Luther College
Athletic Department
Concussion Policy
INTRODUCTION

Luther College is committed to ensuring the health and safety of its student-athlete. To this end, and in accordance with NCAA legislation [Division III Constitution 3.2.4.16], Luther College has adopted the following Concussion Safety Protocol for all student-athletes.

The Luther College Concussion Management Protocol establishes the following to meet the requirements listed in the NCAA Concussion Safety Protocol Checklist and the NCAA Concussion Safety Protocol Template:
1. A sport-related concussion definition;
2. Independent medical care
3. Preseason education
4. Reducing exposure to head trauma
5. Pre-participation assessment
6. Recognition and diagnosis of concussion
7. Concussion management
8. Return-to-learn
9. Return-to-play
10. Written certificate of compliance signed by the athletics health care administrator

I. CONCUSSION DEFINITION

The 5th international conference on concussion in sport defines concussion as follows:

Sport-related concussion (SRC) is a traumatic brain injury induced by biomechanical forces. Several common features that may be utilized to clinically define the nature of a concussive head injury include:

- SRC 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.
- SRC typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously. However, in some cases, signs and symptoms evolve over a number of minutes to hours to days.
- SRC may result in neuropathological changes, but the acute clinical signs and symptoms largely reflect a functional disturbance rather than a structural injury and, as such, no abnormality is seen on standard structural neuroimaging studies.
- SRC results in a range of clinical signs and symptoms that may or may not involve loss of consciousness. Resolution of the clinical and cognitive features typically follows a sequential course. However, in some cases symptoms may be prolonged.
- The clinical signs and symptoms cannot be explained by drug, alcohol, or medication use, other injuries (such as cervical injuries, peripheral vestibular dysfunction, etc.) or other comorbidities (psychological factors or coexisting medical conditions).
II. INDEPENDENT MEDICAL CARE

As required by NCAA Independent Medical Care legislation, team physicians and athletic trainers shall have unchallengeable autonomous authority to determine concussion management and return-to-activity decisions for all student-athletes. Further, the athletics health care administrator shall ensure that the concussion safety protocol is available to and understood by all athletics personnel.

III. PRESEASON CONCUSSION EDUCATION

- Each academic calendar year all student-athletes will go through an educational presentation on concussion. This educational presentation will be presented by an athletic training staff member as a part of the student-athlete eligibility meeting. Concussion education information via NCAA concussion fact sheets or other applicable materials will be made available annually to student-athletes, coaches, team physicians, athletic trainers and directors of athletics.
- In addition, student-athletes must sign a statement in which they acknowledge that they have read and understood the concussion material and accept the responsibility for reporting their injuries and illnesses to the institutional medical staff, including signs and symptoms of concussions. This signed acknowledgement will be filed as part of the student-athlete’s medical record.
- All coaches, athletic trainers, and the director of athletics will attend a concussion education presentation and be required to sign an acknowledgement, on an annual basis, that they have attended and understood the concussion education presentation. This signed acknowledgement will be on file with the Athletics Compliance Director.

IV. REDUCING EXPOSURE TO HEAD TRAUMA

Luther College is committed to student-athlete health and safety. To that end, Luther College will be proactive in efforts to minimize exposure to head trauma. The following procedures are in place:

- Concussion Fact Sheets, plus education safe play and proper technique, are made available to student-athletes at sports team eligibility meetings as well as on the Luther College Athletics website.
- Concussion Fact Sheets, plus education safe play and proper technique, are made available to coaches, sport administrators, team physicians, athletic trainers, and strength and conditioning coaches on an annual basis.
- Adherence to ‘Inter-association Consensus: Year-Round Football Practice Contact Recommendations’ are followed during football conditioning sessions.
- Reduction of gratuitous contact is emphasized during practices.
- Teams stress a “safety-first” approach to sport.
V. PRE-PARTICIPATION BASELINE ASSESSMENT

- All student-athletes that compete on a NCAA intercollegiate athletic team at Luther College will be required to undergo an initial baseline assessment that addresses brain injury and concussion history, symptom evaluation, cognitive assessment, and balance evaluation. Luther College supports intercollegiate athletic teams for football, baseball, wrestling, softball, women's volleyball, and men's and women's soccer, cross country, tennis, golf, basketball, swimming & diving, indoor and outdoor track & field.
- Baseline testing will include use of ImPACT Testing, a computerized neurocognitive test which measures attention span, working memory, sustained and selective attention time, non-verbal problem solving, and reaction time. Additionally, athletes will be taken through a SCAT5 assessment which includes a brain injury and concussion history, a symptom evaluation using the Symptoms Rating Scale (SRS), a cognitive screen using the Standardized Assessment of Concussion (SAC), and balance assessment using the modified Balance Error Scoring System (mBESS). Finally, each athlete will go through a physiological signs/symptoms exam to be assessed for cervical range of motion, visual acuity, field of vision, visual tracking, and balance during gait (tandem walk).
- Any student-athlete who has had a documented concussion in the past 6 to 12 months will be required to complete a new baseline concussion assessment prior to the start of the next traditional or non-traditional sport season.
- The team physicians will determine pre-participation clearance and the need for additional consultation or testing of those with a history of concussions.

VI. RECOGNITION AND DIAGNOSIS OF CONCUSSION

Medical Personnel

- A Luther College certified athletic trainer or team physician with training in the diagnosis, treatment and initial management of acute concussion must be “present” at all NCAA home traditional season varsity competitions in the following contact/collision sports: basketball; football; pole vault; soccer; wrestling. To be present means to be on site at the campus or arena of the competition. Medical personnel may be from Luther College, the opposing team, or may be independently contracted for the event.
- A Luther College certified athletic trainer or team physician with training in the diagnosis, treatment and initial management of acute concussion must be “available” at all NCAA varsity practices in the following contact/collision sports: basketball; football; pole vault; soccer; wrestling. To be available means that, at a minimum, Luther College medical personnel can be contacted at any time during the practice via telephone, messaging, email, beeper or other immediate communication means. Further, the case can be discussed through such communication, and immediate arrangements can be made for the athlete to be evaluated.
**Recognition of the Signs and Symptoms of Mild Traumatic Brain Injuries (MTBI) / Cerebral Concussions**

<table>
<thead>
<tr>
<th>Physical</th>
<th>Cognitive</th>
<th>Emotional</th>
<th>Sleep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>Feeling mentally “foggy”/ “out of it”</td>
<td>Irritable</td>
<td>Drowsiness</td>
</tr>
<tr>
<td>Nausea</td>
<td>Feeling slowed down</td>
<td>Sad</td>
<td>Sleeping more than usual</td>
</tr>
<tr>
<td>Vomiting</td>
<td>Difficulty concentrating</td>
<td>Anxious</td>
<td>Sleeping less than usual</td>
</tr>
<tr>
<td>Dizziness</td>
<td>Difficulty remembering</td>
<td>Nervous</td>
<td>Difficulty falling asleep</td>
</tr>
<tr>
<td>Balance problems/irregularities</td>
<td>Amnesia - forgetful of information and conversations</td>
<td>Confusion about recent events</td>
<td></td>
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<tr>
<td>Sensitive to light/vision changes</td>
<td>-Retrograde (memory loss of events prior to trauma)</td>
<td></td>
<td></td>
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<tr>
<td>Sensitivity to noise</td>
<td>-Anterograde (memory loss of events after trauma)</td>
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<tr>
<td>Tinnitus - ringing in ears</td>
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<tr>
<td>Numbness / tingling</td>
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<td></td>
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<tr>
<td>Fatigue</td>
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<tr>
<td>Dazed</td>
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<td>Stunned</td>
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<tr>
<td>Loss of consciousness</td>
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<td></td>
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<tr>
<td>Slurred speech</td>
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<td></td>
<td></td>
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<tr>
<td>Fluid emerging from nose/ears</td>
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<td></td>
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<tr>
<td>Seizures</td>
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<td></td>
<td></td>
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<tr>
<td>Eating Disturbances</td>
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</tbody>
</table>

Visible signs of concussion include but are not limited to: lying motionless; unconsciousness; vomiting; vacant look; slow to get up; balance difficulty or incoordination; clutching the head.

If an athlete, teammate, coach, official or member of medical staff identifies signs, symptoms or behaviors consistent with concussion, the following should take place immediately:

a) The student-athlete must be removed from practice or competition.
b) The student-athlete must be evaluated by a Luther College or host site athletic trainer but not the coach of the student-athlete if he/she is also a certified athletic trainer or by a physician with concussion experience.
c) The student-athlete must be removed from practice/play for that calendar day if a concussion is confirmed.
d) If it is a non-athletic related injury sustained on campus, the athletic trainer will contact campus security officer to report the incident.
e) If it is a non-athletic related injury that occurs off campus, the athletic trainer will refer the student-athlete to health services or to a physician. The student-athlete must return with medical documentation.

**Concussion Assessment and Initial Management**

A student-athlete with a suspected concussion will be assessed by a certified athletic trainer with the following:

- Take a history of the current injury and any previously related concerns.
- The SCAT5 assessment will be completed which includes a
  - Symptom evaluation using the Symptoms Rating Scale (SRS),
  - Cognitive screen using the Standardized Assessment of Concussion (SAC),
  - Balance assessment using the modified Balance Error Scoring System (mBESS), and
- A physiological signs/symptoms exam will be completed to assess for cervical range of motion, visual acuity, field of vision, visual tracking, and balance during gait (tandem walk).
- Additional testing may include respiration, heart rate, blood pressure, cranial nerves assessment, and Vestibular-Ocular Motor Screening (VOMS).

Because a force sufficient to cause concussion can also cause cervical spine or other head trauma, medical staff should also:
- Establish the athlete's level of responsiveness including Glasgow Coma Scale (GCS) and initiate the emergency action plan, if needed. An athlete should be transported if he/she has any of the following:
  - Glasgow Coma Scale < 13.
  - Prolonged loss of consciousness.
  - Focal neurological deficit suggesting intracranial trauma.
  - Repetitive emesis.
  - Persistently diminished/worsening mental status or other neurological signs/symptoms.
  - Spine injury.
- When an athlete has sustained a blow to the head that may be severe enough to cause further harm (skull or brain injury), it is recommended that personnel follow the procedures for spinal management.
- Stabilize the head and neck, if needed.
- Perform an initial assessment and care for any life-threatening conditions (ABCs)
- Perform a physical assessment, including observation and palpation for cervical spine trauma, skull fracture and intracranial bleed. Establish the presence of CSF via the Halo Test if the athlete is bleeding from the nose or ears.
- Complete a history of the injury taking into account the patient and others, especially if a loss of consciousness occurs.
- Consider referring the athlete for medical evaluation and diagnostic testing to rule out intracranial bleeding.

If an athlete is determined to have a concussion, the athlete will be removed from all athletic activities (contests, practices, and conditioning) for the remainder of the day in order to progress through the concussion management protocol. The first post-injury ImPACT testing will be completed only after the SCAT5 and all physiological signs and symptoms are back to the baseline measures (within standard deviation of the test) unless otherwise instructed by the Luther College Medical Director or one of the team physicians.
VII. POST-CONCUSSION MANAGEMENT

- In the case of a non-emergent concussion, but when there is a lack of a reliable person to monitor the athlete at home, the student-athlete will be referred to a physician.
- As deemed appropriate, the student-athlete may be discharged home with a reliable observer, either a parent or roommate, with oral and/or written concussion care instructions to begin physical and cognitive recovery. The concussed athlete should not be allowed to drive for at least 24 hours due to slower reaction time, trouble paying attention, poor physical coordination and poor judgment resulting from a concussion. Such instructions must be documented.
- The athlete should follow-up with the certified athletic training staff in 24-48 hours for further evaluation. The certified athletic trainer will be in contact with one of the designated Luther College athletic department team physicians to ensure the athlete follows up with a physician. Further serial follow-up will be done on an as needed basis thereafter until complete recovery and/or return to play is achieved OR the athlete is disqualified from further athletic participation OR when the athlete discontinues athletic participation will be referred to health services for transfer of care.
- In the case of an athlete with prolonged recovery (>14 days), in order to consider co-morbid or post-concussion diagnoses including post-concussion syndrome, sleep dysfunction, migraine or other headache disorders, mood disorders such as anxiety and depression, ocular or vestibular dysfunction or cervicalgia/neck pain, the athlete will be referred on to a specialist (neurologist, psychologist, physical therapist, etc) as needed.

VIII. RETURN-TO-LEARN

Returning to academic activities after a concussion is a parallel concept to returning to play after concussion. After concussion, brain energy may not be available to perform normal cognitive exertion and function. The return-to-learn concept will follow an individualized and step-wise process overseen by a Luther College athletic trainer who will work in conjunction with a multidisciplinary team. The Luther College multidisciplinary team may vary student-to-student, depending on the difficulty in returning to a normal school schedule.
- The Luther College athletic trainer assigned to the team that the concussed student athlete is a member of will be the point person who will contact the following multidisciplinary team members regarding return-to-learn needs:
  o Team Physician (Dr Ryan, Dr Wientzen, Dr Thompson, or other physician, as appropriate)
  o Diane Tappe, Director of Health Services, tappdi01@luther.edu, ext. 1045 or ext. 1073
  o Sally Mallam in Disability Accommodations and Academic Support, mallamsa@luther.edu, ext. 1270
The concussed athlete may need to be removed from all or a portion of his or her academic activities or be provided modification until such time he or she is back to normal physiological and cognitive function. Student Life as well as Disability Accommodations and Academic Support will address contacting and addressing the academic modifications with professors in order to be consistent with ADAAA compliance.

The following individualized plan components may be utilized as needed:

- No classroom attendance or activity on the same day as the concussion.
- Remaining at home or dorm if the student-athlete cannot tolerate light cognitive activity.
- Gradual return to classroom and studying as tolerated.
- Modification of schedule or academic accommodations for up to two weeks

The academic schedule will normally not need to be adjusted for more than two weeks. If the student-athlete continues to require accommodations after two weeks, the following will occur:

- The athlete will be re-evaluated by a physician, which will confirm the diagnosis or consider other post-concussion diagnoses.
- Other members may be added to the multi-disciplinary team as needed.
- For more prolonged return-to-learn cases, consideration will be given to working with other on-campus as well as off-campus resources.

IX. RETURN-TO-PLAY

It is important to recognize each return-to-play plan will be individualized and supervised by a Luther College health care provider with expertise in concussion management. Final determination of return-to-play will be made by the Luther College physician or his or her qualified designee.

The initial treatment for all athletes following concussion is at least 1-2 days of relative physical and cognitive rest. Relative rest should continue until the athlete has returned to his/her pre-concussion baseline status. Discretion can be used by the health care provider to introduce mild aerobic activity during the transition period of returning to pre-concussion baseline status, so long as such activity does not exacerbate post-concussion signs or symptoms.
Once the athlete has returned to his/her baseline status, a stepwise progression return-to-play protocol will take place. Progression from one step in the protocol to the next can take place when the stepwise activity does not lead to worsening or new symptoms. The stepwise progression includes:

**Step 1:** Symptom-Limited Activity: Daily activities that do not provoke symptoms. [Recovery-Gradual reintroduction of work/school activities]

**Following Medical Clearance from Physician - Begin Return to Play Protocol**
When the student-athlete has all symptoms gone and ImPACT is back to normal, the physician may allow the athlete to begin the Functional Return-to-Play (RTP) Protocol under the guidance of the certified athletic trainer. In some instances, a physician may allow the athletic trainer to begin and progress the athlete through the entire RTP protocol if the athlete remains asymptomatic throughout the progression allowing full return to participation. The Functional Return to Play protocol follows the steps listed below with the requirement that each step must be accomplished without return of any signs or symptoms of a concussion before moving on to the next step. An athlete may not advance more than one step per day (24 hour period). In the event that an athlete becomes symptomatic the athletic trainer will make contact with the physician regarding recovery progression.

**Step 2:** Light Aerobic Exercise: Interval activities and exercise (<70% max HR); No Resistance Training. [Increase Heart Rate]. Individual Activity Supervised by AT Staff

**Step 3:** Sport Specific Exercise: Non-contact general and sports-specific exercise and drills (>70% max HR); No Head Impact Activities. [Add Movement] Individual Activity Supervised by AT Staff

**Step 4:** Non-Contact Training Drills and Practice: Non-contact, sports-specific individual and team drills; Harder training drills; May start progressive resistance training
Step 5: Medical Clearance from Physician for Full, Unlimited Contact Practice
Limited, controlled return to full-contact practice for collision and contact sport athletes
[Restore Confidence and Assess Functional Skills by Coaching Staff] Team Activity
Supervised by AT Staff. Non-contact sport athletes may be cleared to move from Step 4
to Step 6.


At any point, if the student-athlete becomes symptomatic (i.e., more symptomatic than
baseline), or scores on clinical/cognitive measures decline, the student-athlete should
be returned to the previous level of activity and the team physician should be notified,
as necessary.

Final determination of return-to-play ultimately resides with the team physician.

LUTHER COLLEGE ATHLETIC TRAINING 2018-19
STANDARD OPERATING PROCEDURES FOR THE ATHLETIC TRAINER

MEDICAL EMERGENCIES: Mild Traumatic Brain Injuries (MTBI)/Cerebral
Concussions

Recognition and management of concussions follows the recommendations and
guidelines of the following:
- Consensus Statement on Concussion in Sport - The 5th International
  Conference on Concussion in Sport Held in Berlin, October 2016 (BJSM, 2017)
- National Athletic Trainers’ Association Position Statement: Management of
  Sport Concussion (NATA, 2014)
- American Medical Society for Sports Medicine Position Statement: Concussion
  in Sport (ClinJSportMed, 2013)
X. WRITTEN CERTIFICATE OF COMPLIANCE

Luther College Concussion Management Plan          Academic Year 2019-20

By signing and dating this form, you acknowledge, on behalf of Luther College, that for the 2019-20 academic year:

1. The Concussion Management Plan fulfills the requirements of NCAA Concussion Management Legislation (Division III Constitution 3.2.4.16).

2. The Concussion Safety Protocol is consistent with the Inter-Association Consensus: Diagnosis and Management of Sport-Related Concussion Best Practices.

   **Athletics Health Care Administrator**
   Signature of Amber Suckow, LAT, ATC
   Amber Suckow
   Print Name
   8/9/19
   Date

   **Medical Director**
   Signature of Janet Ryan, MD
   Janet Ryan
   Print Name
   8-12-19
   Date

   **Compliance Director**
   Signature of Amanda Bailey
   Amanda Bailey
   Print Name
   8/12/19
   Date

   **Athletics Director**
   Signature of Renae Hartl
   Renae Hartl
   Print Name
   08/09/19
   Date
Appendix A

(Concussion Checklist)
Concussion Checklist

Patient Name:___________________ Sport:__________________ DOI:__________________

☐ Baseline Testing Completed (ImPACT & SCAT5)

Initial Evaluation (Day 1)
  ☐ Start Daily Progress Note
  ☐ History (MOI, S/S, motion sickness, migraines, anxiety)
  ☐ Documentation of serial follow-up (i.e. next appointment)
  ☐ 24-48 hours post diagnosis SCAT5
  ☐ Notified Student Life for Return to Learn considerations
  ☐ Given athlete/roommate home care instructions including driving
  ☐ Follow-up plan

☐ Follow-up Exams with Graded Symptoms Sheet
  • Classroom/Academic issues
  • Addressed activity level
  • Dietary intake, sleep patterns, current medications (type, dosage, etc.)
  • Explanation of Graded Symptoms scores
  • Future Instructions (activity level, ER, medications, class)

Return to Baseline
  ☐ Completed SCAT5 & ImPACT

Return to Play
  ☐ Step 1: Symptom-Limited Activity
  ☐ Communication with physician for clearance to Step 2
  ☐ Step 2: Light Aerobic Exercise
  ☐ Step 3: Sport Specific Exercise
  ☐ Step 4: Non-Contact Training Drills/weight lifting
  ☐ Communication with physician for clearance to Step 5
  ☐ Step 5: Full, Unlimited Contact Practice
  ☐ Step 6: Full Sport Participation
  ☐ Follow up with athlete 1-2 week post full RTP

Date Completed:

ATC Signature:_________________________
Appendix B

(SCAT5)
WHAT IS THE SCAT5?

The SCAT5 is a standardized tool for evaluating concussions designed for use by physicians and licensed healthcare professionals. The SCAT5 cannot be performed correctly in less than 10 minutes.

If you are not a physician or licensed healthcare professional, please use the Concussion Recognition Tool 5 (CRT5). The SCAT5 is to be used for evaluating athletes aged 13 years and older. For children aged 12 years or younger, please use the Child SCAT5.

Preseason SCAT5 baseline testing can be useful for interpreting post-injury test scores, but is not required for that purpose. Detailed instructions for use of the SCAT5 are provided on page 7. Please read through these instructions carefully before testing the athlete. Brief verbal instructions for each test are given in italics. The only equipment required for the tester is a watch or timer.

This tool may be freely copied in its current form for distribution to individuals, teams, groups and organizations. It should not be altered in any way, re-branded or sold for commercial gain. Any revision, translation or reproduction in a digital form requires specific approval by the Concussion in Sport Group.

Recognise and Remove

A head impact by either a direct blow or indirect transmission of force can be associated with a serious and potentially fatal brain injury. If there are significant concerns, including any of the red flags listed in Box 1, then activation of emergency procedures and urgent transport to the nearest hospital should be arranged.

Key points

- Any athlete with suspected concussion should be REMOVED FROM PLAY, medically assessed and monitored for deterioration. No athlete diagnosed with concussion should be returned to play on the day of injury.
- If an athlete is suspected of having a concussion and medical personnel are not immediately available, the athlete should be referred to a medical facility for urgent assessment.
- Athletes with suspected concussion should not drink alcohol, use recreational drugs and should not drive a motor vehicle until cleared to do so by a medical professional.
- Concussion signs and symptoms evolve over time and it is important to consider repeat evaluation in the assessment of concussion.
- The diagnosis of a concussion is a clinical judgment, made by a medical professional. The SCAT5 should NOT be used by itself to make, or exclude, the diagnosis of concussion. An athlete may have a concussion even if their SCAT5 is "normal".

Remember:

- The basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.
- Do not attempt to move the athlete (other than that required for airway management) unless trained to do so.
- Assessment for a spinal cord injury is a critical part of the initial on-field assessment.
- Do not remove a helmet or any other equipment unless trained to do so safely.
IMMEDIATE OR ON-FIELD ASSESSMENT

The following elements should be assessed for all athletes who are suspected of having a concussion prior to proceeding to the neurocognitive assessment and ideally should be done on-field after the first first aid / emergency care priorities are completed.

If any of the “Red Flags” or observable signs are noted after a direct or indirect blow to the head, the athlete should be immediately and safely removed from participation and evaluated by a physician or licensed healthcare professional.

Consideration of transportation to a medical facility should be at the discretion of the physician or licensed healthcare professional.

The GCS is important as a standard measure for all patients and can be done serially if necessary in the event of deterioration in conscious state. The Maddocks questions and cervical spine exam are critical steps of the immediate assessment; however, these do not need to be done serially.

STEP 1: RED FLAGS

RED FLAGS:
- Neck pain or tenderness
- Double vision
- Weakness or tingling/ burning in arms or legs
- Severe or increasing headache
- Seizure or convulsion
- Loss of consciousness
- Deteriorating conscious state
- Vomiting
- Increasingly restless, agitated or combative

STEP 2: OBSERVABLE SIGNS

Witnessed ☐ Observed on Video ☐

<table>
<thead>
<tr>
<th></th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lying motionless on the playing surface</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Balance / gait difficulties / motor incoordination: stumbling, slow / laboured movements</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Disorientation or confusion, or an inability to respond appropriately to questions</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Blank or vacant look</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Facial injury after head trauma</td>
<td>Y</td>
<td>N</td>
</tr>
</tbody>
</table>

STEP 3: MEMORY ASSESSMENT

MADDOCKS QUESTIONS

“I am going to ask you a few questions, please listen carefully and give your best effort. First, tell me what happened?”

Mark Y for correct answer / N for incorrect

<table>
<thead>
<tr>
<th>Question</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>What venue are we at today?</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Which half is it now?</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Who scored last in this match?</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>What team did you play last week / game?</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Did your team win the last game?</td>
<td>Y</td>
<td>N</td>
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STEP 4: EXAMINATION

GLASGOW COMA SCALE (GCS)

<table>
<thead>
<tr>
<th>Time of assessment</th>
<th>Date of assessment</th>
<th>Best eye response (E)</th>
<th>Best verbal response (V)</th>
<th>Best motor response (M)</th>
<th>Glasgow Coma score (E + V + M)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No eye opening 1</td>
<td>Incomprehensible sounds 2</td>
<td>No motor response 1</td>
<td>Glasgow Coma score (E + V + M)</td>
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<tr>
<td></td>
<td></td>
<td>Eye opening in response to pain 2</td>
<td>Inappropriate words 3</td>
<td>Extension to pain 2</td>
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<td></td>
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<td>Eye opening to speech 3</td>
<td>Confused 4</td>
<td>Abnormal flexion to pain 3</td>
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<td></td>
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<td>Eyes opening spontaneously 4</td>
<td>Oriented 5</td>
<td>Flexion / Withdrawal to pain 4</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Localizes to pain 5</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Obey’s commands 6</td>
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</tbody>
</table>

CERVICAL SPINE ASSESSMENT

Does the athlete report that their neck is pain free at rest? Y N

If there is NO neck pain at rest, does the athlete have a full range of ACTIVE pain free movement? Y N

Is the limb strength and sensation normal? Y N

In a patient who is not lucid or fully conscious, a cervical spine injury should be assumed until proven otherwise.
OFFICE OR OFF-FIELD ASSESSMENT

Please note that the neurocognitive assessment should be done in a distraction-free environment with the athlete in a resting state.

STEP 1: ATHLETE BACKGROUND

Sport / team / school: ______________________________
Date / time of injury: ______________________________
Years of education completed: ______________________
Age: ____________________________
Gender: M / F / Other
Dominant hand: left / neither / right
How many diagnosed concussions has the athlete had in the past?: ______________________________
When was the most recent concussion?: ______________________________
How long was the recovery (time to being cleared to play) from the most recent concussion?: ________ (days)

Has the athlete ever been:

- Hospitalized for a head injury? Yes No
- Diagnosed / treated for headache disorder or migraines? Yes No
- Diagnosed with a learning disability / dyslexia? Yes No
- Diagnosed with ADD / ADHD? Yes No
- Diagnosed with depression, anxiety or other psychiatric disorder? Yes No

Current medications? If yes, please list:

________________________
________________________
________________________
________________________
________________________

Name: ____________________________
DOB: ____________________________
Address: ____________________________
ID number: ____________________________
Examiner: ____________________________
Date: ____________________________

STEP 2: SYMPTOM EVALUATION

The athlete should be given the symptom form and asked to read this instruction paragraph out loud then complete the symptom scale. For the baseline assessment, the athlete should rate his/her symptoms based on how he/she typically feels and for the post injury assessment the athlete should rate their symptoms at this point in time.

Please Check:  □ Baseline  □ Post-Injury

Please hand the form to the athlete

<table>
<thead>
<tr>
<th>Symptom</th>
<th>none</th>
<th>mild</th>
<th>moderate</th>
<th>severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>“Pressure in head”</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Neck Pain</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Nausea or vomiting</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Dizziness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Blurred vision</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Balance problems</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sensitivity to light</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sensitivity to noise</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling slowed down</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling like “in a fog”</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>“Don’t feel right”</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Difficulty concentrating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Difficulty remembering</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Fatigue or low energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Confusion</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>More emotional</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Irritability</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sadness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Nervous or Anxious</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Trouble falling asleep</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Total number of symptoms: ____________________________ of 22
Symptom severity score: ____________________________ of 132

Do your symptoms get worse with physical activity? Y N
Do your symptoms get worse with mental activity? Y N
If 100% is feeling perfectly normal, what percent of normal do you feel?
If not 100%, why?

Please hand form back to examiner
**STEP 3: COGNITIVE SCREENING**

*Standardised Assessment of Concussion (SAC)*

### ORIENTATION

<table>
<thead>
<tr>
<th>Question</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>What month is it?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the date today?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the day of the week?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What year is it?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What time is it right now? (within 1 hour)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Orientation score**

### IMMEDIATE MEMORY

The Immediate Memory component can be completed using the traditional 5-word per trial list or optionally using 10-words per trial to minimise any ceiling effect. All 3 trials must be administered irrespective of the number correct on the first trial. Administer at the rate of one word per second.

Please choose EITHER the 5 or 10 word list groups and circle the specific word list chosen for this test.

I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order. For Trials 2 & 3 I am going to repeat the same list again. Repeat back as many words as you can remember in any order, even if you said the word before.

#### Immediate Memory Score

<table>
<thead>
<tr>
<th>List</th>
<th>Alternate 5 word lists</th>
<th>Score (of 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Finger Penny Blanket Lemon Insect</td>
<td>Trial 1 Trial 2 Trial 3</td>
</tr>
<tr>
<td>B</td>
<td>Candle Paper Sugar Sandwich Wagon</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Baby Monkey Perfume Sunset Iron</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Elbow Apple Carpet Saddle Bubble</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Jacket Arrow Pepper Cotton Movie</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Dollar Honey Mirror Saddle Anchor</td>
<td></td>
</tr>
</tbody>
</table>

#### Immediate Memory Score

<table>
<thead>
<tr>
<th>List</th>
<th>Alternate 10 word lists</th>
<th>Score (of 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Finger Penny Blanket Lemon Insect</td>
<td>Trial 1 Trial 2 Trial 3</td>
</tr>
<tr>
<td>H</td>
<td>Baby Monkey Perfume Sunset Iron</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Elbow Apple Carpet Saddle Bubble</td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>Jacket Arrow Pepper Cotton Movie</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>Dollar Honey Mirror Saddle Anchor</td>
<td></td>
</tr>
</tbody>
</table>

### DIGITS BACKWARDS

Please circle the Digit list chosen (A, B, C, D, E, F). Administer at the rate of one digit per second reading DOWN the selected column.

**Concentration Number Lists (circle one)**

<table>
<thead>
<tr>
<th>List A</th>
<th>List B</th>
<th>List C</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-9-3</td>
<td>5-2-6</td>
<td>1-4-2</td>
</tr>
<tr>
<td>6-2-9</td>
<td>4-1-5</td>
<td>6-5-8</td>
</tr>
<tr>
<td>3-8-1-4</td>
<td>1-7-9-5</td>
<td>6-8-3-1</td>
</tr>
<tr>
<td>3-2-7-9</td>
<td>4-9-6-8</td>
<td>3-4-8-1</td>
</tr>
<tr>
<td>6-2-9-7-1</td>
<td>4-8-5-2-7</td>
<td>4-9-1-5-3</td>
</tr>
<tr>
<td>1-5-2-8-6</td>
<td>6-1-8-4-3</td>
<td>6-8-2-5-1</td>
</tr>
<tr>
<td>7-1-8-4-6-2</td>
<td>8-3-1-9-6-4</td>
<td>3-7-6-5-1-9</td>
</tr>
<tr>
<td>5-3-9-1-4-8</td>
<td>7-2-4-8-5-6</td>
<td>9-2-6-5-1-4</td>
</tr>
</tbody>
</table>

**Digits Score:**

<table>
<thead>
<tr>
<th>List D</th>
<th>List E</th>
<th>List F</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-8-2</td>
<td>3-8-2</td>
<td>2-7-1</td>
</tr>
<tr>
<td>9-2-6</td>
<td>5-1-8</td>
<td>4-7-9</td>
</tr>
<tr>
<td>4-1-8-3</td>
<td>2-7-9-3</td>
<td>1-6-8-3</td>
</tr>
<tr>
<td>9-7-2-3</td>
<td>2-1-6-9</td>
<td>3-9-2-4</td>
</tr>
<tr>
<td>1-7-9-2-6</td>
<td>4-1-8-6-9</td>
<td>2-4-7-5-8</td>
</tr>
<tr>
<td>4-1-7-5-2</td>
<td>9-4-1-7-5</td>
<td>8-3-9-6-4</td>
</tr>
<tr>
<td>2-6-4-8-1-7</td>
<td>6-9-7-3-8-2</td>
<td>5-8-6-2-4-9</td>
</tr>
<tr>
<td>8-4-1-9-3-5</td>
<td>4-2-7-9-3-8</td>
<td>3-1-7-8-2-6</td>
</tr>
</tbody>
</table>

**Concentration Total Score (Digits + Months):**

<table>
<thead>
<tr>
<th>List G</th>
<th>List H</th>
<th>List I</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-1-8-4-6-2</td>
<td>8-3-1-9-6-4</td>
<td>3-7-6-5-1-9</td>
</tr>
<tr>
<td>5-3-9-1-4-8</td>
<td>7-2-4-8-5-6</td>
<td>9-2-6-5-1-4</td>
</tr>
</tbody>
</table>

**Concentration Total Score (Digits + Months):**

<table>
<thead>
<tr>
<th>List J</th>
<th>List K</th>
<th>List L</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-8-2</td>
<td>3-8-2</td>
<td>2-7-1</td>
</tr>
<tr>
<td>9-2-6</td>
<td>5-1-8</td>
<td>4-7-9</td>
</tr>
<tr>
<td>4-1-8-3</td>
<td>2-7-9-3</td>
<td>1-6-8-3</td>
</tr>
<tr>
<td>9-7-2-3</td>
<td>2-1-6-9</td>
<td>3-9-2-4</td>
</tr>
<tr>
<td>1-7-9-2-6</td>
<td>4-1-8-6-9</td>
<td>2-4-7-5-8</td>
</tr>
<tr>
<td>4-1-7-5-2</td>
<td>9-4-1-7-5</td>
<td>8-3-9-6-4</td>
</tr>
<tr>
<td>2-6-4-8-1-7</td>
<td>6-9-7-3-8-2</td>
<td>5-8-6-2-4-9</td>
</tr>
<tr>
<td>8-4-1-9-3-5</td>
<td>4-2-7-9-3-8</td>
<td>3-1-7-8-2-6</td>
</tr>
</tbody>
</table>

**Months in reverse order**

Now tell me the months of the year in reverse order. Start with the last month and go backward. So you’ll say December, November. Go ahead.

<table>
<thead>
<tr>
<th>Month</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aug</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jul</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jun</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Months Score:**

<table>
<thead>
<tr>
<th>List M</th>
<th>List N</th>
<th>List O</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-5-2-8-6</td>
<td>6-1-8-4-3</td>
<td>6-8-2-5-1</td>
</tr>
<tr>
<td>13-2-7-9-1</td>
<td>4-9-6-8-1</td>
<td>3-4-8-1-7</td>
</tr>
<tr>
<td>6-2-9-7-1</td>
<td>4-8-5-2-7</td>
<td>4-9-1-5-3</td>
</tr>
<tr>
<td>1-5-2-8-6</td>
<td>6-1-8-4-3</td>
<td>6-8-2-5-1</td>
</tr>
<tr>
<td>7-1-8-4-6-2</td>
<td>8-3-1-9-6-4</td>
<td>3-7-6-5-1-9</td>
</tr>
<tr>
<td>5-3-9-1-4-8</td>
<td>7-2-4-8-5-6</td>
<td>9-2-6-5-1-4</td>
</tr>
</tbody>
</table>

**Immediate Memory Score**

**Time that last trial was completed**

**Immediate Memory Score**

**Time that last trial was completed**

---

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**STEP 4: NEUROLOGICAL SCREEN**

See the instruction sheet (page 7) for details of test administration and scoring of the tests.

- Can the patient read aloud (e.g. symptom checklist) and follow instructions without difficulty? [Y N]
- Does the patient have a full range of pain-free PASSIVE cervical spine movement? [Y N]
- Without moving their head or neck, can the patient look side-to-side and up-and-down without double vision? [Y N]
- Can the patient perform the finger nose coordination test normally? [Y N]
- Can the patient perform tandem gait normally? [Y N]

**BALANCE EXAMINATION**

**Modified Balance Error Scoring System (mBESS) testing**

- Which foot was tested (i.e. which is the non-dominant foot)?
  - □ Left
  - □ Right
- Testing surface (hard floor, field, etc.):
- Footwear (shoes, barefoot, braces, tape, etc.):

<table>
<thead>
<tr>
<th>Condition</th>
<th>Errors</th>
<th>of 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double leg stance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single leg stance (non-dominant foot)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tandem stance (non-dominant foot at the back)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Errors</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

**STEP 5: DELAYED RECALL**

The delayed recall should be performed after 5 minutes have elapsed since the end of the Immediate Recall section. Score 1 pt. for each correct response.

Do you remember that list of words I read a few times earlier? Tell me as many words from the list as you can remember in any order.

**Time Started**

Please record each word correctly recalled. Total score equals number of words recalled.

- Total number of words recalled accurately: [ ] of 5 or [ ] of 10

**STEP 6: DECISION**

- Date and time of injury:

<table>
<thead>
<tr>
<th>Domain</th>
<th>Date &amp; time of assessment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptom number (of 22)</td>
<td></td>
</tr>
<tr>
<td>Symptom severity score (of 132)</td>
<td></td>
</tr>
<tr>
<td>Orientation (of 5)</td>
<td></td>
</tr>
<tr>
<td>Immediate memory (of 15 of 30)</td>
<td></td>
</tr>
<tr>
<td>Concentration (of 5)</td>
<td></td>
</tr>
<tr>
<td>Neuro exam</td>
<td></td>
</tr>
<tr>
<td>Balance errors (of 30)</td>
<td></td>
</tr>
<tr>
<td>Delayed Recall (of 5 of 10)</td>
<td></td>
</tr>
</tbody>
</table>

- Date and time of assessment:

<table>
<thead>
<tr>
<th>Date of injury:</th>
</tr>
</thead>
</table>

If the athlete is known to you prior to their injury, are they different from their usual self?
- □ Yes  □ No  □ Unsure  □ Not Applicable
  (If different, describe why in the clinical notes section)

Concussion Diagnosed?
- □ Yes  □ No  □ Unsure  □ Not Applicable

If re-testing, has the athlete improved?
- □ Yes  □ No  □ Unsure  □ Not Applicable

I am a physician or licensed healthcare professional and I have personally administered or supervised the administration of this SCAT5.

Signature: __________________________

Name: ______________________________

Title: _________________________________

Registration number (if applicable): __________________________

Date: _________________________________

---

SCORING ON THE SCAT5 SHOULD NOT BE USED AS A STAND-ALONE METHOD TO DIAGNOSE CONCUSSION, MEASURE RECOVERY OR MAKE DECISIONS ABOUT AN ATHLETE’S READINESS TO RETURN TO COMPETITION AFTER CONCUSSION.

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CLINICAL NOTES:

Name: ___________________________
DOB: ___________________________
Address: _________________________
ID number: _______________________
Examiner: _________________________
Date: _____________________________

CONCUSSION INJURY ADVICE

(To be given to the person monitoring the concussed athlete)

This patient has received an injury to the head. A careful medical examination has been carried out and no sign of any serious complications has been found. Recovery time is variable across individuals and the patient will need monitoring for a further period by a responsible adult. Your treating physician will provide guidance as to this timeframe.

If you notice any change in behaviour, vomiting, worsening headache, double vision or excessive drowsiness, please telephone your doctor or the nearest hospital emergency department immediately.

Other important points:

Initial rest: Limit physical activity to routine daily activities (avoid exercise, training, sports) and limit activities such as school, work, and screen time to a level that does not worsen symptoms.

1) Avoid alcohol
2) Avoid prescription or non-prescription drugs without medical supervision. Specifically:
   a) Avoid sleeping tablets
   b) Do not use aspirin, anti-inflammatory medication or stronger pain medications such as narcotics
3) Do not drive until cleared by a healthcare professional.
4) Return to play/sport requires clearance by a healthcare professional.

Clinic phone number: ___________________________
Patient’s name: ___________________________
Date / time of injury: ___________________________
Date / time of medical review: _______________________
Healthcare Provider: ___________________________
INSTRUCTIONS

Words in Italics throughout the SCAT5 are the instructions given to the athlete by the clinician

Symptom Scale

The time frame for symptoms should be based on the type of test being administered. At baseline it is advantageous to assess how an athlete “typically” feels whereas during the acute/post-acute stage it is best to ask how the athlete feels at the time of testing.

The Symptom scale should be completed by the athlete, not by the examiner. In situations where the Symptom scale is being completed after exercise, it should be done in a resting state, generally by approximating his/her resting heart rate.

For total number of symptoms, maximum possible is 22 except immediately post injury, if sleep item is omitted, which then creates a maximum of 21.

For Symptom severity score, add all scores in table, maximum possible is 22 x 6 = 132, except immediately post injury if sleep item is omitted, which then creates a maximum of 216-126.

Immediate Memory

The Immediate Memory component can be completed using the traditional 5-word per trial list or, optionally, using 10-words per trial. The literature suggests that the Immediate Memory has a notable ceiling effect when a 5-word list is used. In settings where this ceiling is prominent, the examiner may wish to make the task more difficult by incorporating two 5-word groups for a total of 10 words per trial. In this case, the maximum score per trial is 10 with a total trial maximum of 30.

Choose one of the word lists (either 5 or 10). Then perform 3 trials of immediate memory using this list.

Complete all 3 trials regardless of score on previous trials.

“I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order.” The words must be read at a rate of one word per second.

Trials 2 & 3 MUST be completed regardless of score on trial 1 & 2.

Trials 2 & 3:

“I am going to repeat the same list again. Repeat back as many words as you can remember in any order, even if you said the word before.”

Score 1 pt. for each correct response. Total score equals sum across all 3 trials. Do NOT inform the athlete that delayed recall will be tested.

Concentration

Digits backward

Choose one column of digits from lists A, B, C, D, E or F and administer those digits as follows:

Say: “I am going to read a string of numbers and when I am done, you repeat them back to me in reverse order of how I read them to you. For example, if I say 7-1-9, you would say 9-1-7.”

Begin with first 3 digit string.

If correct, circle “Y” for correct and go to next string length. If incorrect, circle “N” for the first string length and read trial 2 in the same string length. One point possible for each string length. Stop after incorrect on both trials (2 N’s) in a string length. The digits should be read at the rate of one per second.

Months in reverse order

“Now tell me the months of the year in reverse order. Start with the last month and go backward. So you’ll say December, November...Go ahead”

1 pt. for entire sequence correct

Delayed Recall

The delayed recall should be performed after 5 minutes have elapsed since the end of the Immediate Recall section.

“Do you remember that list of words I read a few times earlier? Tell me as many words from the list as you can remember in any order.”

Score 1 pt. for each correct response

Modified Balance Error Scoring System (mBESS)5 testing

This balance testing is based on a modified version of the Balance Error Scoring System (BESS). A timing device is required for this testing.

Each of 20-second trial/stance is scored by counting the number of errors. The examiner will begin counting errors only after the athlete has assumed the proper start position. The modified BESS is calculated by adding one error point for each error during the three 20-second tests. The maximum number of errors for any single condition is 10. If the athlete commits multiple errors simultaneously, only one error is recorded but the athlete should quickly return to the testing position, and counting should resume once the athlete is set. Athletes that are unable to maintain the testing procedure for a minimum of five seconds at the start are assigned the highest possible score, ten, for that testing condition.

OPTION For further assessment, the same 3 stances can be performed on a surface of medium density foam (e.g., approximately 50cm x 40cm x 6cm).

Balance testing – types of errors

1. Hands lifted off iliac crest
2. Opening eyes
3. Step, stumble, or fall
4. Moving hip into > 30 degrees abduction
5. Lifting forefoot or heel
6. Remaining out of test position > 5 sec

“I am now going to test your balance. Please take your shoes off (if applicable), roll up your pant legs above ankle (if applicable), and remove any ankle taping (if applicable). This test will consist of twenty second tests with different stances.”

(a) Double leg stance:

“The first stance is standing with your feet together with your hands on your hips and with your eyes closed. You should try to maintain stability in this position for 20 seconds. I will be counting the number of times you move out of this position. I will start timing when you are set and have closed your eyes.”

(b) Single leg stance:

“If you were to kick a ball, which foot would you use? This will be the dominant foot! Now stand on your non-dominant foot. The dominant leg should be held in approximately 30 degrees of hip flexion and 45 degrees of knee flexion. Again, you should try to maintain stability for 20 seconds on your non-dominant foot, with your eyes closed. I will be counting the number of times you move out of this position. If you stumble out of this position, open your eyes and return to the start position and continue balancing. I will start timing when you are set and have closed your eyes.”

(c) Tandem stance:

“Now stand heel-to-toe with your non-dominant foot in back. Your weight should be evenly distributed across both feet. Again, you should try to maintain stability for 20 seconds with your hands on your hips and your eyes closed. I will be counting the number of times you move out of this position. If you stumble out of this position, open your eyes and return to the start position and continue balancing. I will start timing when you are set and have closed your eyes.”

Tandem Gait

Participants are instructed to stand with their feet together behind a starting line (the test is best done with footwear removed). Then, they walk in a forward direction as quickly and as accurately as possible along a 38mm wide (sports tape), 3 metre line with an alternate foot heel-to-toe gait ensuring that they approximate their heel and toe on each step. Once they cross the end of the 3m line, they turn 180 degrees and return to the starting point using the same gait. Athletes fall the test if they step off the line, have a separation between their heel and toe, or if they touch or grab the examiner or an object.

Finger to Nose

“I am going to test your coordination now. Please sit comfortably on the chair with your eyes open and your arm (either right or left) outstretched (shoulder flexed to 90 degrees and elbow and fingers extended), pointing in front of you. When I give a start signal, I would like you to perform five successive finger to nose repetitions using your index finger to touch the tip of the nose, and then return to the starting position, as quickly and as accurately as possible.”

References

CONCUSSION INFORMATION

Any athlete suspected of having a concussion should be removed from play and seek medical evaluation.

Signs to watch for

Problems could arise over the first 24–48 hours. The athlete should not be left alone and must go to a hospital at once if they experience:

- Worsening headache
- Drowsiness or inability to be awakened
- Inability to recognize people or places
- Repeated vomiting
- Unusual behaviour or confusion or irritable
- Seizures (arms and legs jerk uncontrollably)
- Weakness or numbness in arms or legs
- Unsteadiness on their feet.

Consult your physician or licensed healthcare professional after a suspected concussion. Remember, it is better to be safe.

Rest & Rehabilitation

After a concussion, the athlete should have physical rest and relative cognitive rest for a few days to allow their symptoms to improve. In most cases, after no more than a few days of rest, the athlete should gradually increase their daily activity level as long as their symptoms do not worsen. Once the athlete is able to complete their usual daily activities without concussion-related symptoms, the second step of the return to play/sport progression can be started. The athlete should not return to play/sport until their concussion-related symptoms have resolved and the athlete has successfully returned to full school/learning activities.

When returning to play/sport, the athlete should follow a stepwise, medically managed exercise progression, with increasing amounts of exercise. For example:

Graduated Return to School Strategy

Concussion may affect the ability to learn at school. The athlete may need to miss a few days of school after a concussion. When going back to school, some athletes may need to go back gradually and may need to have some changes made to their schedule so that concussion symptoms do not get worse. If a particular activity makes symptoms worse, then the athlete should stop that activity and rest until symptoms get better. To make sure that the athlete can get back to school without problems, it is important that the healthcare provider, parents, caregivers and teachers talk to each other so that everyone knows what the plan is for the athlete to go back to school.

Note: If mental activity does not cause any symptoms, the athlete may be able to skip step 2 and return to school part-time before doing school activities at home first.

<table>
<thead>
<tr>
<th>Mental Activity</th>
<th>Activity at each step</th>
<th>Goal of each step</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Daily activities that do not give the athlete symptoms</td>
<td>Typical activities that the athlete does during the day as long as they do not increase symptoms (e.g. reading, texting, screen time). Start with 5-15 minutes at a time and gradually build up.</td>
<td>Gradual return to typical activities.</td>
</tr>
<tr>
<td>2. School activities</td>
<td>Homework, reading or other cognitive activities outside of the classroom.</td>
<td>Increase tolerance to cognitive work.</td>
</tr>
<tr>
<td>3. Return to school part-time</td>
<td>Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day.</td>
<td>Increase academic activities.</td>
</tr>
<tr>
<td>4. Return to school full-time</td>
<td>Gradually progress school activities until a full day can be tolerated.</td>
<td>Return to full academic activities and catch up on missed work.</td>
</tr>
</tbody>
</table>

If the athlete continues to have symptoms with mental activity, some other accommodations that can help with return to school may include:

- Starting school later, only going for half days, or going only to certain classes
- More time to finish assignments/tests
- Quiet room to finish assignments/tests
- Not going to noisy areas like the cafeteria, assembly halls, sporting events, music class, shop class, etc.
- Taking lots of breaks during class, homework, tests
- No more than one exam/day
- Shorter assignments
- Repetition/memory cues
- Use of a student helper/tutor
- Reassurance from teachers that the child will be supported while getting better

The athlete should not go back to sports until they are back to school/learning, without symptoms getting significantly worse and no longer needing any changes to their schedule.

Graduated Return to Sport Strategy

For example:

medically managed exercise progression, with increasing amounts of exercise. When returning to play/sport, the athlete should follow a stepwise,

Exercise step | Functional exercise at each step | Goal of each step
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Symptom-limited activity</td>
<td>Daily activities that do not provoke symptoms.</td>
</tr>
<tr>
<td>2. Light aerobic exercise</td>
<td>Walking or stationary cycling at slow to medium pace. No resistance training.</td>
</tr>
<tr>
<td>4. Non-contact training drills</td>
<td>Harder training drills, e.g., passing drills. May start progressive resistance training.</td>
</tr>
<tr>
<td>5. Full contact practice</td>
<td>Following medical clearance, participate in normal training activities.</td>
</tr>
<tr>
<td>6. Return to play/sport</td>
<td>Normal game play.</td>
</tr>
</tbody>
</table>

In this example, it would be typical to have 24 hours (or longer) for each step of the progression. If any symptoms worsen while exercising, the athlete should go back to the previous step. Resistance training should be added only in the later stages (Stage 3 or 4 at the earliest).

Written clearance should be provided by a healthcare professional before return to play/sport as directed by local laws and regulations.

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Appendix C

(Patient Home Care Plan)
Luther College Athletic Training

Concussion Information: Patient

Home Instruction Care Plan

You have been diagnosed with a concussion (also known as a mild traumatic brain injury) and need to be watched closely for 24-48 hours.

**REST IS THE KEY.** You should **NOT** participate in any activities (i.e. sports, physical education, bike riding, weight training) that increase your heart rate or blood pressure above resting values if you still have symptoms. Your concussion management care plan is based on your symptoms and is designed to help speed your recovery. It is important to limit activities that require heavy concentration or long periods of attention. Once your symptoms have resolved and your concentration has returned to normal, you can slowly increase your daily activity load and duration of those activities.

<table>
<thead>
<tr>
<th>Physical</th>
<th>Thinking</th>
<th>Emotional</th>
<th>Sleep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headaches</td>
<td>Sensitivity to light/noise</td>
<td>Feeling mentally foggy</td>
<td>Irritability</td>
</tr>
<tr>
<td>Nausea</td>
<td>Neck Pain</td>
<td>Problems concentrating</td>
<td>Sadness</td>
</tr>
<tr>
<td>Fatigue</td>
<td>Numbness/tingling</td>
<td>Problems remembering</td>
<td>Feeling emotional</td>
</tr>
<tr>
<td>Visual problems</td>
<td>Vomiting</td>
<td>Feeling slowed down</td>
<td>Nervous/Anxious</td>
</tr>
<tr>
<td>Balance problems</td>
<td>Dizziness</td>
<td>Increased confusion</td>
<td>Trouble falling asleep</td>
</tr>
</tbody>
</table>

**Today the following symptoms are present:**

- [ ] no symptoms

**Go to the Emergency Room if you suddenly experience any of the following:**

- Headache that worsens
- Look very drowsy, can’t be wakened
- Can’t recognize people or places
- Unusual behavior change
- Seizures
- Repeated vomiting
- Increased confusion
- Increased irritability/aggression
- Neck pain that worsens
- Slurred speech
- Weakness or numbness in arms/legs
- Loss of consciousness
- Dilated or Unequal pupils
- Blurred/change in vision
- Stumbling/loss of balance
- Decrease in level of consciousness

Do not use prescription medications unless specifically directed to do so by the athletic training staff or team physician.

Athlete:______________________________
Sport: ______________________________
DOB:____________________Age:_________
Date of Injury:________________________
You should follow the directions on this sheet and contact your athletic trainer if you have questions. If the athletic trainer is not available, call the emergency room immediately.

<table>
<thead>
<tr>
<th>Athletic Trainer</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luther College Health Services</td>
<td>(563) 387-1045</td>
</tr>
<tr>
<td>Winneshiek Medical Center Emergency Room</td>
<td>(563) 382-2911</td>
</tr>
<tr>
<td>Luther College Campus Security</td>
<td>(563) 387-2111</td>
</tr>
</tbody>
</table>

**Returning to Daily Activities**

1. Stay on your regular sleep schedule, as much as possible. However, rest/nap as you feel necessary. Be sure to get enough sleep at night—no late nights. Keep the same bedtime all week.

2. Limit physical activities and activities that require heavy concentration or thinking that make symptoms worse. During recovery, it is normal to feel frustrated and sad when you do not feel right or cannot participate.

   - Avoid physical activities such as: Skills class, sports practice, weight-training, running, biking, swimming until further notice

   - Limit activities requiring concentration/use of electronic devices such as: Movies, video games, email, music, reading

3. Eat regularly. Drink lots of fluids and eat carbohydrates or protein to maintain appropriate blood sugar levels. Avoid spicy foods and eat a healthy, well-balanced diet.

4. As symptoms decrease, you may increase and lengthen daily activities as directed by your athletic trainer. If symptoms worsen or return, lessen your activity. Repeated evaluation of your symptoms is required to help guide recovery, consult with your athletic trainer for daily appointments.

5. If you are still having symptoms of concussion you may need extra help in completing academic work. As your symptoms subside the extra help will be removed gradually. Inform your professors and work study supervisors of your injury. Your athletic trainer will contact Susan Halverson in the student life office at 563-387-1020 for assistance with this process.

<table>
<thead>
<tr>
<th>It is OK to:</th>
<th>There is no need to:</th>
<th>DO NOT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Tylenol (acetaminophen)</td>
<td>Check eyes with a light</td>
<td>DRINK ALCOHOL</td>
</tr>
<tr>
<td>Use an ice pack on neck/head for comfort</td>
<td>Wake up every hour</td>
<td>Eat spicy foods</td>
</tr>
<tr>
<td>Go to sleep</td>
<td>Stay in bed</td>
<td>Drive a car</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use aspirin, Aleve, Advil, Ibuprofen or other NSAID products</td>
</tr>
</tbody>
</table>

It is OK to:

- Use Tylenol (acetaminophen)
- Use an ice pack on neck/head for comfort
- Go to sleep

There is no need to:

- Check eyes with a light
- Wake up every hour
- Stay in bed

DO NOT:

- DRINK ALCOHOL
- Eat spicy foods
- Drive a car
- Use aspirin, Aleve, Advil, Ibuprofen or other NSAID products
Returning to Sports

You should never return to play until directed to do so by the athletic training staff and team physician.

If your symptoms should return during the return to play protocol, stop activity and report immediately to your athletic trainer.

As with any injury, a full recovery will reduce the chances of sustaining another injury. Follow the team physician and/or athletic trainer’s recommendations.

The following are recommended at this time:

__ No physical activity including sports practices and lifting sessions at this time.

Next Follow Up Date and Time: ______________________

__ Gradual return to sports practices under the supervision of an athletic trainer, following clearance from a physician.

• Return to play should occur in gradual steps beginning with light activity and progressing to full contact game type situations.

• Pay careful attention to your symptoms and concentration abilities at each stage of activity.

If symptoms return, inform your athletic trainer in order to reevaluate your return to play activity level.