficit emergency care and neuroimaging may be warranted

**SMC Athletic Training Room Clinic Evaluation**

1) Any SMC student-athlete who has sustained a concussion will be required to report to the SMC Athletic Training Room (ATR) or equivalent if traveling for more formal evaluation

2) Clinic evaluation will consist of:
   a. SMC Initial Clinic Evaluation Form
   b. SCAT 3  
      i. Graded symptoms checklist
      ii. Cognitive Assessment (SAC)
      iii. Neck Examination
      iv. Balance Examination – Modified balance error scoring system (BESS)
      v. Coordination Examination
      vi. SAC Delayed Recall

3) The athlete will be scheduled for ImPACT testing within 48 hours of injury, or when symptoms diminish

4) If warranted a neurological evaluation will be scheduled with Health Services within 48 hours of injury

5) If warranted physician evaluation will also be scheduled within 48 hours of injury

6) Prior to leaving the ATR the athlete will be given a home instructions sheet, and given instructions on what to do should their condition deteriorate

**Treatment / Rehabilitation**

1) SMC athletes who have sustained a concussion will be required to follow up with their athletic trainer daily until all symptoms have resolved, and they have gone through a return to play protocol symptom free

2) Follow up evaluation will consist of completing the SMC Management Follow up form
   a. Graded symptoms checklist
   b. Neurologic exam
   c. SAC Testing

3) Once the athlete is asymptomatic and has returned to baseline values with the SAC test, they should then be tested on ImPACT (2nd time since onset of injury)

4) Once the athlete is symptom free and back to baseline values with the SAC test, and the ImPACT score they may begin a supervised graduated RTP protocol
Special Considerations

Medications – Are usually not needed but in some cases may be needed when considering sleep and headaches. If the athletic trainer or physician allows the athlete to take medication, only Tylenol (acetaminophen) should be used. Aspirin and NSAIDS should **NOT** be used by the athlete. * note that the athlete should not be using medication when assessing symptoms and RTP.

Physician/Neurologist Clearance - Will be required for the following situations prior to RTP:

- Multiple Concussions, in season and/or career
- Duration of symptoms greater than 10 days
- LOC greater than 1 minute
- Convulsions
- Two consecutive episodes close together, and or recent TBI
- Athlete suffering from migraine, depression, ADHD, sleep disorder, or other mental health issue
- Athlete currently taking psychoactive drugs, anticoagulants

Return to Play Considerations

RTP protocol following a concussion follows a stepwise progression. The athlete should be symptom free and have returned to baseline values before beginning this progression. The athlete should complete each level and progress to the next if they remain asymptomatic both at rest and with provocative exercise. Generally, each step should take about 24 hours. Should the athlete become symptomatic during the progression, they should drop back to the previous asymptomatic level and try to progress after a 24 hour period of rest has passed and a follow up ImPACT test completed (if necessary).

1) The ATC will not make a return to play decision on an athlete who has experienced loss of consciousness or amnesia lasting longer than 15 minutes. An athlete who has not experienced these symptoms and is completely asymptomatic may return to play if the ATC decides it is appropriate.

2) An athlete will NOT, under any circumstances, be allowed to return to play if they are experiencing any concussion symptoms.

3) An athlete may return the same day of injury if they meet the following conditions:
   a. No loss of consciousness
   b. No Post-Traumatic Amnesia
   c. Completely Asymptomatic 15 minutes following removal from play.
      i. **NOTE: An athlete may be asymptomatic immediately following a head trauma but may develop symptoms over time**
   d. Asymptomatic after Exertional tests performed
4. Recent research has suggested that a headache that does not resolve entirely is not necessarily a post-traumatic symptom of concussion. This is seen more often in sports such as football where the head, neck, and upper musculature are put routinely in stressful situations. This can be an exception to the rule when determining return to play for an athlete. It will be at the discretion of the ATC to determine if the athlete can return.

5. It is strongly recommended that objective tests are used when determining athletes’ mental status and ability to return to play. Subjective assessments (such as the “symptom checklist”) are susceptible to error due to bias on the individual reporting the information.

6. Once athletes are asymptomatic (returned to baseline) for at least 24 hours (barring the set of circumstances in number 4 listed above), they should begin a gradual return to play. This should consist of a step-by-step program as follows.
   - **Level 1** – Light aerobic exercise (<70% Max HR) = increase heart rate (walking, stationary bike, sit ups, etc.)
   - **Level 2** – Sport specific exercises (ex. Skating, running, cutting, jumping)
   - **Level 3** – Non-contact drills (complex training drills, passing, catching, resistance training)
   - **Level 4** – full contact practice (full medical clearance)
   - **Level 5** – Return to play (game)

Continued post-concussive symptoms, prior concussion history and any diagnostic testing results along with neurocognitive testing and physical exam, will be utilized by the team physician and athletic trainer in establishing a timeline for an athlete’s return to activity. It is important to note that this timeline could last over a period of days to weeks or months, or potential medical disqualification from Saint Michael’s College athletics. All cases will be handled on an individualized basis. The decision by the Team Physician for all cases of an athlete’s return to activity is final.

**Summary**

The Saint Michael’s College Athletic Training Department is proactive in the prevention, recognition, and management of concussion in order to limit the risks of concussions associated with athletics. As well as to limit the potential catastrophic and long term risks associated with sustaining a concussion. Therefore the management and return to play decisions will remain in the realm of clinical judgment on an individualized basis by both the certified athletic trainer and the team physician.

The recommendation in this document for the management of concussion are based on a review of the medical literature including, but not limited to, Consensus Statement on Concussion in Sport held in Zurich, The National Athletic Trainers’ Association Position statement: Management of Sport-related Concussion.
SMC Management Follow Up Concussion Symptom Inventory

Name: ____________________________  Today’s Date/Time: ________________

Please complete the following scale based on how you currently feel: Score is on a 0-6 scale (6 being worst)

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<th>Symptom</th>
<th>Score</th>
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<td>Nausea or Vomiting</td>
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<td>Dizziness</td>
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<td>Balance Problems</td>
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<td>Feeling like “in a fog”</td>
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<td>“Don’t Feel Right”</td>
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<td>Difficulty Concentrating</td>
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<td>Difficulty Remembering</td>
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<td>Fatigue or Low Energy</td>
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<td>Confusion</td>
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<td>Drowsiness</td>
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<td>Trouble Falling Asleep</td>
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<td>Irritability</td>
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<td>Sadness</td>
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<td>Nervous or Anxious</td>
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Total Symptom Score
SMC Home Instructions for Concussion

You have had a concussion and need to be watched closely for the next several days until you have completely recovered. Please review the following information about your treatment and recovery.

WHAT IS A CONCUSSION? A concussion is a type of traumatic brain injury caused by a bump, blow or jolt to the head. Concussions can also occur from a fall or a blow to the body that causes the head and brain to move quickly back and forth. A concussion can change the way your brain normally works. Concussions can range from mild to severe and can occur even if you do not lose consciousness.

WHAT ARE THE SYMPTOMS OF A CONCUSSION? You can’t see a concussion, but you may notice some of the symptoms right away. Other symptoms can show up hours or days after the injury. Concussion symptoms may include:

- Headache
- Confusion
- Fuzzy or blurred vision
- Nausea or vomiting
- Sensitivity to light
- Feeling sluggish, tired or groggy
- Feeling unusually irritable
- Sleeping more than usual
- Trouble falling asleep
- Irritability or moody
- Difficulty with concentration and memory

HOW DO YOU RECOVER FROM A CONCUSSION? Rest is very important after a concussion because it helps the brain to heal. Ignoring symptoms and trying to “tough it out” often makes the symptoms worse. Be patient because healing takes time. Exercise or activities that involve a lot of concentration, such as studying, working on the computer, texting, or playing video games, may cause concussion symptoms (such as headache or fatigue) to reappear or get worse. If your symptoms come back or you get new symptoms as you become more active, this is a sign that you are pushing yourself too hard.
TIPS TO HELP YOU GET BETTER:

- Get plenty of sleep at night and rest during the day
- Avoid activities that are physically demanding (sports, prolonged walking, working out) or require a lot of concentration (sustained computer use, video games)
- Do not drive a car, ride a bike or operate heavy equipment until you feel clear in your thoughts
- Do not take Aspirin or Ibuprofen (Advil, Motrin)
- Tylenol (acetaminophen) may be acceptable if authorized by your certified athletic trainer or Physician
- DO NOT DRINK ALCOHOL. Alcohol and other drugs may slow your recovery and put you at risk of further injury
- Avoid noise and bright lights when possible

There are many people who can help you as you recover from a concussion. You do not have to do it alone. Keep talking with your health care provider, family members, and friends, about how you are feeling, both physically and emotionally.

Signs and symptoms of a closed head injury do not always present until hours after the initial trauma. Due to this fact; you should be aware of possible signs and symptoms that indicate a significant head injury.

If any of the following occur call an ambulance or take the athlete to the hospital ER.

- Persistent or repeated vomiting
- Convulsions/seizure
- Difficulty seeing, any peculiar movements of the eyes, or one pupil is larger than the other
- Restless, irritability, or drastic changes in emotional control
- Difficulty walking
- Difficulty speaking or slurred speech
- Progressive or sudden impairment of consciousness
- Bleeding or drainage of fluid from the nose or ears

Emergency Phone Numbers
SMC Direct Dispatch – 802-654-2000
SMC Public Safety – 802-654-2374
Rescue – 911
SMC Health Services – 802-654-2234
SMC Athletic Training Room – 802-654-2496
Renee Breault – 802-373-5270
Chris Jones - 603-219-9488
Abigail Keough – 203-313-3328

If any signs and symptoms from the list above become apparent, do not delay seeking medical attention