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 Tool1. 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? Y N
“If so, how long?” Y N
Balance or motor incoordination (stumbles, slow/laboured movements, etc.)? Y N
Disorientation or confusion (inability to respond appropriately to questions)? Y N
Loss of memory:
“If so, how long?” Y N
“Before or after the injury?” Y N
Blank or vacant look: Y N
Visible facial injury in combination with any of the above: Y N

1 Glasgow coma scale (GCS)
Best eye response (E)
No eye opening 1
Eye opening in response to pain 2
Eye opening to speech 3
Eyes opening spontaneously 4
Best verbal response (V)
No verbal response 1
Incomprehensible sounds 2
Inappropriate words 3
Confused 4
Oriented 5
Best motor response (M)
No motor response 1
Extension to pain 2
Abnormal flexion to pain 3
Flexion/Withdrawal to pain 4
Localizes to pain 5
Obeys commands 6
Glasgow Coma score (E + V + M) of 15
GCS should be recorded for all athletes in case of subsequent deterioration.

2 Maddocks Score3
“Tell me what happened”:
Digits backward
Seconds

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.
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? ___________________________
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? □ Y □ N
If yes, please list: ___________________________

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

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)

Do the symptoms get worse with physical activity? □ Y □ N
Do the symptoms get worse with mental activity? □ Y □ N

Self rated □ □ □ □
Clinician interview □ □ □ □
Self rated and clinician monitored □ □ □ □
Self rated with parent input □ □ □ □

Overall rating: If you know the athlete well prior to the injury, how different is the athlete acting compared to his/her usual self? Please circle one response:

<table>
<thead>
<tr>
<th>Rating</th>
<th>No different</th>
<th>Very different</th>
<th>Unsure</th>
<th>N/A</th>
</tr>
</thead>
</table>

Cognitive assessment

Standardized Assessment of Concussion (SAC)³

Orientation (1 point for each correct answer)

<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 of 9

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</td>
<td>0 1 0 1</td>
<td>0 1 0 1</td>
<td>candle, baby, finger</td>
</tr>
<tr>
<td>apple</td>
<td>0 1 0 1</td>
<td>0 1 0 1</td>
<td>0 1 0 1</td>
<td>paper, monkey, penny</td>
</tr>
<tr>
<td>carpet</td>
<td>0 1 0 1</td>
<td>0 1 0 1</td>
<td>0 1 0 1</td>
<td>sugar, perfume, blanket</td>
</tr>
<tr>
<td>saddle</td>
<td>0 1 0 1</td>
<td>0 1 0 1</td>
<td>0 1 0 1</td>
<td>sandwich, sunset, lemon</td>
</tr>
<tr>
<td>bubble</td>
<td>0 1 0 1</td>
<td>0 1 0 1</td>
<td>0 1 0 1</td>
<td>wagon, iron, insect</td>
</tr>
</tbody>
</table>

Total 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>6-2-9 5-2-6 4-1-5</td>
</tr>
<tr>
<td>3-8-1-4</td>
<td>0 1</td>
<td>3-2-7-9 1-7-9-5 4-9-6-8</td>
</tr>
<tr>
<td>6-2-9-7-1</td>
<td>0 1</td>
<td>1-5-2-8-6 3-8-5-2-7 6-1-8-4-3</td>
</tr>
<tr>
<td>7-1-8-4-6-2</td>
<td>0 1</td>
<td>5-3-9-1-4-8 8-3-1-9-6-4 7-2-4-8-5-6</td>
</tr>
</tbody>
</table>

Total of 4

Concentration: Month in Reverse Order (1 pt. for entire sequence correct)
Dec-Nov-Oct-Sept-Aug-Jul-Jun-May-Apr-Mar-Feb-Jan 0 1

Concentration score of 5

Neck Examination:

Range of motion Tenderness Upper and lower limb sensation & strength
Findings:

Balance examination

Do one or both of the following tests.
Footwear (shoes, barefoot, braces, tape, etc.)

Modified Balance Error Scoring System (BESS) testing²

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 gait²
Time (best of 4 trials): ________ seconds

Coordination examination

Upper limb coordination

Which arm was tested: □ left □ right
Coordination score of 1

SAC Delayed Recall⁴

Delayed recall score of 5
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.

For total number of symptoms, maximum possible is 22.

For Symptom severity score, add all scores in table, maximum possible is 22 x 6 = 132.

SAC

Immediate Memory

“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.”

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.”

Complete all 3 trials regardless of score on trial 1 & 2. Read the words at a rate of one per second. 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

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

If correct, go to next string length. If incorrect, read trial 2. One point possible for each string length. Stop after incorrect on both trials. 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 backwards. So you’ll say December, November … Go ahead”

1 pt. for entire sequence correct

Delayed Recall

The delayed recall should be performed after completion of the Balance and Coordination Examination.

“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

Balance Examination

Modified Balance Error Scoring System (BESS) testing

This balance testing is based on a modified version of the Balance Error Scoring System (BESS). A stopwatch or watch with a second hand is required for this testing.

For Symptom severity score, add all scores in table, maximum possible is 22 x 6 = 132.

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 BSM 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.


ATHLETE 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, keeping intensity, 70% maximum predicted heart rate. No resistance training</td>
<td>Increase heart rate</td>
</tr>
<tr>
<td>Sport-specific exercise</td>
<td>Skating drills in ice hockey, running drills in soccer, No head impact activities</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

Scoring Summary:

<table>
<thead>
<tr>
<th>Test Domain</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>Date:</td>
</tr>
<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><strong>SAC Total</strong></td>
<td></td>
</tr>
<tr>
<td>BESS (total errors)</td>
<td></td>
</tr>
<tr>
<td>Tandem Gait (seconds)</td>
<td></td>
</tr>
<tr>
<td>Coordination of 1</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

Patient's name
Date/time of injury
Date/time of medical review
Treating physician

Contact details or stamp