What is the SCAT3?1

The SCAT3 is a standardized tool for evaluating injured athletes for concussion and can be used in athletes aged from 13 years and older. It supersedes the original SCAT and the SCAT2 published in 2005 and 2009, respectively.2 For younger persons, ages 12 and under, please use the Child SCAT3. The SCAT3 is designed for use by medical professionals. If you are not qualified, please use the Sport Concussion Recognition Tool. Preseason baseline testing with the SCAT3 can be helpful for interpreting post-injury test scores.

Specific instructions for use of the SCAT3 are provided on page 3. If you are not familiar with the SCAT3, please read through these instructions carefully. This tool may be freely copied in its current form for distribution to individuals, teams, groups and organizations. Any revision or any reproduction in a digital form requires approval by the Concussion in Sport Group.

NOTE: The diagnosis of a concussion is a clinical judgment, ideally made by a medical professional. The SCAT3 should not be used solely to make, or exclude, the diagnosis of concussion in the absence of clinical judgement. An athlete may have a concussion even if their SCAT3 is “normal.”

What is a concussion?

A concussion is a disturbance in brain function caused by a direct or indirect force to the head. It results in a variety of non-specific signs and/or symptoms (some examples listed below) and most often does not involve loss of consciousness. Concussion should be suspected in the presence of any one or more of the following:

- Symptoms (e.g., headache), or
- Physical signs (e.g., unsteadiness), or
- Impaired brain function (e.g. confusion) or
- Abnormal behaviour (e.g., change in personality).

SIDELINE ASSESSMENT

Indications for Emergency Management

NOTE: A hit to the head can sometimes be associated with a more serious brain injury. Any of the following warrants consideration of activating emergency procedures and urgent transportation to the nearest hospital:

- Glasgow Coma score less than 15
- Deteriorating mental status
- Potential spinal injury
- Progressive, worsening symptoms or new neurologic signs

Potential signs of concussion?

If any of the following signs are observed after a direct or indirect blow to the head, the athlete should stop participation, be evaluated by a medical professional and should not be permitted to return to sport the same day if a concussion is suspected.

Any loss of consciousness?

“If so, how long?”

Balance or motor incoordination (stumbles, slow/laboured movements, etc.)?

Disorientation or confusion (inability to respond appropriately to questions)?

Loss of memory:

“If so, how long?”

“Before or after the injury?”

Blank or vacant look:

Visible facial injury in combination with any of the above:

Glasgow coma scale (GCS)

1. 

Best eye response (E)

- No eye opening
- Eye opening in response to pain
- Eye opening to speech
- Eyes opening spontaneously

1

2

3

4

Best verbal response (V)

- No verbal response
- Incomprehensible sounds
- Inappropriate words
- Confused
- Oriented

1

2

3

4

5

Best motor response (M)

- No motor response
- Extension to pain
- Abnormal flexion to pain
- Flexion/Withdrawal to pain
- Localizes to pain
- Obey commands

1

2

3

4

5

6

Glasgow Coma score (E + V + M)

GCS should be recorded for all athletes in case of subsequent deterioration.

Maddocks Score3

2. 

“I am going to ask you a few questions, please listen carefully and give your best effort.”

Modified Maddocks questions (1 point for each correct answer)

What venue are we at today?

Which half is it now?

Who scored last in this match?

What team did you play last week/game?

Did your team win the last game?

Maddocks score

Maddocks score is validated for sideline diagnosis of concussion only and is not used for serial testing.

Notes: Mechanism of Injury (“tell me what happened”):

Any athlete with a suspected concussion should be REMOVED FROM PLAY, medically assessed, monitored for deterioration (i.e., should not be left alone) and should not drive a motor vehicle until cleared to do so by a medical professional. No athlete diagnosed with concussion should be returned to sports participation on the day of Injury.

Name

Date/Time of Injury:

Date of Assessment:

Examiner:

SCAT3™

Sport Concussion Assessment Tool – 3rd Edition

For use by medical professionals only

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Examiner:

SCAT3™

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**BACKGROUND**

Name: ___________________ Date: ___________________

Examiner: ___________________

Sport/team/school: ___________________ Date/time of injury: ___________________

Age: ___________________ Gender: M F

Years of education completed: ___________________

Dominant hand: right left neither

How many concussions do you think you have had in the past? Y N

When was the most recent concussion? ___________________

How long was your recovery from the most recent concussion? ___________________

Have you ever been hospitalized or had medical imaging done for a head injury? Y N

Have you ever been diagnosed with headaches or migraines? Y N

Do you have a learning disability, dyslexia, ADD/ADHD? Y N

Have you ever been diagnosed with depression, anxiety or other psychiatric disorder? Y N

Has anyone in your family ever been diagnosed with any of these problems? Y N

Are you on any medications? If yes, please list: Y N

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**SYMPTOM EVALUATION**

**How do you feel?**

*You should score yourself on the following symptoms, based on how you feel now*.  

<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>Trouble falling asleep</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>
</tbody>
</table>

Total number of symptoms (Maximum possible 22)

**Symptom severity score** (Maximum possible 132)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>self rated</th>
<th>self rated and clinician monitored</th>
<th>clinician interview</th>
<th>self rated with parent input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>No</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

---

**COGNITIVE & PHYSICAL EVALUATION**

**4 Cognitive assessment**

*Standardized Assessment of Concussion (SAC)*

Orientation (1 point for each correct answer)

- What month is it? 0 1
- What is the date today? 0 1
- What is the day of the week? 0 1
- What year is it? 0 1
- What time is it right now? (within 1 hour) 0 1

Orientation score of 5

**Immediate memory**

<table>
<thead>
<tr>
<th>List</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
<th>Alternative word list</th>
</tr>
</thead>
<tbody>
<tr>
<td>elbow</td>
<td>0 1 0 1 0 1</td>
<td>candle</td>
<td>baby</td>
<td>finger</td>
</tr>
<tr>
<td>apple</td>
<td>0 1 0 1 0 1</td>
<td>paper</td>
<td>monkey</td>
<td>penny</td>
</tr>
<tr>
<td>carpet</td>
<td>0 1 0 1 0 1</td>
<td>sugar</td>
<td>perfume</td>
<td>blanket</td>
</tr>
<tr>
<td>saddle</td>
<td>0 1 0 1 0 1</td>
<td>sandwich</td>
<td>sunset</td>
<td>lemon</td>
</tr>
<tr>
<td>bubble</td>
<td>0 1 0 1 0 1</td>
<td>wagon</td>
<td>iron</td>
<td>insect</td>
</tr>
</tbody>
</table>

Immediate memory score total of 15

**Concentration: Digits Backward**

<table>
<thead>
<tr>
<th>List</th>
<th>Trial 1</th>
<th>Alternative digit list</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-9-3</td>
<td>0 1</td>
<td>1-5-2-8-6</td>
</tr>
<tr>
<td>3-8-1-4</td>
<td>0 1</td>
<td>3-8-5-2-7</td>
</tr>
<tr>
<td>6-2-9-7-1</td>
<td>0 1</td>
<td>6-1-8-4-3</td>
</tr>
<tr>
<td>7-1-8-4-6-2</td>
<td>0 1</td>
<td>7-2-4-8-5-6</td>
</tr>
</tbody>
</table>

Total of 4

**Concentration: Month in Reverse Order** (1 pt. for entire sequence correct)


Concentration score of 5

**5 Neck Examination:**

Range of motion Tenderness Upper and lower limb sensation & strength

Findings:

---

**6 Balance examination**

Do one or both of the following tests.

- Footwear (shoes, barefoot, braces, tape, etc.)

Modified Balance Error Scoring System (BESS) testing

- Which foot was tested (i.e. which is the non-dominant foot) Left Right
- Testing surface (hard floor, field, etc.)

Condition

- Double leg stance: Errors
- Single leg stance (non-dominant foot): Errors
- Tandem stance (non-dominant foot at back): Errors

And/or

Tandem gait* Time (best of 4 trials): _______ seconds

---

**7 Coordination examination**

Upper limb coordination

Which arm was tested: 

Coordination score of 1

---

**8 SAC Delayed Recall**

Delayed recall score of 5

---

SCAT3 to be done in resting state. Best done 10 or more minutes post exercise.

---

Scoring on the SCAT3 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. Since signs and symptoms may evolve over time, it is important to consider repeat evaluation in the acute assessment of concussion.
INSTRUCTIONS
Words in italics throughout the SCAT3 are the instructions given to the athlete by the tester.

Symptom Scale
“You should score yourself on the following symptoms, based on how you feel now”.
To be completed by the athlete. In situations where the symptom scale is being completed after exercise, it should still be done in a resting state, at least 10 minutes post exercise.

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.

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 foot off or heel
6. Remaining out of test position > 5 sec

Each of the 20-second trials is scored by counting the errors, or deviations from the proper stance, accumulated by the athlete. The examiner will begin counting errors only after the individual 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 total number of errors for any single condition is 10. If a 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 subject is set. Subjects 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 50cmx40cmx6cm).

Coordination Examination

Upward limb coordination
Finger-to-nose (FTN) task:
“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. 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.”

Scoring: 5 correct repetitions in < 4 seconds = 1 pt.

Note for testers: Athletes fail the test if they do not touch their nose, do not fully extend their elbow or do not perform five repetitions. Failure should be scored as 0.

References & Footnotes
1. This tool has been developed by a group of international experts at the 4th International Consensus meeting on Concussion in Sport held in Zurich, Switzerland in November 2012. The full details of the conference outcomes and the authors of the tool are published in The BJS Injury Prevention and Health Protection, 2013, Volume 47, Issue 5. The outcome paper will also be simultaneously co-published in other leading biomedical journals with the copyright held by the Concussion in Sport Group, to allow unrestricted distribution, providing no alterations are made.
ATHLETES INFORMATION

Any athlete suspected of having a concussion should be removed from play, and then 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:
- Have a headache that gets worse
- Are very drowsy or can’t be awakened
- Can’t recognize people or places
- Have repeated vomiting
- Behave unusually or seem confused; are very irritable
- Have seizures (arms and legs jerk uncontrollably)
- Have weak or numb arms or legs
- Are unsteady on their feet; have slurred speech

Remember, it is better to be safe. Consult your doctor after a suspected concussion.

Return to play
Athletes should not be returned to play the same day of injury. When returning athletes to play, they should be medically cleared and then follow a stepwise supervised program, with stages of progression.

For example:

<table>
<thead>
<tr>
<th>Rehabilitation stage</th>
<th>Functional exercise at each stage of rehabilitation</th>
<th>Objective of each stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No activity</td>
<td>Physical and cognitive rest</td>
<td>Recovery</td>
</tr>
<tr>
<td>Light aerobic exercise</td>
<td>Walking, swimming or stationary cycling</td>
<td>Increase heart rate</td>
</tr>
<tr>
<td>Sport-specific exercise</td>
<td>Skiing in ice hockey, running drills in soccer</td>
<td>Add movement</td>
</tr>
<tr>
<td>Non-contact training drills</td>
<td>Progression to more complex training drills, eg passing drills in football and ice hockey. May start progressive resistance training</td>
<td>Exercise, coordination, and cognitive load</td>
</tr>
<tr>
<td>Full contact practice</td>
<td>Following medical clearance participate in normal training activities</td>
<td>Restore confidence and assess functional skills by coaching staff</td>
</tr>
<tr>
<td>Return to play</td>
<td>Normal game play</td>
<td></td>
</tr>
</tbody>
</table>

There should be at least 24 hours (or longer) for each stage and if symptoms recur the athlete should rest until they resolve once again and then resume the program at the previous asymptomatic stage. Resistance training should only be added in the later stages.

If the athlete is symptomatic for more than 10 days, then consultation by a medical practitioner who is expert in the management of concussion, is recommended.

Medical clearance should be given before return to play.

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, dizziness, worsening headache, double vision or excessive drowsiness, please contact your doctor or the nearest hospital emergency department immediately.

Other important points:
- Rest (physically and mentally), including training or playing sports until symptoms resolve and you are medically cleared
- No alcohol
- No prescription or non-prescription drugs without medical supervision. Specifically:
  - No sleeping tablets
  - Do not use aspirin, anti-inflammatory medication or sedating pain killers
  - Do not drive until medically cleared
  - Do not train or play sport until medically cleared

Clinic phone number

<table>
<thead>
<tr>
<th>Test Domain</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Symptoms 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</td>
<td></td>
</tr>
<tr>
<td>Concentration of 5</td>
<td></td>
</tr>
<tr>
<td>Delayed Recall of 5</td>
<td></td>
</tr>
<tr>
<td>SAC Total</td>
<td></td>
</tr>
</tbody>
</table>

Scoring Summary:

Notes:

Patient’s name

Date/time of injury

Date/time of medical review

Treating physician

Clinic phone number

Contact details or stamp