The University of Chicago Sports Medicine Department recognizes that head injuries, especially mild traumatic brain injury or concussions, pose a significant health risk for all athletes in intercollegiate athletics at the University. With this significant health risk, the University of Chicago Sports Medicine Department has implemented policies and procedures to assess and identify those student-athletes that have sustained a mild traumatic brain injury or concussion.

These policies and procedures are directed and overseen by the team physician for the University of Chicago Sports Medicine Department. The team physician or designees appointed by the team physician have final say over each return-to-play decision. The following have been identified by the NCAA as recommended best practice for a Concussion/Traumatic Brain Injury Management Plan.

**Definition of Concussion**

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

1. 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.
2. Concussion typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously. However, in some cases, symptoms and signs may evolve over a number of minutes to hours.
3. Concussion may result in neuropsychological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury and, as such no abnormality is seen on standard neuroimaging studies.
4. 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 some cases symptoms may be prolonged.

Following a concussion, the student-athlete may experience a variety of symptoms. These symptoms can present immediately or can present in a delayed effect. Not all concussions will result in a loss of consciousness. Concussions will present differently for each student-athlete. Symptoms can range from mild to severe. The NCAA lists the following as signs and symptoms of a concussion:

**Physical:**
- Headache
- Nausea
- Vomiting
- Balance Problems
- Fatigue
- Sensitivity to light

**Cognitive:**
- Feeling Mentally "foggy"
- Feeling Slowed Down
- Difficulty Concentrating

**Physical:**
- Numbness/tingling
- Dazed
- Stunned
• Difficulty Remembering
• Forgetful of recent information and conversations
• Confused about recent events
• Answers questions slowly

Emotional:
• Irritable
• Sad
• More Emotional
• Nervous

Sleep:
• Drowsiness
• Sleeping more than usual
• Sleeping less than usual
• Difficulty falling asleep

Other signs and symptoms of a concussion are as follows:

• Slowed reaction time
• Loss of consciousness
• Amnesia

Operational Considerations

The initial evaluation of a student-athlete with a possible brain injury should assess acute trauma. If the athlete is unable to leave the field under his or her own power, the sports medicine team should perform a primary survey, including airway, breathing, and circulation. Whether the patient is conscious or not, the sports medicine team should suspect and if, possible, rule out a cervical spine injury and other more severe injuries. Once no life-threatening injuries are determined to be present, the concussion examination should begin. If there is a situation where the primary survey is compromised, then the sports medicine team will refer to the University of Chicago Emergency Action Plan for appropriate actions.

Brief assessment that relies on the patients' response to such simple questions such "Are you OK?" or "Can you go?" are not supported and should not be used to determine if a student athlete has sustained a concussion.

Team Physician

The Team Physicians for the University of Chicago Sports Medicine Department is Dr. Bruce Reider, MD and Dr. Holly Benjamin, MD, FACSM. The Team Physicians oversee the protocol and have the following responsibilities to the sport medicine staff:

1. Providing medical direction for all student-athlete protocol implementation
2. Evaluating injured student-athletes and monitoring their return-to-play as well as return-to-learn protocol
3. Providing final medical return-to-play clearance after a successful progression of the sports medicine return-to-play protocol
4. Serve as the liaison for mental health services
Pre-Participation Assessment and Education

Each student-athlete entering a University of Chicago athletic team will fill out a medical history questionnaire. If the student athlete has indicated he or she has suffered from a concussion in the past, student-athlete will fill out an additional Concussion History Sheet (Appendix A). This sheet will be kept in the student-athlete's file for the duration of his/her tenure at the university. If a student-athlete indicates they have suffered from two or more concussion in their past medical history, that student-athlete will need to be medically cleared by the team physician before he or she is allowed to participate in organized team activities.

A baseline assessment consisting of both subjective and objective tests, standard cognitive, balance assessments, and physical evaluation will be performed on all student-athletes participating in any NCAA sport. These teams at the University of Chicago are baseball, basketball, cross country, football, soccer, softball, swimming and diving, tennis, track and field, volleyball and wrestling. All testing will be performed on all athletes annually during pre-season and prior to participating in contact practices for those in contact sports. A student-athlete will not be medically cleared until he/she finishes all required baseline assessments. The following baseline assessments will be required and will be administrated by the Sports Medicine Staff from the University of Chicago:

1. SCAT – 3 (Sports Concussion Assessment Tool) & SAC (Standardized Assessment of Concussion)
2. Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT)
3. Balance Error Scoring System (BESS)
4. Mental Health Screening

The baseline assessments will be administered by a member of the athletic training staff or by the team physician(s), if present. Both paper-pencil and electronic data collection methods may be used to complete baseline screening.

BESS Testing Baseline BESS testing will be performed prior to first official practice for all student athletes. The following equipment will be used during BESS testing: foam airex pad, stopwatch, BESS scorecard. Testing will be videotaped with an electronic tablet or performed by direct observation. Any University of Chicago ATC may videotape or directly observe and score the athlete performing the BESS. BESS scoring will be tallied by an ATC, preferably the one assigned to the athlete’s sport. All videos will be kept in a locked cabinet in the Head Athletic Trainer’s office when not in use. Videos will be destroyed immediately after being viewed and scored. BESS videos will be scored in a maximum of one month’s time. The attached script will be used to instruct the student athlete on the testing protocol (Appendix H). Post-injury BESS screens may be either performed by direct observation or by videotaping. The above procedure for handling videotaping of BESS testing will utilized for post-injury testing.
Mental Health

The NCAA recently published an Inter-association Consensus Document: Best Practices for Understanding and Supporting Student-Athlete Mental Wellness. Mental health is recognized as an important part of overall student-athlete health. University of Chicago student-athlete mental health services include athletics, campus health, counseling services and disability services on campus. The team physician will serve as the liaison for student-athlete mental health issues and will work with the student health service and counseling service to facilitate routine mental health referrals at any time it is determined that a student-athlete is suspected of having a mental health condition. An informed consent process that identifies the construct of care and includes a release of information will be utilized by sports medicine personnel and principles of confidentiality will be followed at all times. The Mental Health Emergency Action and Management Plan (MHEAMP) outlines the following steps that should be taken by a coach, athlete, athletic trainer, team physician or any other sports medicine personnel who identifies a mental health crisis situation: (1) Contact the University 24 hour hotline for urgent access to a University counselor; or (2) Contact emergency medical services; or (3) transport the athlete to the University of Chicago Hospital’s Emergency Room. Each time the MHEAMP is initiated, the preventive and emergency procedures will be reviewed by the team physician with the sports medicine personnel involved after resolution of the emergency situation.

The University of Chicago has implemented the following screening questionnaires as part of their baseline mental health screening. The Patient Health Questionnaire (PHQ-9) depression screen threshold score of 6 or higher will merit further evaluation by the team physician and a referral for mental health services will be made as determined by the follow up evaluation. The Generalized Anxiety Disorder-7 (GAD-7) will be used as an anxiety screen. A threshold score of 6 or higher will merit further evaluation by the team physician and a referral for mental health services will be made as determined by the follow up evaluation. The Pittsburgh Sleep Quality Assessment (PSQI) will be administered as well as a sleep history intake sheet. The scores will be reviewed by the team physician and further evaluation will be recommended if the presence of a sleep disorder is determined.

In compliance with the NCAA guideline, all student-athletes, regardless of year and sport, will be annually presented with educational materials that provide information about the possibility of a head injury, as well as signs and symptoms of a concussion. Student-athletes will also be presented with a concussion education video by the NCAA. In addition, each student-athlete will receive a concussion education sheet directed toward student-athletes from the NCAA (Appendix B). All student-athletes will be required to sign the University of Chicago Student-Athlete Concussion Statement (Appendix C). By signing this statement, the student athlete agrees that he or she understands the risk of head injury while competing in intercollegiate athletics regardless of sport. Student-athletes will not be medically cleared until they agree and sign the University of Chicago Student-Athlete Concussion Statement provided by the Sport Medicine Staff.

Due to the severe nature of a head injury, University of Chicago believes in a conservative approach for treating a mild traumatic brain injury or concussion. This includes the student-athlete self-reporting his or her symptoms after suffering a mild traumatic brain injury or concussion. Due to the nature of a mild traumatic brain injury or concussion, signs and symptoms are not always visible to the sport medicine staff. Therefore, the student-athlete is responsible for reporting his or her signs and symptoms completely and honestly to the University of Chicago Sports Medicine Staff as soon as any signs or symptoms are present. Each student-athlete agrees upon this standard once the student-athlete signs the University of Chicago Student-Athlete Concussion Statement.
Additionally, each coach (including volunteer coaches) on the University of Chicago Athletics’ Staff will undergo concussion management education. Coaches will be required to watch the same NCAA sponsored video about concussions. Each coach will receive an educational handout (Appendix D) from the NCAA. At the beginning of each educational year, every coach on staff will be required to attend an education session regarding the University of Chicago Policy and Procedures including Concussion Management. At the completion of all these requirements, all coaches will be required to sign the University of Chicago Coach’s Concussion Statement (Appendix E). By signing this statement, the coaches agree they understand the risk of mild traumatic brain injury and concussion and will abide by all policies and procedures outlined by the University of Chicago Sports Medicine Staff.

**Concussion Management Protocol**

University of Chicago ATC's (Certified Athletic Trainers) often operate at practices and games, both home and away, without on-site physician supervision coverage. As such, University of Chicago ATC’s are often called upon to evaluate an athlete with a suspected concussion. ATC's should have a high index of education about concussions and should stay up-to-date on all current protocols. University of Chicago ATC’s will review the concussion management and concussion assessments yearly to remain standardized on mild traumatic brain injury and concussion.

When a student-athlete shows any signs, symptoms, or behaviors consistent with a mild traumatic head injury or concussion, the ATC or team physician will remove the student-athlete immediately from competition or practice until a full evaluation can be performed by the team physician and/or ATC. The sideline mild traumatic brain injury or concussion assessment will include the following:

- **Sport Concussion Assessment Tool (SCAT) 3 test**

The Team Physician and/or ATC should suspect a concussion if any non-baseline symptoms are present or detected after a head injury or blow to the head. In addition, SCAT 3 test scores inconsistent with baseline symptoms should be interpreted as a possible concussion resulting in immediate removal of the athlete from athletic participation. If the student-athlete is determined to have a mild traumatic brain injury or concussion, ATC will notify the student-athletes head coach immediately of the removal from participation. If the student-athlete does not show any sign or symptoms of a concussion or scores adequately on the sideline evaluations, the student-athlete will be allowed to return to athletic participation but will be monitored by the ATC for any developing signs or symptoms of a concussion. If signs and symptoms of a mild traumatic brain injury or concussion develop later during participation, the student-athlete will be removed immediately.

**Same Day Return-to-Play**

A student-athlete suspected or diagnosed with a concussion will be removed immediately from all competition or practice and will not return to any athletic activity for the remainder of the day. The student-athlete will not be allowed to return until cleared by the team physician or designee under the direction of the team physician.

**Referral**

Once removed from athletic participation, the student-athlete will be monitored by the sport medicine staff for the remainder of the event the student-athlete was participating in. The sports medicine staff will continually monitor the student athlete for any deterioration in symptoms. If the student shows deterioration, further referral is needed.

*Revised 8/1/16*
On-the-Field Referral

Upon completion of a primary survey (ABC's), activation of the Emergency Action Plan, subsequent referral to an appropriate emergency treatment facility is warranted with any of the following signs or symptoms with the student-athlete:

- Prolonged loss of consciousness
- Deteriorating levels of consciousness
- High index of suspicion of spine or skull injury
- Seizure Activity
- Evidence of hemodynamic instability/deterioration of vital signs

Off-the-Field Immediate Referral

If the student-athlete shows signs of deterioration from the status originally assessed on-the-field through continual monitoring, activation of the Emergency Action Plan and subsequent referral to an appropriate emergency treatment facility is warranted with any of the following signs or symptoms with the student-athlete:

- Deterioration of neurological signs such as motor, sensory, and cranial nerve deficits subsequent to initial on-field assessment
- Documented loss of consciousness
- Deteriorating levels of consciousness
- Persistent Vomiting
- Post-concussion symptoms that continue to worsen

Non-Immediate Referral

All student-athletes suspected or diagnosed with a concussion will be evaluated by the team physician or designee under the direction of the team physician prior to return to full sports participation.

Follow-Up Care After Practice or Competition

Immediately after removal from practice or after a home competition, the student-athlete with a suspected concussion will return to the athletic training room with the supervising ATC and/or team physician. At that time, it will be determined if the student athlete will be able to return to locker room. The student-athlete will be instructed to return to the athletic training room after they have finished in the locker room. If the student-athlete is not able to return to the locker room under the supervision of a teammate, than referral is warranted to rule out any traumatic head injuries.

Once the student-athlete returns to the athletic training room, additional concussion testing will continue for the student-athlete. If SCAT 3 test was not administered on the field/court of play, then ATC will administer the test at this point. SAC testing may also be performed at the discretion of the athletic training staff and the team physician. ImPACT Concussion Management testing will be administered immediately after all SCAT 3 testing is complete and after the SAC testing if that is performed. The student-athlete will complete the ImPACT testing under the supervision of an ATC. A BESS test will be performed under the supervision of an ATC. Post-injury BESS screens may be either performed by direct observation or by videotaping following the previously described baseline BESS
screening guidelines. Finally, mental health screening will be performed if it appears indicated based on the student’s reported symptoms on the SCAT-3, or the presence of any other concerning signs or symptoms associated with the suspected concussion that are either stated by the athlete or observed by any member of the athletic training staff, coaches or the team physicians at any time. The emergency action plan and mental health protocol will be implemented if a mental health condition is identified that requires urgent or emergent evaluation. All data from all tests will be collected and it will be presented to the team physician for final diagnosis of a mild traumatic brain injury or concussion.

Home-Care Instructions

After the student-athlete has completed all follow-up care after practice or competition, the ATC will explain the home-care instructions. The ATC will determine who the on-campus emergency contact will be (i.e. room-mate, dorm administrator, etc.) for the student-athlete. If the on-campus emergency contact is a teammate of the student-athlete, the student-athlete's roommate will sit in on the home-care instructions while ATC educates the student-athlete. If the on-campus emergency contact is not a teammate or present, ATC will call the emergency contact to inform contact that the student-athlete has sustained a concussion or mild traumatic brain injury. The student-athlete will receive a Concussion Take-Home Sheet (Appendix F) explaining what the student-athlete should and should not do while recovering from a concussion. The Take-Home sheet will also provide contact information for the supervising ATC. The student-athlete should be instructed to contact the ATC with any questions or concerns. The Take-Home sheet will also provide information on the follow-up appointments with the ATC and/or team physician.

Mild Traumatic Head Injury or Concussion at Away Competitions

If a student-athlete sustains a concussion or head injury during an away contest with an athletic trainer and/or team physician present, the following protocol will be enacted:

- SCAT 3 evaluation will still be present for side-line evaluation
- ATC and/or team physician will continue to monitor the student-athlete for the remainder of the trip
- ImPACT On-line Concussion testing will be tested at the earliest convenience for both the student-athlete and ATC.
  - If computer and on-line access to the ImPACT testing site is available, the student-athlete should take the ImPACT test as soon as possible.
  - If no computer and/or on-line access is available to the student-athlete or ATC, the student-athlete should take ImPACT on-line testing at the earliest convenience of the student-athlete and ATC once returning to campus from away contest and/or away trips.
- Home-care instructions will be administered upon return to campus.

If a student-athlete sustains a concussion or mild traumatic brain injury during an away contest without a University of Chicago Athletic Trainer present, the following protocol will be enacted:

- If a coach or away athletic trainer suspects a concussion, the student-athlete will be removed from competition and/or practice.
- Head coach and/or assistant coaches will continually monitor student-athlete for deteriorating symptoms of a mild traumatic brain injury or concussion.

Revised 8/1/16
If the head coach and/or assistant coach believes the student-athlete's symptoms are deteriorating, student-athlete should be taken to a medical facility i.e Emergency Room.

- After practice or competition, the head coach will notify the supervising ATC about the mild traumatic brain injury or concussion to the student-athlete.
- The head coach and ATC will arrange a meeting with the ATC and the student-athlete for concussion evaluation at the earliest convenience of both the ATC and the student-athlete.
- The head coach will give contact information of the supervising ATC to the student-athlete in case of any concerns of the student-athlete.
- The ATC will start follow-up care and testing of the student-athlete at the arranged time set with the student-athlete and the head coach.

Return to Play Guidelines

Each day following a mild traumatic brain injury or concussion, the student-athlete will follow up with the ATC either through personal or electronic contact. The student-athlete will fill out a post-concussion symptoms sheet (Appendix G) rating their symptoms on a scale of 0 (not experiencing) to 6 (worst they ever felt). The scores will be added up once the student-athlete has completed the sheet. The score will be compared to the baseline symptoms score on the student-athlete's baseline SCAT-3 and/or ImPACT evaluation. Once the symptoms score is equal to or less than the baseline symptoms score and the student-athlete is asymptomatic for a 24 hour period, they will be allowed to start the return to play protocol under the direction of the supervising ATC and team physician.

When an asymptomatic status has been established and neurocognitive scoring has returned to the baseline level, a progression will be utilized for return to play. The return-to-play protocol is a step-by-step procedure where an asymptomatic level is maintained as functional exercise is slowly added to the activity level. Each step of the return to play protocol occurs roughly every 24 hours, based on each individual's status. If the student-athlete does not remain asymptomatic with physical exertion or mental exertion in academic demands, the student-athlete will not be able to progress on to the next step. The supervising ATC will be in direct contact with the team physician while progressing the student-athlete through the protocol. Only the team physician or designee under the direct supervision of the team physician can give the student-athlete clearance to return to athletic participation. It is important to note that this timeline could last over a period of days, weeks, months, or ultimately result in potential medical disqualification from the participation in University of Chicago Athletics. The return to play protocol will be documented in a step-by-step manner on the University of Chicago Concussion Return-to-Play Protocol Form (Appendix H).

If the student-athlete is referred to a neurosurgeon and/or outside physician, or if the student-athlete obtains care from a personal physician outside the Sports Medicine Team, the team physician will have final say on return to play decision following a mild traumatic brain injury or concussion. Input from additional physicians will be taken into consideration on the return to play decision.
The return to play protocol is as follows:

1. No Activity
   a. The student-athlete must remain asymptomatic at rest for a minimal period of 24 hours.
   b. The student-athlete must remain asymptomatic with all academic activities for same the 24 hour period. (See Return To Academics Guidelines Below)
   c. Once the student-athlete is symptom free for 24 hours, the student athlete will re-take the ImPACT evaluation, SCAT3, and BESS evaluation. The ImPACT Composite Scores should show no defects.

2. Light Aerobic Exercises
   a. Walking or Biking (max heart rate-50%) for a minimal amount of time (30 minutes or less)
   b. Can be performed after all neurocognitive tests are completed and passed

3. Mode, duration and intensity-dependant exercise based upon sport
   a. Aerobic Activity (running, biking, swimming, etc.) for an extended period of time (20 plus minutes)
   b. Exertional Exercises (push-ups, sit-ups, jumping jacks, burpees, etc.) following aerobic activity

4. Sport-Specific Activity with no Head Impact
   a. Basic low-impact drill associated with student-athlete’s sport

5. Non-Contact Sports Drill and Resumptions of Progressive Resistance Training
   a. Progression or more complex drill

6. Full-Contact Practice
   a. After receiving medical clearance from team physician

7. Return to Play

Return to Academics Guidelines

Return to academics is a parallel concept to return to play, but has received less scientific research. Return-to-learn guidelines assume that both physical and cognitive activities require brain energy utilization, and that after a sport-related concussion, brain energy may not be available for physical and cognitive exertion because of brain energy crisis. Return-to-learn should be managed in a stepwise program that fits the needs of the individual within the context of a multi-disciplinary team that includes physicians, ATC, coaches, psychologist/counselors, neuropsychologists, administrators as well as academic and the University of Chicago Office of Student Disability Services representative. Like return-to-play, it is difficult to provide prescriptive recommendations for return-to-learn. The athlete may appear physically normal but may be unable to perform as expected due to concussive symptomatology.

Within the stepwise progression with return to academics, the NCAA has laid out the following guidelines.

- The first step in return to academics is relative physical and cognitive rest.
  - Relative cognitive rest involves minimizing potential cognitive stressors, such as school work, video games, reading, texting and watching television.
  - Considerations should be given to avoiding the classroom for the same day as sport related concussion.

Revised 8/1/16
• This period of time is individualized and should be determined by the multidisciplinary team.
• The gradual return to academics should be based on the absence of concussion symptoms following concussion exposure. The consensus to date includes the following:
  o If the student-athlete cannot tolerate light cognitive activity, he or she should remain at home or in the residence hall.
  o Once the student-athlete can tolerate cognitive activity without return of symptoms, he/she should return to the classroom, often in graduated increments.
• At any point, if the student-athlete becomes symptomatic, or scores on clinical/cognitive measures decline, the team physician should be notified and the student-athlete cognitive activity reassessed.

In cooperation with the University Of Chicago Office Of Student Disability Services and the University of Chicago Sports Medicine Team, the following guidelines will be implemented when a student-athlete is diagnosed and/or suspected of a concussion or mild traumatic brain injury:

• Supervising ATC will assist the student if necessary in contacting their advisor and professors to alert them of the injury.
• Supervising ATC will contact Karyn LaTurner, karyn@uchicago.edu (773)702-6000 at the University of Chicago Student Disability Services to notify the office about the student-athlete's concussion.
• In turn, Student Disability Services will notify the academic advisor about the concern of the concussion or mild traumatic brain injury on the student's disability.
• Student Disability Services will inform academic advisor that the student athlete is exempt from attending classes due to the symptoms of the concussion or mild traumatic brain injury for one day past injury and/ until asymptomatic.
• During this time of exemption, student-athlete will be granted extensions on all work assignments and/or tests.
• Once asymptomatic, student-athlete can return to class as long as they remain asymptomatic.
• Student-athlete will be given a Professor Concussion Information Form (Appendix I) from the ATC to hand out to all of the student-athlete's current professors. A form can also be obtained from Dr. Benjamin at Student Health Services or the treating specialist the student is referred to for additional treatment. A written excuse can be obtained from Dr. Reider as well if necessary.
• If the student-athletes concussion symptoms last longer than one to two weeks in time, the supervising ATC will contact Office of Student Disability Services about the possibility of academic adjustments or accommodations.
Reference Documents


