

OWIA Concussion Policy

Version 2 - SCAT5

POLICY OBJECTIVE

The aim of this policy is to provide guidelines for OWIA staff involved in managing athletes who have sustained a sport-related concussion.

Our common goal is to achieve a successful return to sport, with full recovery and readiness for competition, in the quickest timeframe possible. This policy places a high priority on minimisation of short-term risk and long-term health consequences.

The policy provides standardised guidelines to support medical, physiotherapy and coaching staff at potentially remote international training camps and competitions. Our protocol is consistent with the principles outlined in the documents:

- Consensus statement on concussion in sport—the 5th international conference on concussion in sport held in Berlin, October 2016 ([British Journal of Sports Medicine, 2017](#))
- [FIS Medical Guide, 2013](#)
- ASC Concussion in Sport website (<https://concussioninsport.gov.au/>) – note that the information presented in this website relates to the SCAT3 guidelines and has not yet been fully updated to [SCAT5](#).

This policy can be used for winter sports athletes at all participation levels (recreational, sub-elite and elite).

This policy has been updated following publication ([BJSM 2017](#)) of the Sport Concussion Assessment Tool (5th Consensus Meeting), and in future will continue to be regularly updated in accordance with new research and consensus statements. Please check the [OWIA website](#) for the most up-to-date version.

WHO THE POLICY APPLIES TO

This Concussion Policy applies to all OWIA contracted athletes, coaches and team support staff (employees and contractors, including medical personnel, physiotherapists, strength & conditioning coaches, exercise scientists, sport psychologists, dietitians) and other persons selected to an OWIA team.

This guideline assumes the reader has a similar level of knowledge to medical practitioners and allied health professionals such as physiotherapists.

POLICY PRINCIPLES

- Concussion must be taken seriously to safeguard the long-term welfare of athletes
- Athletes with concussion must be removed from participation and may not resume on the same day
- Athletes suspected of concussion must be thoroughly assessed and monitored by a healthcare professional
- Athletes with concussion must progress through a Graded Return to Sport (GRTS) protocol
- Athletes must receive medical clearance before returning to sport

WHAT IS A CONCUSSION?

Sport-related concussion may be caused by a direct blow to the head, face or neck, or by impact elsewhere on the body, with impulsive force transmission to the head. Concussion typically results in rapid onset of transient disturbance in brain

function. Symptoms are often evident immediately, but may appear over minutes to hours. Although concussion may result in neuropathological changes, the acute clinical signs and symptoms reflect a functional disturbance rather than structural injury. No abnormality is seen on imaging studies. Loss of consciousness (LOC) may or may not occur. Resolution typically follows a rapid sequential course, but in some cases symptoms may be prolonged.

Concussions occur frequently in winter sport disciplines. Transient neurological disturbances are usually seen, followed by spontaneous recovery, in 80-90% of cases within 7-10 days. However, each concussion is different and the length of time to full recovery can vary between individuals, and also on different occasions in the same individual. It may take days, weeks or even months to make a full return to sport and the recovery time cannot reliably be predicted; often it is unrelated to severity of symptoms or the duration of LOC.

BEWARE OF STRUCTURAL INJURY

Forces to the head can produce structural damage including scalp and facial lacerations, fractures, cervical spine injury and intracranial haemorrhage. An extradural haemorrhage may initially be indistinguishable from concussion, but the athlete may deteriorate dramatically at any time in the first 4 hours. The safest place for such a deterioration to occur is in a hospital Emergency Room. If you have any doubts concerning structural head or neck injury, urgent evacuation of the athlete to a quality medical facility is recommended.

POLICY STATEMENT

An athlete who has been diagnosed with, or suspected of, a concussion should be assessed and managed by support personnel familiar with this protocol.

Management should include:

- Attention to first responder/first aid principles
- Thorough assessment, general and neurological examination and serial symptom analysis including balance assessment and comparison to pre-injury baselines if available
- Progression through a Graded Return to Sport protocol (GRTS)

This is described in more detail below.

CONCUSSION MANAGEMENT GUIDELINES

STEP 1 – READY

Protective gear:

- For prevention or reduction in severity of concussion, we encourage the use of:
 - Helmets:
 - Note that instrumented helmets and video-based or other sensor systems are not yet reliable for the diagnosis or assessment of concussion
 - Unequal helmet inserts
 - Custom moulded mouthguards (for prevention of fractures and dental injury)
- There is no gold standard for helmets in winter sport
 - The International Ski Federation (FIS) rules state that the National Ski Associations require their athletes to use helmets which conform to recognised and appropriate standards including CEN 1077 or ASTM F2040

- The International Skating Union (ISU) rules specify that helmets for short track speed skating must have regular shape, no protrusions and comply with the current American Society for Testing and Materials (ASTM) standard for short track speed skating
- It is mandatory for an athlete to replace their helmet if they have experienced a concussive episode or any damage has occurred to their helmet through normal use or travel
- The primary purpose of Unequal products is to reduce blunt force trauma during high impact sports. Unequal have a specific line of head protection inserts available which can be conveniently placed inside an existing helmet. The OWIA recommends the use of [Unequal](#) inserts to reduce the frequency and/or severity of concussions

Baseline Testing:

- Each athlete is encouraged to undergo annual baseline pre-season testing including:
 - CogSport (or ImPact as mandated and supplied by IBSF)
 - IBSF ImPact concussion baseline testing 2016/2017
 - [SCAT5 \(Appendix A\)](#) (or [Child-SCAT5](#) for ages 5-12) ([Appendix B](#))
 - [BESS](#) balance ([Appendix C](#))
- Valid baseline results assist with post-injury diagnosis of concussion, often allow more aggressive return to sport timelines and provide objectivity to support clinical decisions regarding return to sport
- A detailed concussion history is a very helpful resource to have, in the subsequent management of concussion.
- Although strongly recommended, a baseline [SCAT5](#) is not a prerequisite for interpretation of a post injury [SCAT5](#).

STEP 2 - RECOGNISE

First response – apply first aid principles:

- DRABC
- Management of unconscious patient
- Cervical spine care
- Primary survey, secondary survey
- Exclude or manage traumatic injuries (structural)
- Maintain vigilance for structural brain injury - red flags, listed in red on page 2 of the [SCAT5](#) and on the [CRT5](#).

Recognise the clinical domains of concussion:

- Use your own observations, video if available and reports from athletes, coaches, teammates or officials
- Keep watching – symptoms may change or take 24-48 hours to appear
- Take note of multiple clinical domains:

Clinical domain	Symptoms	Signs
Somatic	Headache, sensitivity to light or sound	
Cognitive	Feeling slowed down, or in a fog	Amnesia, perseveration, slowed reaction time
Emotional	Sadness, anger	Emotional lability, tearfulness
Neurological	Visual disturbance, incoordination	Neurological signs
Balance	Balance impairment	Groggy, unsteady gait
Behavioural	Irritability	Uncharacteristic aggression
Conscious state	Sleepiness, drowsiness	LOC

- Use the [Concussion Recognition Tool 5 \(CRT5\)](#) below ([Figure 1](#)) ([Appendix D](#)) if there are no trained healthcare professionals present

Figure 1 – Concussion Recognition Tool 5 (CRT5)

CONCUSSION RECOGNITION TOOL 5®

To help identify concussion in children, adolescents and adults


FIFA®
Supported by




RECOGNISE & REMOVE

Head impacts can be associated with serious and potentially fatal brain injuries. The Concussion Recognition Tool 5 (CRT5) is to be used for the identification of suspected concussion. It is not designed to diagnose concussion.

STEP 1: RED FLAGS – CALL AN AMBULANCE

If there is concern after an injury including whether ANY of the following signs are observed or complaints are reported then the player should be safely and immediately removed from play/game/activity. If no licensed healthcare professional is available, call an ambulance for urgent medical assessment:

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

Remember:

• In all cases, the basic principles of first aid (danger, response, airway, breathing, circulation) should be followed.	• Do not attempt to move the player (other than required for airway support) unless trained to do so.
• Assessment for a spinal cord injury is critical.	• Do not remove a helmet or any other equipment unless trained to do so safely.

If there are no Red Flags, identification of possible concussion should proceed to the following steps:

STEP 2: OBSERVABLE SIGNS

Visual clues that suggest possible concussion include:

• Lying motionless on the playing surface	• Disorientation or confusion, or an inability to respond appropriately to questions	• Balance, gait difficulties, motor incoordination, stumbling, slow laboured movements
• Slow to get up after a direct or indirect hit to the head	• Blank or vacant look	• Facial injury after head trauma

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STEP 3: SYMPTOMS

• Headache	• Blurred vision	• More emotional	• Difficulty concentrating
• "Pressure in head"	• Sensitivity to light	• More irritable	• Difficulty remembering
• Balance problems	• Sensitivity to noise	• Sadness	• Feeling slowed down
• Nausea or vomiting	• Fatigue or low energy	• Nervous or anxious	• Feeling like "in a fog"
• Drowsiness	• "Don't feel right"	• Neck Pain	
• Dizziness			

STEP 4: MEMORY ASSESSMENT
(IN ATHLETES OLDER THAN 12 YEARS)

Failure to answer any of these questions (modified appropriately for each sport) correctly may suggest a concussion:

• "What venue are we at today?"	• "What team did you play last week/game?"
• "Which half is it now?"	• "Did your team win the last game?"
• "Who scored last in this game?"	

Athletes with suspected concussion should:

- Not be left alone initially (at least for the first 1-2 hours).
- Not drink alcohol.
- Not use recreational/ prescription drugs.
- Not be sent home by themselves. They need to be with a responsible adult.
- Not drive a motor vehicle until cleared to do so by a healthcare professional.

The CRT5 may be freely copied in its current form for distribution to individuals, teams, groups and organisations. Any revision and any reproduction in a digital form requires approval by the Concussion in Sport Group. It should not be altered in any way, rebranded or sold for commercial gain.

ANY ATHLETE WITH A SUSPECTED CONCUSSION SHOULD BE IMMEDIATELY REMOVED FROM PRACTICE OR PLAY AND SHOULD NOT RETURN TO ACTIVITY UNTIL ASSESSED MEDICALLY, EVEN IF THE SYMPTOMS RESOLVE

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STEP 3 - REMOVE

- The athlete **MUST** be removed from play and **MUST NOT** resume sport that day if concussion is suspected or diagnosed
- The athlete **MUST** be evaluated by a trained healthcare professional; if unavailable on site, referral is to be arranged.
 - The first healthcare priority is to exclude cervical spine or structural brain injury – if there is any doubt, arrange urgent referral.
 - The following signs are strongly indicative of concussion:
 - Traumatic convulsion (seizure)
 - Tonic posturing
 - Confirmed or suspected LOC – sliding like a “rag doll”
 - Ataxia – unsteady on feet, “groggy”
 - Disorientation or confusion
- Perform post-injury concussion assessment ASAP (in 15 mins if possible) – [SCAT5](#) and [BESS](#) balance. We recommend that you take a paper copy of the [SCAT5](#) to all training and competition sites.
- [SCAT5](#) interpretation (taken from SCAT3-based [IRB Concussion Guidelines 2014](#)).
 - Positive if any one of these three items: symptoms, SAC score or [BESS](#) varies from baseline

- If you do not have access to a baseline, then the [SCAT5](#) is positive if:
 - There are one or more symptoms that are not usual for that athlete
 - [BESS](#): Tandem - 3 errors or Single Leg stance - 4 errors
 - SAC: Total score 24/30 or less, digits backward 2 or less, delayed recall 3 or less
- If there is doubt about the diagnosis, CogSport can be used, but this should be rarely required.
 - We recommend a cautious approach, “If in doubt, sit them out”
- The athlete should not be left alone, and serial monitoring for deterioration is essential over the first 4-6 hours
- If concussion is NOT confirmed, monitor symptoms for a minimum of 48 hours to allow for delayed onset and evolving symptoms
- Any athlete with a suspected concussion should go through a GRTS protocol
- Suspicion of concussion can only be removed to allow return to competition on the day, by OWIA sports physicians on-site
 - Vigilant monitoring needs to be maintained, including review during and immediately post-event
- If no OWIA medical or physiotherapy staff are present: fellow athletes, coaches, team administrators or parents who observe an athlete displaying signs of concussion have a duty of care to ensure the athlete is removed from the field of play in a safe manner. Referral to a medical practitioner is recommended as soon as possible for comprehensive assessment

STEP 4 – RE-EVALUATE

- The athlete should not be left alone, and serial monitoring for deterioration is essential over the first 4-6 hours
 - If you don't have the resources to do this, the athlete should be evacuated to a medical facility
- Professional re-evaluation at 36-48 hours post-injury should include
 - Repeat [SCAT5](#)
 - Neurological, ocular, vestibular, balance and gait assessment
 - Status – has there been improvement or deterioration?
 - Reconsider neuroimaging if structural brain injury is suspected
- Suspected concussion can only be ruled out if all findings are negative at the 3 time points:
 - Immediately post-injury
 - 4-6 hours post-injury
 - 36-48 hours post-injury

- Notify coach & OWIA medical staff as soon as practical after a concussion. It is important to keep the coach informed of all information and developments, to facilitate a smooth rehabilitation process
- If assessment has been performed by a doctor, please send any reports or imaging to the OWIA Chief Medical Officer and Medical Services & Rehab Manager. Note: Standard CT/MRI is not useful in evaluation of concussion but can play a role in detection of structural damage

STEP 5 - REST & RECOVERY

- Physical and mental rest
 - “Symptom-limited physical & cognitive rest” is recommended
 - This may mean limited screen time or reading and minimal exercise (e.g. walking to meals, etc)
 - The rest period is usually just 24-48 hours, even if acute symptoms have not resolved
 - There are no evidence-based guidelines for the optimal duration and type of rest. The benefits of rest may have been overstated in the past

- Gradual progressive increase in physical and cognitive activity below symptom thresholds is encouraged after 24-48 hours rest
- Low-level exercise may benefit athletes whose symptoms are slow to resolve and can commence at 24-48 hours
 - This constitutes GRTS Stage 0
 - Exercise that doesn't worsen existing symptoms is encouraged
 - Athletes don't have to be symptom-free to do light exercise
- Continue to monitor status using the [SCAT5](#) Symptom scale and [BESS](#) balance daily until the athlete is consistently scoring zero (or has returned to baseline scores)
 - The athlete can fill the symptom information directly into the Athlete Management System (AMS) database via the Smartabase smartphone app or website.
 - If there is any deterioration in symptoms, seek medical assessment immediately
 - The full [SCAT5](#) does not need to be repeated as its usefulness diminishes 3-5 days post-injury
 - Use the symptom scale & [BESS](#) components for monitoring
- Pain relief and non-steroidal anti-inflammatory (NSAID) medications are not recommended in the first 48 hours post-concussion. There is very little evidence to support the use of pharmacological agents
- Attention should be paid to sleep hygiene, nutrition and hydration in the period post-concussion
- Once asymptomatic on the [SCAT5](#) Symptom Evaluation scale, progress to the [CogSport](#) test
 - The athlete's unique CogSport ID number can be found in their AMS profile
 - If the athlete fails the CogSport, wait another 24 hours before re-testing
 - Repeat for as many days as necessary until they pass – no sooner than 24 hour intervals
 - Cognitive recovery may lag behind the resolution of symptoms
 - CogSport impairment can persist 2-3 days after symptom resolution in 35% of concussed athletes ([Makdissi et al, 2010](#))
 - When the athlete passes [BESS](#) and CogSport testing, move onto Stage 1 of the GRTS rehabilitation process below

STEP 6 - REHABILITATION & RETURN – GRADED RETURN TO SPORT (GRTS) PROGRAM

Graded Return to Sport Program (GRTS) – general principles:

- This GRTS program is to be applied for all concussive injuries whether in-competition or not
- Rehabilitation is a “graded return to sport” which is individualised according to the athlete’s response and sport/discipline
- When an athlete is able to complete each stage successfully with no setbacks, it takes 7 days to complete the full rehabilitation protocol
- Progression is slower and more conservative in children, adolescents, when other modifying factors are present and/or in the absence of medical staff
- Refer to [Figure 2: GRTS Protocol for Winter Sport \(p. 10\)](#) for a summary of the procedure
- There are 6 stages of the GRTS
- The quickest possible progression is to move forward by one stage per 24 hours
- If symptoms recur at any stage, drop back to the previous asymptomatic level and try again 24 hours later

Graded Return to Sport Program (GRTS) – stages:

GRTS Stage 0 - Symptom-limited physical and mental activity

- Can overlap with the 24-48 hours relative rest; the minimum is 24 hours
- The objective is to be completely asymptomatic and to return to baseline scores on [BESS](#) and [CogSport](#)
- School-age athletes must also complete return-to-school progression before moving to GRTS Stage 1

GRTS Stage 1 - Light aerobic exercise

- 15 mins of steady heart rate physical activity, at 60-70% of maximum predicted heart rate
- Suitable forms of cardio exercise include treadmill walking, swimming, stationary cycling, rowing ergometer, elliptical trainer, etc
- Reassess symptoms 10 mins post-exercise using the [SCATS](#) Symptom Evaluation scale
 - The objective of continuous aerobic exercise is adaptation to controlled levels of heart rate and intracranial pressure
- [Return to Vision & Balance Exercises](#) can also be commenced at this stage ([Appendix E](#))
 - Separately reassess symptoms 10 mins post-vision and balance exercise, in order to enable attribution of symptoms to either the exercise or the vision and balance program
 - Continue with this program whilst progressing through the GRTS stages, at a different time of day from the physical exercise component to enable separate assessment of symptom response

GRTS Stage 2 - Moderate aerobic exercise

- 30 mins steady heart rate activity
 - The first 15 minutes at 60-70% maximum predicted HR
 - The next 15 minutes at 70-85% maximum predicted HR
- The cold winter environment is an additional stressor, physiologically and cognitively. Outdoor activity such as walking, running or cycling can be incorporated for GRTS Stage 2

GRTS Stage 3 - Sport-specific functional activities

- A dry land battery of sport-specific tasks includes activities such as rolling, jumping, landings, hopping
- These can be modified to best replicate the demands of each discipline. Some useful suggestions include:
 - 10 x jumps forwards (continuous)
 - 10 x jumps backwards
 - 10 x hops forward each leg
 - 10 x hops backwards each leg
 - 10 x hops sideways each leg (to L & R with each leg)
 - 10 x crossover hops each leg
 - 10 x double leg landings (from 50cm height)
 - 10 x drop jumps
 - 5 x single leg landings each leg
 - 5 x landing drills with ¼ turn to each side
 - Balance drills – eyes open and closed
 - Handstands
 - Rolls
- This interval type training work leads to variable higher levels of intracranial pressure, as well as challenging coordination, balance and cognitive function

- We encourage S&C, physio and coaching staff to contribute discipline-specific protocols for GRTS Stage 3
 - A library of exercises could be compiled in this way to create a useful resource that we can share
- Communicate with OWIA staff for medical clearance before return to snow/ice the following day (for adults)

GRTS Stage 4 - Non-contact, low-impact, sport specific on-snow/ice training

- Be sensible and creative in designing a logical progression relevant to the sport and team programming
- Some suggestions include:
 - Mogul skiing - ski flats, smooth easy bottom sections
 - Ski-Cross - ski flats, berms and transitions but no air
 - Half pipe - riding flats, dropping in and riding pipe but no hits
 - Short track - belt work, slow laps
- Progressive resistance and high intensity interval training (HIIT) training can also be resumed

GRTS Stage 5 - Full-contact, normal on-snow/ice training

- This will include usual practice of jumps, landings, technical manoeuvres, tactical responses and potential for falling and/or physical contact with other athletes
- Resumption of usual resistance training intensity

GRTS Stage 6 - Unrestricted resumption of competition activities

- The quickest possible progression to Stage 6 is 7 days from the day of injury

CONCUSSION MODIFIERS

There are a number of modifying factors, which necessitate slower progression of the GRTS protocol.

The number and severity of concussion modifiers affecting a particular athlete need to be considered, as they have a cumulative influence in retarding GRTS progression.

Age

- Children and adolescents require more conservative management of concussion
- Their physiological responses and symptoms differ from those of adults
 - The [Child-SCAT5](#) has been specially developed for use in athletes aged 5 to 12 years
- They may require a longer time frame for recovery than adults
- There is increased risk of a catastrophic outcome from premature return to sport in children
 - Diffuse cerebral swelling, or “second impact syndrome”, is rare but potentially fatal
- Asymptomatic return to school is the first priority, and a prerequisite before planning any return to sport
 - Please refer to Table 1: Graduated Return to School strategy (p. 10)
- Based on age considerations, modified GRTS protocols are specified (refer to [Figure 2](#): GRTS Protocol for Winter Sport, p. 10):
 - Ages 13-17: a minimum 1 week rest is mandated prior to commencing GRTS Stage 1
 - This doubles the minimum return to sport time to 2 weeks (section of chart with red background)
 - Ages 5-12: a minimum 2-week rest, with 48 hours minimum per GRTS stage
 - This doubles the minimum return to sport time again, to 4 weeks (section of chart with yellow background)
 - The [Child-SCAT5](#) must be used for children aged 5-12
- Additional concussion modifiers necessitate an even more conservative (slower) approach in children

- In cases of multiple modifiers co-existing in one athlete, frequent communication and guidance from OWIA medical staff will be required, as the GRTS protocol will need to be customised

Symptoms and Signs

- The number, severity and duration (particularly if >10 days) of symptoms may warrant GRTS modification
 - Note that some symptoms are non-specific and may have non-concussive causes
 - Multimodal physiotherapy management may be required, including treatment of the cervical spine or vestibular system
- Prolonged LOC (>1 minute)
- Post-traumatic or retrograde amnesia
- Concussive convulsions

Past History

- History of previous concussions
 - This is more relevant if there has been a recent concussion OR
 - Prolonged symptoms/slow recovery OR
 - Reduced impact tolerance/threshold for concussion provocation

Comorbidities

- Migraine, depression, sleep disorders, psychoactive drug use

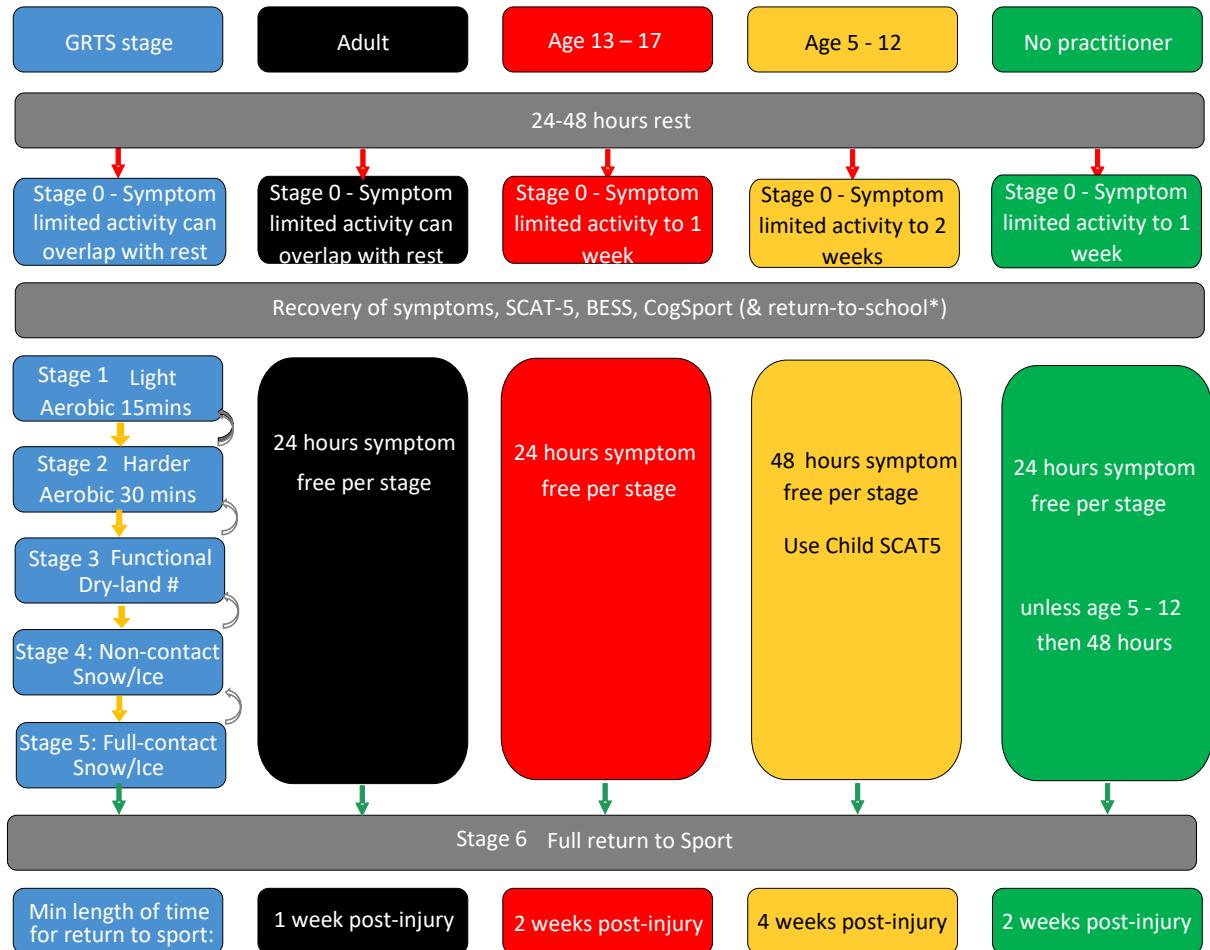
Sport/Behaviour

- High-risk and elite level of sport are considered modifiers, but these apply to all OWIA disciplines
 - In recognition of this, the OWIA standard GRTS protocol has been extended from 6 days (as recommended in the Berlin 2016 consensus statement) to 7 days
 - Dangerous or unnecessarily risky style of play in an individual represents an additional modifier

Absence of OWIA medical support staff

- In cases of concussion occurring during a training camp or competition unattended by OWIA medical staff, the GRTS protocol is modified accordingly (refer section of chart with green background in [Figure 2](#))
- The prescribed period of symptom-limited physical and mental activity (GRTS Stage 0) is extended to 7 days
- This extends the minimum time for return to sport to 2 weeks (as opposed to 1 week with medical staff present)

FIGURE 2: GRTS Protocol for Winter Sport



Note: Medical clearance is required to progress from Stage 3 (dry-land) to Stage 4 (snow-ice)

* Note: For school-aged athletes, return to school is an additional prerequisite prior to commencement of GRTS Stage 1

TABLE 1: Graduated Return to School Strategy

Graduated Return to School strategy			
Stage	Aim	Activity	Goal of each step
1	Symptom-free activities at home	Typical symptom-free ADL including reading and screen time, 5-15 minutes & build up	Gradual return to usual activities
2	School activities at home	Homework, reading, other cognitive tasks	Increase tolerance to cognitive work
3	Return to school part-time	Graduated return to schoolwork. Part-day attendance or full days with increased breaks	Increase academic activities
4	Return to school full-time	Gradually progress to full days at school	Return to full academic activities & catch up on missed work

SPECIFIC PHYSIOTHERAPY-BASED INTERVENTIONS

Detailed physiotherapy assessment and specific treatment has been shown to assist with persistent symptoms of sport-related concussion ([Schneider et al, 2014](#)).

- Assessment findings suggesting cervical involvement include:
 - Limitation in cervical ROM
 - Tenderness to palpation
 - Altered neuromotor control (deep craniocervical flexors and extensors)
 - Altered segmental biomechanics
 - Altered joint position error
 - Decreased crano-cervical flexor or extensor endurance
- Assessment findings suggesting vestibular involvement:
 - Positive head thrust test
 - Decreased dynamic visual acuity
 - Nystagmus suggesting peripheral vestibular hypofunction in infrared blackout goggles
 - Positive positional tests for Benign Paroxysmal Positional Vertigo (BPPV)
 - Altered static balance
 - Altered dynamic balance ([Functional Gait Assessment](#)) ([Appendix F](#))
 - Increased sensitivity to motion ([Motion Sensitivity Test](#)) ([Appendix G](#))

DOCUMENTATION IN THE ATHLETE MANAGEMENT SYSTEM (AMS)

Accurate timely medical record keeping is essential.

Documentation of the circumstances, symptoms and signs, early management and progress of a concussive injury is important.

Symptom responses and post-concussive test results ([SCAT5/Child-SCAT5](#), [BESS](#), [CogSport](#)) can be completed in the AMS.

Athlete Management System (AMS) instructions:

- Save 'Concussion' as a new injury record. You can then add more specific details into the 'Concussion Assessment' form

History
18-Aug-2015 Diagnosis Concussion, Last Treatment by Ashley Merkur, Side Left
Open PDF
Concussion Assessment Add
Physiotherapy Referral Add
Soft Tissue Notes

Enter new Concussion Assessment [REDACTED]

On Date from to

Athlete Details

Full Name

Gender Female

DOB

Age

Cogsport ID

Date of valid Cogsport

Date of Concussion Injury

BESS Assessment

Baseline coming from most recent Annual MSK Screening (currently only Winter Sports setup)

Baseline Errors Firm Surface

From last Annual MSK Screening

Baseline Errors Foam Surface

From last Annual MSK Screening

Baseline BESS Score

From last Annual MSK Screening

BESS Assessments

No Data Found

New BESS Score

SCAT5 Assessment

Brings through most recent SCAT5 score from SCAT5 form when Test Type = Baseline.

Baseline SCAT5 Symptoms

From Baseline SCAT5

Baseline SCAT5 Severity Symptom Score

From Baseline SCAT5

SCAT5 Full Evaluation
No Data Found

Cogsport Test

[Date Assessed](#) [Date Entered](#) [Cogsport Test](#) [Test Report](#)

 Add Cogsport Test

Latest Cogsport

- The Concussion Assessment form has links to enter [BESS](#), [SCAT5](#) and CogSport test results
- The [BESS](#) baseline should appear automatically from the athlete's last screening. Testing post injury can be entered sequentially by clicking on 'New Winter Sports – BESS Score'
- To access the SCAT5 Full evaluation details, click on 'New Winter Sports – SCAT5 Evaluation' and then select 'Coach/Practitioner' at the top of the screen. This will open the entire form (when 'Athlete' is selected you can only see the symptom list)

Test Details

Date of Assessment	Mon 21- September-2015
Time of Assessment	12:00 PM
Role	<input type="radio"/> Athlete <input checked="" type="radio"/> Coach/Practitioner

- The CogSport test is completed within the CogState program. Once the result is uploaded to the CogState server, a PDF report can be produced and saved as an attachment by clicking on 'Add CogSport Test'. The result of the test can be entered in place of the document name for quick reference ("Fail" or "Pass", as below)

Cogsport Test

Date Assessed	Date Entered	Cogsport Test	Test Report
18-08-2015	03-09-2015	Fail	Download Edit
19-08-2015	03-09-2015	Fail	Download Edit
20-08-2015	03-09-2015	Pass	Download Edit

[!\[\]\(ef57557257cbb5c674d51a9e0a98bb4d_img.jpg\) Add Cogsport Test](#)

Latest Cogsport 20-08-2015 Pass

SANCTIONS

Failure to abide by this OWIA Concussion Management Policy, including failure to disclose possible symptoms of concussion to OWIA medical/physiotherapy staff, may expose an athlete to danger, unnecessary risk of injury on return to sport and/or increased risk of long-term health consequences.

It is most important that all athletes and support personnel understand, respect and support the implementation of this Policy. If you have any questions or reservations, scepticism or outright disagreement with any aspect of this Policy, please make your concerns known in order that they can be addressed satisfactorily. This may involve further explanation and education regarding the rationale for this Policy, modification of the Policy or monitoring for future re-evaluation.

Failure to comply with the OWIA Concussion Management Policy may expose an athlete and their support personnel to disciplinary action and sanctions as determined by the OWIA Board.

The OWIA Board may recommend the following sanctions:

- A warning
- Suspension from competition for a specified period
- Suspension from OWIA-organised training
- Suspension or termination of Contract

APPENDIX

APPENDIX A: SCAT5

APPENDIX B: Child-SCAT5

APPENDIX C: BESS manual

APPENDIX D: Concussion Recognition Tool 5

APPENDIX E: Return to Vision and Balance Exercises – Sport Concussion Australasia

APPENDIX F: Functional Gait Assessment

APPENDIX G: Motion Sensitivity Test



SPORT CONCUSSION ASSESSMENT TOOL – 5TH EDITION
DEVELOPED BY THE CONCUSSION IN SPORT GROUP
FOR USE BY MEDICAL PROFESSIONALS ONLY

supported by



FIFA®



FEI

Patient details

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date of Injury: _____ Time: _____

WHAT IS THE SCAT5?

The SCAT5 is a standardized tool for evaluating concussions designed for use by physicians and licensed healthcare professionals¹. 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.

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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.

1

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

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

STEP 3: MEMORY ASSESSMENT MADDOCKS QUESTIONS²

"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

What venue are we at today?	Y	N
Which half is it now?	Y	N
Who scored last in this match?	Y	N
What team did you play last week / game?	Y	N
Did your team win the last game?	Y	N

Note: Appropriate sport-specific questions may be substituted.

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

STEP 4: EXAMINATION GLASGOW COMA SCALE (GCS)³

Time of assessment

Date of assessment

Best eye response (E)

No eye opening	1	1	1
Eye opening in response to pain	2	2	2
Eye opening to speech	3	3	3
Eyes opening spontaneously	4	4	4

Best verbal response (V)

No verbal response	1	1	1
Incomprehensible sounds	2	2	2
Inappropriate words	3	3	3
Confused	4	4	4
Oriented	5	5	5

Best motor response (M)

No motor response	1	1	1
Extension to pain	2	2	2
Abnormal flexion to pain	3	3	3
Flexion / Withdrawal to pain	4	4	4
Localizes to pain	5	5	5
Obeys commands	6	6	6

Glasgow Coma score (E + V + M)

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:

	Yes	No
Hospitalized for a head injury?		
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: _____

2

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

	none	mild	moderate	severe
Headache	0	1	2	3
"Pressure in head"	0	1	2	3
Neck Pain	0	1	2	3
Nausea or vomiting	0	1	2	3
Dizziness	0	1	2	3
Blurred vision	0	1	2	3
Balance problems	0	1	2	3
Sensitivity to light	0	1	2	3
Sensitivity to noise	0	1	2	3
Feeling slowed down	0	1	2	3
Feeling like "in a fog"	0	1	2	3
"Don't feel right"	0	1	2	3
Difficulty concentrating	0	1	2	3
Difficulty remembering	0	1	2	3
Fatigue or low energy	0	1	2	3
Confusion	0	1	2	3
Drowsiness	0	1	2	3
More emotional	0	1	2	3
Irritability	0	1	2	3
Sadness	0	1	2	3
Nervous or Anxious	0	1	2	3
Trouble falling asleep (if applicable)	0	1	2	3

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

3

STEP 3: COGNITIVE SCREENING

Standardised Assessment of Concussion (SAC)⁴

ORIENTATION

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

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.

List	Alternate 5 word lists					Score (of 5)		
						Trial 1	Trial 2	Trial 3
A	Finger	Penny	Blanket	Lemon	Insect			
B	Candle	Paper	Sugar	Sandwich	Wagon			
C	Baby	Monkey	Perfume	Sunset	Iron			
D	Elbow	Apple	Carpet	Saddle	Bubble			
E	Jacket	Arrow	Pepper	Cotton	Movie			
F	Dollar	Honey	Mirror	Saddle	Anchor			
						Immediate Memory Score		of 15
						Time that last trial was completed		

List	Alternate 10 word lists					Score (of 10)		
						Trial 1	Trial 2	Trial 3
G	Finger	Penny	Blanket	Lemon	Insect			
	Candle	Paper	Sugar	Sandwich	Wagon			
H	Baby	Monkey	Perfume	Sunset	Iron			
	Elbow	Apple	Carpet	Saddle	Bubble			
I	Jacket	Arrow	Pepper	Cotton	Movie			
	Dollar	Honey	Mirror	Saddle	Anchor			
						Immediate Memory Score		of 30
						Time that last trial was completed		

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

CONCENTRATION

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.

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.

Concentration Number Lists (circle one)					
List A	List B	List C			
4-9-3	5-2-6	1-4-2	Y	N	0
6-2-9	4-1-5	6-5-8	Y	N	1
3-8-1-4	1-7-9-5	6-8-3-1	Y	N	0
3-2-7-9	4-9-6-8	3-4-8-1	Y	N	1
6-2-9-7-1	4-8-5-2-7	4-9-1-5-3	Y	N	0
1-5-2-8-6	6-1-8-4-3	6-8-2-5-1	Y	N	1
7-1-8-4-6-2	8-3-1-9-6-4	3-7-6-5-1-9	Y	N	0
5-3-9-1-4-8	7-2-4-8-5-6	9-2-6-5-1-4	Y	N	1
List D	List E	List F			
7-8-2	3-8-2	2-7-1	Y	N	0
9-2-6	5-1-8	4-7-9	Y	N	1
4-1-8-3	2-7-9-3	1-6-8-3	Y	N	0
9-7-2-3	2-1-6-9	3-9-2-4	Y	N	1
1-7-9-2-6	4-1-8-6-9	2-4-7-5-8	Y	N	0
4-1-7-5-2	9-4-1-7-5	8-3-9-6-4	Y	N	1
2-6-4-8-1-7	6-9-7-3-8-2	5-8-6-2-4-9	Y	N	0
8-4-1-9-3-5	4-2-7-9-3-8	3-1-7-8-2-6	Y	N	1
			Digits Score:	of 4	

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.

Dec - Nov - Oct - Sept - Aug - Jul - Jun - May - Apr - Mar - Feb - Jan

Months Score	0 1
Concentration Total Score (Digits + Months)	of 5

4

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?	<input type="checkbox"/> Y	<input type="checkbox"/> N
Does the patient have a full range of pain-free PASSIVE cervical spine movement?	<input type="checkbox"/> Y	<input type="checkbox"/> N
Without moving their head or neck, can the patient look side-to-side and up-and-down without double vision?	<input type="checkbox"/> Y	<input type="checkbox"/> N
Can the patient perform the finger nose coordination test normally?	<input type="checkbox"/> Y	<input type="checkbox"/> N
Can the patient perform tandem gait normally?	<input type="checkbox"/> Y	<input type="checkbox"/> N

BALANCE EXAMINATION

Modified Balance Error Scoring System (mBESS) testing⁵

Which foot was tested (i.e. which is the non-dominant foot)	<input type="checkbox"/> Left <input type="checkbox"/> Right
Testing surface (hard floor, field, etc.) _____	
Footwear (shoes, barefoot, braces, tape, etc.) _____	
Condition	Errors
Double leg stance	of 10
Single leg stance (non-dominant foot)	of 10
Tandem stance (non-dominant foot at the back)	of 10
Total Errors	of 30

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date: _____

5

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

6

STEP 6: DECISION

Date & time of assessment:			
Domain			
Symptom number (of 22)			
Symptom severity score (of 132)			
Orientation (of 5)			
Immediate memory	of 15 of 30	of 15 of 30	of 15 of 30
Concentration (of 5)			
Neuro exam	Normal Abnormal	Normal Abnormal	Normal Abnormal
Balance errors (of 30)			
Delayed Recall	of 5 of 10	of 5 of 10	of 5 of 10

Date and time of injury: _____

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.

CLINICAL NOTES:

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.

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

Clinic phone number:

Patient's name:

Date / time of injury:

Date / time of medical review:

Healthcare Provider:

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Contact details or stamp

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 $22 \times 6 = 132$, except immediately post injury if sleep item is omitted, which then creates a maximum of $21 \times 6 = 126$.

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)⁵. 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 | 3. Step, stumble, or fall | 5. Lifting forefoot or heel |
| 2. Opening eyes | 4. Moving hip into > 30 degrees abduction | 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 three 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 that 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 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."

(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 fail 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

1. McCrory et al. Consensus Statement On Concussion In Sport – The 5th International Conference On Concussion In Sport Held In Berlin, October 2016. British Journal of Sports Medicine 2017 (available at www.bjsm.bmjjournals.com)
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3. Jennett, B., Bond, M. Assessment of outcome after severe brain damage: a practical scale. Lancet 1975; i: 480-484
4. McCrea M. Standardized mental status testing of acute concussion. Clinical Journal of Sport Medicine. 2001; 11: 176-181
5. Guskiewicz KM. Assessment of postural stability following sport-related concussion. Current Sports Medicine Reports. 2003; 2: 24-30

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.
- Slurred speech

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 Sport Strategy

Exercise step	Functional exercise at each step	Goal of each step
1. Symptom-limited activity	Daily activities that do not provoke symptoms.	Gradual reintroduction of work/school activities.
2. Light aerobic exercise	Walking or stationary cycling at slow to medium pace. No resistance training.	Increase heart rate.
3. Sport-specific exercise	Running or skating drills. No head impact activities.	Add movement.
4. Non-contact training drills	Harder training drills, e.g., passing drills. May start progressive resistance training.	Exercise, coordination, and increased thinking.
5. Full contact practice	Following medical clearance, participate in normal training activities.	Restore confidence and assess functional skills by coaching staff.
6. Return to play/sport	Normal game play.	

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.

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.

Mental Activity	Activity at each step	Goal of each step
1. Daily activities that do not give the athlete symptoms	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.	Gradual return to typical activities.
2. School activities	Homework, reading or other cognitive activities outside of the classroom.	Increase tolerance to cognitive work.
3. Return to school part-time	Gradual introduction of school-work. May need to start with a partial school day or with increased breaks during the day.	Increase academic activities.
4. Return to school full-time	Gradually progress school activities until a full day can be tolerated.	Return to full academic activities and catch up on missed work.

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.



Sport concussion assessment tool - 5th edition

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Updated information and services can be found at:

<http://bjsm.bmjjournals.com/content/early/2017/04/28/bjsports-2017-097506S>
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Child SCAT5[®]

SPORT CONCUSSION ASSESSMENT TOOL
FOR CHILDREN AGES 5 TO 12 YEARS
FOR USE BY MEDICAL PROFESSIONALS ONLY

supported by



FIFA[®]



FEI

Patient details

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date of Injury: _____ Time: _____

WHAT IS THE CHILD SCAT5?

The Child SCAT5 is a standardized tool for evaluating concussions designed for use by physicians and licensed healthcare professionals¹.

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

Preseason Child SCAT5 baseline testing can be useful for interpreting post-injury test scores, but not required for that purpose. Detailed instructions for use of the Child 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.

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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 the child is suspected of having a concussion and medical personnel are not immediately available, the child should be referred to a medical facility for urgent assessment.
- 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 Child SCAT5 should NOT be used by itself to make, or exclude, the diagnosis of concussion. An athlete may have a concussion even if their Child 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.

1

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 cervical spine exam is a critical step of the immediate assessment, however, it does 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

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date: _____

Incomprehensible sounds	2	2	2
Inappropriate words	3	3	3
Confused	4	4	4
Oriented	5	5	5

Best motor response (M)

No motor response	1	1	1
Extension to pain	2	2	2
Abnormal flexion to pain	3	3	3
Flexion / Withdrawal to pain	4	4	4
Localizes to pain	5	5	5
Obey commands	6	6	6
Glasgow Coma score (E + V + M)			

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

STEP 1: ATHLETE BACKGROUND

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

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: _____

STEP 2: OBSERVABLE SIGNS

Witnessed Observed on Video

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

STEP 3: EXAMINATION

GLASGOW COMA SCALE (GCS)²

Time of assessment

--	--	--

Date of assessment

--	--	--

Best eye response (E)

No eye opening	1	1	1
Eye opening in response to pain	2	2	2
Eye opening to speech	3	3	3
Eyes opening spontaneously	4	4	4

Best verbal response (V)

No verbal response	1	1	1
--------------------	---	---	---

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.

To be done in a resting state

Please Check: Baseline Post-Injury

2

Child Report³

	Not at all/ Never	A little/ Rarely	Somewhat/ Sometimes	A lot/ Often
I have headaches	0	1	2	3
I feel dizzy	0	1	2	3
I feel like the room is spinning	0	1	2	3
I feel like I'm going to faint	0	1	2	3
Things are blurry when I look at them	0	1	2	3
I see double	0	1	2	3
I feel sick to my stomach	0	1	2	3
My neck hurts	0	1	2	3
I get tired a lot	0	1	2	3
I get tired easily	0	1	2	3
I have trouble paying attention	0	1	2	3
I get distracted easily	0	1	2	3
I have a hard time concentrating	0	1	2	3
I have problems remembering what people tell me	0	1	2	3
I have problems following directions	0	1	2	3
I daydream too much	0	1	2	3
I get confused	0	1	2	3
I forget things	0	1	2	3
I have problems finishing things	0	1	2	3
I have trouble figuring things out	0	1	2	3
It's hard for me to learn new things	0	1	2	3
Total number of symptoms:				of 21
Symptom severity score:				of 63
Do the symptoms get worse with physical activity?	Y	N		
Do the symptoms get worse with trying to think?	Y	N		

Overall rating for child to answer:

Very bad	Very good
On a scale of 0 to 10 (where 10 is normal), how do you feel now? 0 1 2 3 4 5 6 7 8 9 10	

If not 10, in what way do you feel different?:

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date: _____

Parent Report

The child:

	Not at all/ Never	A little/ Rarely	Somewhat/ Sometimes	A lot/ Often
has headaches	0	1	2	3
feels dizzy	0	1	2	3
has a feeling that the room is spinning	0	1	2	3
feels faint	0	1	2	3
has blurred vision	0	1	2	3
has double vision	0	1	2	3
experiences nausea	0	1	2	3
has a sore neck	0	1	2	3
gets tired a lot	0	1	2	3
gets tired easily	0	1	2	3
has trouble sustaining attention	0	1	2	3
is easily distracted	0	1	2	3
has difficulty concentrating	0	1	2	3
has problems remembering what he/she is told	0	1	2	3
has difficulty following directions	0	1	2	3
tends to daydream	0	1	2	3
gets confused	0	1	2	3
is forgetful	0	1	2	3
has difficulty completing tasks	0	1	2	3
has poor problem solving skills	0	1	2	3
has problems learning	0	1	2	3
Total number of symptoms:				of 21
Symptom severity score:				of 63
Do the symptoms get worse with physical activity?	Y	N		
Do the symptoms get worse with mental activity?	Y	N		

Overall rating for parent/teacher/ coach/carer to answer

On a scale of 0 to 100% (where 100% is normal), how would you rate the child now?

If not 100%, in what way does the child seem different?

3

STEP 3: COGNITIVE SCREENING

Standardized Assessment of Concussion - Child Version (SAC-C)⁴

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.

List	Score (of 5)				
	Alternate 5 word lists				
			Trial 1	Trial 2	Trial 3
A	Finger	Penny	Blanket	Lemon	Insect
B	Candle	Paper	Sugar	Sandwich	Wagon
C	Baby	Monkey	Perfume	Sunset	Iron
D	Elbow	Apple	Carpet	Saddle	Bubble
E	Jacket	Arrow	Pepper	Cotton	Movie
F	Dollar	Honey	Mirror	Saddle	Anchor
Immediate Memory Score					of 15
Time that last trial was completed					
List	Score (of 10)				
	Alternate 10 word lists				
			Trial 1	Trial 2	Trial 3
G	Finger	Penny	Blanket	Lemon	Insect
	Candle	Paper	Sugar	Sandwich	Wagon
H	Baby	Monkey	Perfume	Sunset	Iron
	Elbow	Apple	Carpet	Saddle	Bubble
I	Jacket	Arrow	Pepper	Cotton	Movie
	Dollar	Honey	Mirror	Saddle	Anchor
Immediate Memory Score					of 30
Time that last trial was completed					

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

CONCENTRATION

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.

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.

Concentration Number Lists (circle one)					
List A	List B	List C			
5-2	4-1	4-9	Y	N	0
4-1	9-4	6-2	Y	N	1
4-9-3	5-2-6	1-4-2	Y	N	0
6-2-9	4-1-5	6-5-8	Y	N	1
3-8-1-4	1-7-9-5	6-8-3-1	Y	N	0
3-2-7-9	4-9-6-8	3-4-8-1	Y	N	1
6-2-9-7-1	4-8-5-2-7	4-9-1-5-3	Y	N	0
1-5-2-8-6	6-1-8-4-3	6-8-2-5-1	Y	N	1
7-1-8-4-6-2	8-3-1-9-6-4	3-7-6-5-1-9	Y	N	0
5-3-9-1-4-8	7-2-4-8-5-6	9-2-6-5-1-4	Y	N	1
List D	List E	List F			
2-7	9-2	7-8	Y	N	0
5-9	6-1	5-1	Y	N	1
7-8-2	3-8-2	2-7-1	Y	N	0
9-2-6	5-1-8	4-7-9	Y	N	1
4-1-8-3	2-7-9-3	1-6-8-3	Y	N	0
9-7-2-3	2-1-6-9-	3-9-2-4	Y	N	1
1-7-9-2-6	4-1-8-6-9	2-4-7-5-8	Y	N	0
4-1-7-5-2	9-4-1-7-5	8-3-9-6-4	Y	N	1
2-6-4-8-1-7	6-9-7-3-8-2	5-8-6-2-4-9	Y	N	0
8-4-1-9-3-5	4-2-7-3-9-8	3-1-7-8-2-6	Y	N	1
Digits Score:					of 5

DAYS IN REVERSE ORDER

Now tell me the days of the week in reverse order. Start with the last day and go backward. So you'll say Sunday, Saturday. Go ahead.

Sunday - Saturday - Friday - Thursday - Wednesday - Tuesday - Monday	0 1
Days Score	of 1
Concentration Total Score (Digits + Days)	of 6

4

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?	<input type="checkbox"/> Y	<input type="checkbox"/> N
Does the patient have a full range of pain-free PASSIVE cervical spine movement?	<input type="checkbox"/> Y	<input type="checkbox"/> N
Without moving their head or neck, can the patient look side-to-side and up-and-down without double vision?	<input type="checkbox"/> Y	<input type="checkbox"/> N
Can the patient perform the finger nose coordination test normally?	<input type="checkbox"/> Y	<input type="checkbox"/> N
Can the patient perform tandem gait normally?	<input type="checkbox"/> Y	<input type="checkbox"/> N

BALANCE EXAMINATION

Modified Balance Error Scoring System (BESS) testing⁵

Which foot was tested (i.e. which is the non-dominant foot)	<input type="checkbox"/> Left	<input type="checkbox"/> Right
Testing surface (hard floor, field, etc.) _____		
Footwear (shoes, barefoot, braces, tape, etc.) _____		
Condition		
Double leg stance	Errors of 10	
Single leg stance (non-dominant foot, 10-12 y/o only)	Errors of 10	
Tandem stance (non-dominant foot at back)	Errors of 10	
Total Errors	5-9 y/o of 20	10-12 y/o of 30

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date: _____

5

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

6

STEP 6: DECISION

Domain	Date & time of assessment:		
Symptom number Child report (of 21) Parent report (of 21)			
Symptom severity score Child report (of 63) Parent report (of 63)			
Immediate memory	of 15 of 30	of 15 of 30	of 15 of 30
Concentration (of 6)			
Neuro exam	Normal Abnormal	Normal Abnormal	Normal Abnormal
Balance errors (5-9 y/o of 20) (10-12 y/o of 30)			
Delayed Recall	of 5 of 10	of 5 of 10	of 5 of 10

Date and time of injury: _____

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 Child SCAT5.**

Signature: _____

Name: _____

Title: _____

Registration number (if applicable): _____

Date: _____

SCORING ON THE CHILD 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.



For the Neurological Screen (page 5), if the child cannot read, ask him/her to describe what they see in this picture.

CLINICAL NOTES:



Concussion injury advice for the child and parents/carergivers

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

This child has had an injury to the head and needs to be carefully watched for the next 24 hours by a responsible adult.

If you notice any change in behavior, vomiting, dizziness, worsening headache, double vision or excessive drowsiness, please call an ambulance to take the child to hospital immediately.

Other important points:

Following concussion, the child should rest for at least 24 hours.

- The child should not use a computer, internet or play video games if these activities make symptoms worse.
- The child should not be given any medications, including pain killers, unless prescribed by a medical doctor.
- The child should not go back to school until symptoms are improving.
- The child should not go back to sport or play until a doctor gives permission.

Name: _____

DOB: _____

Address: _____

ID number: _____

Examiner: _____

Date: _____

Clinic phone number: _____

Patient's name: _____

Date / time of injury: _____

Date / time of medical review: _____

Healthcare Provider: _____

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Contact details or stamp

INSTRUCTIONS

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

Symptom Scale

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.

At Baseline	On the day of injury	On all subsequent days
<ul style="list-style-type: none"> The child is to complete the Child Report, according to how he/she feels today, and The parent/carer is to complete the Parent Report according to how the child has been over the previous week. 	<ul style="list-style-type: none"> The child is to complete the Child Report, according to how he/she feels now. If the parent is present, and has had time to assess the child on the day of injury, the parent completes the Parent Report according to how the child appears now. 	<ul style="list-style-type: none"> The child is to complete the Child Report, according to how he/she feels today, and The parent/carer is to complete the Parent Report according to how the child has been over the previous 24 hours.

For Total number of symptoms, maximum possible is 21

For Symptom severity score, add all scores in table, maximum possible is $21 \times 3 = 63$

Standardized Assessment of Concussion Child Version (SAC-C)

Immediate Memory

Choose one of the 5-word lists. 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.

OPTION: The literature suggests that the Immediate Memory has a notable ceiling effect when a 5-word list is used. (In younger children, use the 5-word list). 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.

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 only, from List A, B, C, D, E or F, and administer those digits as follows:

"I am going to read you some numbers and when I am done, you say them back to me backwards, in reverse order of how I read them to you. For example, if I say 7-1, you would say 1-7."

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.

Days of the week in reverse order

"Now tell me the days of the week in reverse order. Start with Sunday and go backward. So you'll say Sunday, Saturday ... Go ahead!"

1 pt. for entire sequence correct

Delayed Recall

The delayed recall should be performed after at least 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."

Circle each word correctly recalled. Total score equals number of words recalled.

Neurological Screen

Reading

The child is asked to read a paragraph of text from the instructions in the Child SCAT5. For children who can not read, they are asked to describe what they see in a photograph or picture, such as that on page 6 of the Child SCAT5.

Modified Balance Error Scoring System (mBESS)⁵ testing

These instructions are to be read by the person administering the Child SCAT5, and each balance task should be demonstrated to the child. The child should then be asked to copy what the examiner demonstrated.

Each of 20-second trial/stance is scored by counting the number of errors. The This balance testing is based on a modified version of the Balance Error Scoring System (BESS)⁵.

A stopwatch or watch with a second hand is required for this testing.

"I am now going to test your balance. Please take your shoes off, roll up your pants above your ankle (if applicable), and remove any ankle taping (if applicable). This test will consist of two different parts."

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).

(a) Double leg stance:

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

(b) Tandem stance:

Instruct or show the child how to stand heel-to-toe with the non-dominant foot in the back. Weight should be evenly distributed across both feet. Again, the child should try to maintain stability for 20 seconds with hands on hips and eyes closed. You should inform the child that you will be counting the number of times the child moves out of this position. If the child stumbles out of this position, instruct him/her to open the eyes and return to the start position and continue balancing. You should start timing when the child is set and the eyes are closed.

(c) Single leg stance (10-12 year olds only):

"If you were to kick a ball, which foot would you use? [This will be the dominant foot] Now stand on your other foot. You should bend your other leg and hold it up (show the child). Again, try to stay in that position 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 move out of this position, open your eyes and return to the start position and keep balancing. I will start timing when you are set and have closed your eyes."

Balance testing – types of errors

- | | | |
|---------------------------------|---|---|
| 1. Hands lifted off iliac crest | 3. Step, stumble, or fall | 5. Lifting forefoot or heel |
| 2. Opening eyes | 4. Moving hip into > 30 degrees abduction | 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 child. The examiner will begin counting errors only after the child has assumed the proper start position. The modified BESS is calculated by adding one error point for each error during the 20-second tests. The maximum total number of errors for any single condition is 10. If a child commits multiple errors simultaneously, only one error is recorded but the child should quickly return to the testing position, and counting should resume once subject is set. Children who 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.

Tandem Gait

Instruction for the examiner - Demonstrate the following to the child:

The child is 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. Children fail 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

The tester should demonstrate it to the child.

"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). 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 as quickly and as accurately as possible."

Scoring: 5 correct repetitions in < 4 seconds = 1

Note for testers: Children fail the test if they do not touch their nose, do not fully extend their elbow or do not perform five repetitions.

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- Ayr, L.K., Yeates, K.O., Taylor, H.G., Brown, M. Dimensions of postconcussive symptoms in children with mild traumatic brain injuries. Journal of the International Neuropsychological Society. 2009; 15:19-30
- McCrea M. Standardized mental status testing of acute concussion. Clinical Journal of Sports Medicine. 2001; 11: 176-181
- Guskiewicz KM. Assessment of postural stability following sport-related concussion. Current Sports Medicine Reports. 2003; 2: 24-30

CONCUSSION INFORMATION

If you think you or a teammate has a concussion, tell your coach/trainer/parent right away so that you can be taken out of the game. You or your teammate should be seen by a doctor as soon as possible. YOU OR YOUR TEAMMATE SHOULD NOT GO BACK TO PLAY/SPORT THAT DAY.

Signs to watch for

Problems can happen over the first 24-48 hours. You or your teammate should not be left alone and must go to a hospital right away if any of the following happens:

- New headache, or headache gets worse
- Neck pain that gets worse
- Becomes sleepy/drowsy or can't be woken up
- Cannot recognise people or places
- Feeling sick to your stomach or vomiting
- Acting weird/strange, seems/feels confused, or is irritable
- Has any seizures (arms and/or legs jerk uncontrollably)
- Has weakness, numbness or tingling (arms, legs or face)
- Is unsteady walking or standing
- Talking is slurred
- Cannot understand what someone is saying or directions

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

Graduated Return to Sport Strategy

After a concussion, the child should rest physically and mentally for a few days to allow symptoms to get better. In most cases, after a few days of rest, they can gradually increase their daily activity level as long as symptoms don't get worse. Once they are able to do their usual daily activities without symptoms, the child should gradually increase exercise in steps, guided by the healthcare professional (see below).

The athlete should not return to play/sport the day of injury.

NOTE: An initial period of a few days of both cognitive ("thinking") and physical rest is recommended before beginning the Return to Sport progression.

Exercise step	Functional exercise at each step	Goal of each step
1. Symptom-limited activity	Daily activities that do not provoke symptoms.	Gradual reintroduction of work/school activities.
2. Light aerobic exercise	Walking or stationary cycling at slow to medium pace. No resistance training.	Increase heart rate.
3. Sport-specific exercise	Running or skating drills. No head impact activities.	Add movement.
4. Non-contact training drills	Harder training drills, e.g., passing drills. May start progressive resistance training.	Exercise, coordination, and increased thinking.
5. Full contact practice	Following medical clearance, participate in normal training activities.	Restore confidence and assess functional skills by coaching staff.
6. Return to play/sport	Normal game play.	

There should be at least 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). The athlete should not return to sport until the concussion symptoms have gone, they have successfully returned to full school/learning activities, and the healthcare professional has given the child written permission to return to sport.

If the child has symptoms for more than a month, they should ask to be referred to a healthcare professional who is an expert in the management of concussion.

Graduated Return to School Strategy

Concussion may affect the ability to learn at school. The child may need to miss a few days of school after a concussion, but the child's doctor should help them get back to school after a few days. When going back to school, some children may need to go back gradually and may need to have some changes made to their schedule so that concussion symptoms don't get a lot worse. If a particular activity makes symptoms a lot worse, then the child should stop that activity and rest until symptoms get better. To make sure that the child can get back to school without problems, it is important that the health care provider, parents/caregivers and teachers talk to each other so that everyone knows what the plan is for the child to go back to school.

Note: If mental activity does not cause any symptoms, the child may be able to return to school part-time without doing school activities at home first.

Mental Activity	Activity at each step	Goal of each step
1. Daily activities that do not give the child symptoms	Typical activities that the child 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.	Gradual return to typical activities.
2. School activities	Homework, reading or other cognitive activities outside of the classroom.	Increase tolerance to cognitive work.
3. Return to school part-time	Gradual introduction of school-work. May need to start with a partial school day or with increased breaks during the day.	Increase academic activities.
4. Return to school full-time	Gradually progress school activities until a full day can be tolerated.	Return to full academic activities and catch up on missed work.

If the child continues to have symptoms with mental activity, some other things that can be done to 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 child 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.



Sport concussion assessment tool for childrens ages 5 to 12 years

Br J Sports Med published online April 26, 2017

Updated information and services can be found at:

<http://bjsm.bmjjournals.com/content/early/2017/04/28/bjsports-2017-097492childscat5.citation>

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Balance Error Scoring System (BESS)

Developed by researchers and clinicians at the University of North Carolina's Sports Medicine Research Laboratory, Chapel Hill, NC 27599-8700

The Balance Error Scoring System provides a portable, cost-effective, and objective method of assessing static postural stability. In the absence of expensive, sophisticated postural stability assessment tools, the BESS can be used to assess the effects of mild head injury on static postural stability. Information obtained from this clinical balance tool can be used to assist clinicians in making return to play decisions following mild head injury.

The BESS can be performed in nearly any environment and takes approximately 10 minutes to conduct.

Materials

1) Testing surfaces

-two testing surfaces are needed to complete the BESS test: floor/ground and foam pad.

1a) Floor/Ground: Any level surface is appropriate.

1b) Foam Pad (Power Systems Airex Balance Pad 81000)

Address = PO Box 31709 Knoxville, TN 37930 tel = 1-800-321-6975

Web Address = www.power-systems.com

Dimensions: Length: 10" Width: 10" Height: 2.5"

The purpose of the foam pad is to create an unstable surface and a more challenging balance task, which varies by body weight. It has been hypothesized that as body weight increases the foam will deform to a greater degree around the foot. The heavier the person the more the foam will deform. As the foam deforms around the foot, there is an increase in support on the lateral surfaces of the foot. The increased contact area between the foot and foam has also been theorized to increase the tactile sense of the foot, also helping to increase postural stability. The increase in tactile sense will cause additional sensory information to be sent to the CNS. As the brain processes this information it can make better decisions when responding to the unstable foam surface.

2) Stop watch

-necessary for timing the subjects during the 6, twenty second trials

3) An assistant to act as a spotter

-the spotter is necessary to assist the subject should they become unstable and begin to fall. The spotter's attention is especially important during the foam surface.

4) BESS Testing Protocol

-these instructions should be read to the subject during administration of the BESS

5) BESS Score Card (See end of document)

BESS Test Administration

- 1) Before administering the BESS, the following materials should be present:
 - foam pad
 - stop watch
 - spotter
 - BESS Testing Protocol
 - BESS Score Card
- 2) Before testing, instruct the individual to remove shoes and any ankle taping if necessary.
Socks may be worn if desired.
- 3) Read the instructions to the subject as they are written in the BESS Testing Protocol.
- 4) Record errors on the BESS Score Card as they are described below.

Scoring the BESS

Each of the twenty-second trials is scored by counting the errors, or deviations from the proper stance, accumulated by the subject. The examiner will begin counting errors only after the individual has assumed the proper testing position.

Errors: An error is credited to the subject when any of the following occur:

- ◆ moving the hands off of the iliac crests
- ◆ opening the eyes
- ◆ step stumble or fall
- ◆ abduction or flexion of the hip beyond 30°
- ◆ lifting the forefoot or heel off of the testing surface
- ◆ remaining out of the proper testing position for greater than 5 seconds

-The maximum total number of errors for any single condition is 10.

Normal Scores for Each Possible Testing Surface

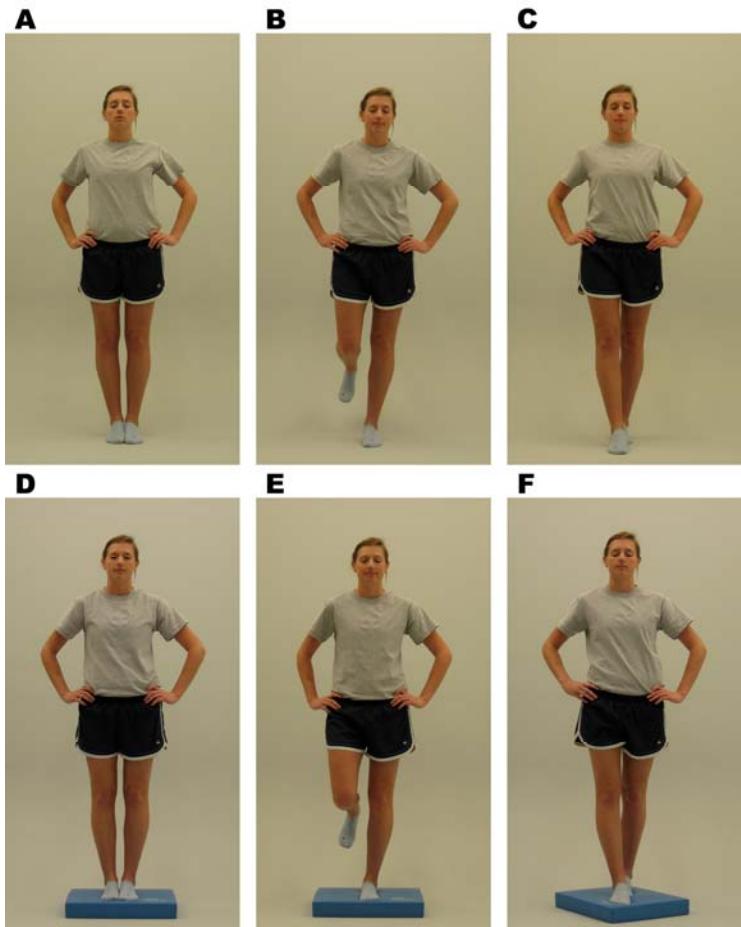
	Firm Surface	Foam Surface
Double Leg Stance	.009 ± .12	.33 ± .90
Single Leg Stance	2.45 ± 2.33	5.06 ± 2.80
Tandem Stance	.91 ± 1.36	3.26 ± 2.62
Surface Total	3.37 ± 3.10	8.65 ± 5.13
BESS Total Score		12.03 ± 7.34

Maximum Number of Errors Possible for Each Testing Surface

	Firm Surface	Foam Surface
Double Leg Stance	10	10
Single Leg Stance	10	10
Tandem Stance	10	10
Surface Total	30	30

-if a subject commits multiple errors simultaneously, only one error is recorded. For example, if an individual steps or stumbles, opens their eyes, and removes their hands from their hips simultaneously, then they are credited with only **one error**.

-subjects that are unable to maintain the testing procedure for a minimum of **five seconds** are assigned the highest possible score, ten, for that testing condition.



A&D: ***Double leg stance:*** Standing on a firm surface with feet side by side (touching), hands on the hips and eyes closed

B&E: ***Single leg stance:*** Standing on a firm surface on the non-dominant foot (defined below), the hip is flexed to approximately 30° and knee flexed to approximately 45°. Hands are on the hips and eyes closed.

****Non-Dominant Leg:*** The non-dominant leg is defined as the opposite leg of the preferred kicking leg

C&F: ***Tandem Stance:*** Standing heel to toe on a firm surface with the non-dominant foot (defined above) in the back. Heel of the dominant foot should be touching the toe of the non-dominant foot. Hands are on the hips and their eyes are closed.

Script for the BESS Testing Protocol

Direction to the subject: I am now going to test your balance.

Please take your shoes off, roll up your pant legs above ankle (if applicable), and remove any ankle taping (if applicable).

This test will consist of 6 - twenty second tests with three different stances on two different surfaces. I will describe the stances as we go along.

DOUBLE LEG STANCE:

Direction to the subject: The first stance is standing with your feet together like this [administrator demonstrates two-legged stance]

You will be standing with your hands on your hips with your eyes closed. You should try to maintain stability in that position for entire 20 seconds. I will be counting the number of times you move out of this position. For example: if you take your hands off your hips, open your eyes, take a step, lift your toes or your heels. If you do move out of the testing stance, simply open your eyes, regain your balance, get back into the testing position as quickly as possible, and close your eyes again.

There will be a person positioned by you to help you get into the testing stance and to help if you lose your balance.

Direction to the spotter: You are to assist the subject if they fall during the test and to help them get back into the position.

Direction to the subject: Put your feet together, put your hands on your hips and when you close your eyes the testing time will begin [Start timer when subject closes their eyes]

SINGLE LEG STANCE:

Direction to subject: 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.

[Before continuing the test assess the position of the dominant leg as such: 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 with your eyes closed. I will be counting the number of times you move out of this position.

Place your hands on your hips. When you close your eyes the testing time will begin. [Start timer when subject closes their eyes]

Direction to the spotter: You are to assist the subject if they fall during the test and to help them get back into the position.

TANDEM STANCE:

Directions to the subject: 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 eyes closed. I will be counting the number of times you move out of this position.

Place your hands on your hips. When you close your eyes the testing time will begin.
[Start timer when subject closes their eyes]

Direction to the spotter: You are to assist the subject if they fall during the test and to help them get back into the position.

*** Repeat each set of instructions for the foam pad

Score Card

Balance Error Scoring System (BESS) (Guskiewicz)			
Balance Error Scoring System – Types of Errors	SCORE CARD: (# errors)	FIRM Surface	FOAM Surface
1. Hands lifted off iliac crest	Double Leg Stance (feet together)		
2. Opening eyes	Single Leg Stance (non-dominant foot)		
3. Step, stumble, or fall	Tandem Stance (non-dom foot in back)		
4. Moving hip into > 30 degrees abduction	Total Scores:		
5. Lifting forefoot or heel	BESS TOTAL:		
6. Remaining out of test position >5 sec			
The BESS is calculated by adding one error point for each error during the 6 20-second tests.			

Which **foot** was tested: Left Right
(i.e. which is the **non-dominant** foot)

APPENDIX D - CONCUSSION RECOGNITION TOOL 5

CONCUSSION RECOGNITION TOOL 5[©]

To help identify concussion in children, adolescents and adults

Supported by



RECOGNISE & REMOVE

Head impacts can be associated with serious and potentially fatal brain injuries. The Concussion Recognition Tool 5 (CRT5) is to be used for the identification of suspected concussion. It is not designed to diagnose concussion.

STEP 1: RED FLAGS – CALL AN AMBULANCE

If there is concern after an injury including whether ANY of the following signs are observed or complaints are reported then the player should be safely and immediately removed from play/game/activity. If no licensed healthcare professional is available, call an ambulance for urgent medical assessment:

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

STEP 2: OBSERVABLE SIGNS

Visual clues that suggest possible concussion include:

- Lying motionless on the playing surface
- Slow to get up after a direct or indirect hit to the head
- Blank or vacant look
- Disorientation or confusion, or an inability to respond appropriately to questions
- Balance, gait difficulties, motor incoordination, stumbling, slow laboured movements
- Facial injury after head trauma

STEP 3: SYMPTOMS

(IN ATHLETES OLDER THAN 12 YEARS)

- Headache
- "Pressure in head"
- Balance problems
- Nausea or vomiting
- Drowsiness
- Dizziness
- Blurred vision
- Sensitivity to light
- Sensitivity to noise
- Fatigue or low energy
- "Don't feel right"
- More emotional
- More irritable
- Sadness
- Nervous or anxious
- Neck Pain
- Difficulty concentrating
- Difficulty remembering
- Feeling slowed down
- Feeling like "in a fog"

STEP 4: MEMORY ASSESSMENT

Failure to answer any of these questions (modified appropriately for each sport) correctly may suggest a concussion:

- "What team did you play last week/game?"
- "Who scored last in this game?"
- "What venue are we at today?"
- "Which half is it now?"
- "Did your team win the last game?"

Athletes with suspected concussion should:

- Not be left alone initially (at least for the first 1-2 hours).
- Not drink alcohol.
- Not use recreational/ prescription drugs.
- Not be sent home by themselves. They need to be with a responsible adult.
- Not drive a motor vehicle until cleared to do so by a healthcare professional.

The CRT5 may be freely copied in its current form for distribution to individuals, teams, groups and organisations. Any revision and any reproduction in a digital form requires approval by the Concussion in Sport Group. It should not be altered in any way, rebranded or sold for commercial gain.

ANY ATHLETE WITH A SUSPECTED CONCUSSION SHOULD BE IMMEDIATELY REMOVED FROM PRACTICE OR PLAY AND SHOULD NOT RETURN TO ACTIVITY UNTIL ASSESSED MEDICALLY, EVEN IF THE SYMPTOMS RESOLVE



Concussion recognition tool 5©

Br J Sports Med published online April 26, 2017

Updated information and services can be found at:

<http://bjsm.bmjjournals.com/content/early/2017/04/28/bjsports-2017-097508C>
RT5.citation

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RETURN - TO - VISION AND BALANCE 1



Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Gaze stabilisation in sitting    	Focus on ball at eye level at arms length. Keep ball in clear focus and stationary. Slowly move head: 1. Side to side 2. Up down	Perform for 60 seconds. Rest 30 seconds. Repeat 3 times for each direction. If ball blurs or moves – slow head down. Increase speed as tolerated.
Sitting supported on firm surface      	Keep head upright. Feet flat on floor, hands supporting. Shift weight to the left - hold and right - hold: 1. Side to side 2. Forward backwards 3. Diagonally	Hold for 15 seconds in each position.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 1

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Standing feet apart   	Look straight ahead at a stationary ball. Position arms: 1. Out to side 2. At sides 3. Across chest	Hold each arm position for 20 seconds.
Standing weight shift feet apart    	Within limits of stability, slowly shift weight: 1. Side to side 2. Forwards and backwards	Hold each position for 10 seconds. Repeat sequence 5 times.
Walking head side to side   	Start on solid surface with head and eyes straight ahead. Start walking, turn head and eyes towards right, then back straight ahead and then toward left.	Repeat left and right sequence 5 times.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 2

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Gaze stabilisation standing	    <p>Feet apart, focus on ball at eye level at arms length. Keep ball in clear focus and stationary. Slowly move head: 1. Side to side 2. Up down</p>	Perform for 60 seconds. Rest 30 seconds. Repeat 3 times for each direction. If ball blurs or moves – slow head down. Increase speed as tolerated.
Sitting with no support on firm surface	    <p>Keep head upright. Feet flat on floor, hands supporting. Shift weight to the left - hold and right - hold: 1. Side to side 2. Forward backwards 3. Diagonally</p>	Hold for 15 seconds in each position.
Standing feet together	   <p>Look straight ahead at stationary ball. Position arms: 1. Out to side 2. At sides 3. Across chest</p>	Hold each arm position for 20 seconds.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 2

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Standing weight shift moving arms 	Shift weight forward bringing arms back, hips forward over toes until heels rise off floor. Return to starting position. Shift weight backward bringing arms forward, hips back over heel until toes rise off floor.	Repeat sequence 5 times.
Walking on compliant surface 	Walk on 3m foam balance beam turning at the end, returning to starting point. Walk: 1. Forwards 2. Backwards	Repeat forward and backwards sequence 3 times each.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 3

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Eye smooth pursuits in standing	    <p>Hold a ball at arms length, eyes fixed on it. While head stays still. Move ball in each direction: 1. Side to side 2. Up and down</p>	Perform for 60 seconds. Rest 30 seconds. Repeat 3 times for each direction. If ball blurs or moves – slow head down. Increase speed as tolerated.
Sitting on compliant surface (foam / pillow)	  <p>Keep head upright. Feet flat on floor, hands out in front. Shift weight: 1. Side to side - hold 2. Forward backwards - hold 3. Diagonally - hold</p>	Hold for 15 seconds in each position.
Standing partial tandem	   <p>1 foot partially in front of other, look straight ahead at stationary ball: 1. Arms out to side 2. At sides 3. Across chest</p>	Hold each arm position for 20 seconds.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 3

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Standing lateral weight shift 	Feet shoulder width apart, shift weight over right leg, bending head and trunk slightly to left. Return to starting position. Shift weight over left leg, bending head and trunk slightly to right.	Repeat sequence 5 times.
Walking on compliant surface head side to side 	Walk on 3m foam balance beam, turning at the end, returning to starting point. Walk: 1. Forwards 2. Backwards	Repeat forward and backwards sequence 3 times each.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 4

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Eye saccades sitting and standing  	Hold 2 stationary balls 30 cm apart at eye level at arms length. Move eyes first slowly, then quicker from target to target. Keep head still.	Perform for 30 seconds. Rest for 15 seconds. Repeat the sequence 3 times.
Sitting on firm surface     	With feet flat on floor, move both arms in the following sequence 1 – 3: 1. Front 2. Sides 3. Diagonally	1 sequence = movement directions 1 – 3. Perform 10 sequences. Increase speed as tolerated

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 4

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Standing tandem	<p>One foot directly in front of other, look straight ahead at stationary ball, arms:</p> <ol style="list-style-type: none"> 1. Out to side 2. At sides 3. Across chest 	<p>Hold each arm position for 20 seconds.</p>
Standing single step	<p>Take 1 step at a time with each leg. Return to starting position:</p> <ol style="list-style-type: none"> 1. Forward and backwards 2. Sideways 	<p>Perform sequence 5 times. On firm surface, then on foam / pillow.</p>
Tandem gait on a firm surface	<p>Walk along a 1 cm wide - 3m straight line. Arms</p> <ol style="list-style-type: none"> 1. Arms out to side 2. At sides 3. Across chest 	<p>Turn around then return to starting point. Perform in each arm position 1 – 3.</p>

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 5

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Eye corrective saccades sitting	Hold two balls 30 cm apart at eye level at arms length. Head still, eyes left then head left. Eyes quickly right, then head right: 1. Side by side 2. Up down	Repeat the sequence in each direction for 60 seconds.
Sitting on compliant surface (foam / pillow)	With feet flat on floor, move both arms in the following sequence 1 – 3: 1. Front 2. Sides 3. Diagonally	1 sequence = movement directions 1 – 3. Perform 10 sequences. Increase speed as tolerated
Standing feet together on compliant surface (foam / pillow)	Look straight ahead at stationary ball, arms: 1. Out to side 2. At sides 3. Across chest	Hold each arm position for 20 seconds.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 5

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Standing in place then turn 	Lead with head first. Then turn slowly towards right, then left: 1. Quarter turns 2. Half turns 3. Full turns	Repeat each cycle (1-3) 3 times. First with eyes open. If tolerated perform with eyes closed.
Walking obstacle course 	Create a 5 meter obstacle course around and over objects. Walk the course: 1. Forwards 2. Backwards	Repeat the course forwards and backwards 3 times each.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 6

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Eye convergence sitting  	Hold ball at eye level at arms length away. Keep ball in focus. Move ball towards nose, then back to arms length. First slowly, then increasing speed.	Perform 10 reps. Eyes to stay comfortable, ball clear.
Sitting on firm surface  	Pick up ball located down on right, then place up on left. Then pick up a ball located down on left and place up on right.	Repeat 10 times in each left and right direction. Use athletes sport specific ball. Increase speed as tolerated.
Standing tandem on compliant surface (foam / pillow)   	1 foot directly in front of other, look straight ahead at stationary ball: 1. Arms out to side 2. At sides 3. Across chest	Hold each arm position for 20 seconds.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 6

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Standing in place on compliant surface (foam / pillow) and then turn 	Lead with head, then turn slowly towards right, then left: 1. Quarter turns 2. Half turns 3. Full turns	Repeat each cycle (1-3) 3 times. First with the eyes open. If tolerated perform with eyes closed.
Walking stop start on command 	Have someone command you to "stop" and "start" on cue. Walk in straight line at different speeds: 1. Slowly 2. Fast	Walk for ___ minute/s on each surface. First on firm surface and then on compliant surface (3m balance beam).

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 7

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Eye cancellation sitting and standing	<p>Take a ball, toss from hand to hand, moving the head to follow ball path.</p> <p>Keep ball in focus.</p> <p>Toss ball</p> <ul style="list-style-type: none"> 1. Side to side 2. Up down 	Repeat for 30 seconds in each direction.
Sitting on compliant surface (foam / pillow)	<p>Pick up ball located down on right and place up on left.</p> <p>Then pick up a ball located down on left and place up on right.</p>	Repeat 10 times in each left and right direction.
Standing eyes closed feet together	<p>Stand upright with arms:</p> <ul style="list-style-type: none"> 1. Out to side 2. At sides 3. Across chest <p>Simultaneously visualizing the positions.</p>	Hold each arm position for 20 seconds.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 7

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Standing in place then turn 	First $\frac{1}{4}$ turn eyes to ball at eye level. Keeping eyes fixed on ball then $\frac{1}{4}$ turn head then body in sequence toward the target.	Complete 5 full turn sequences at $\frac{1}{4}$ turn progression. Increase the speed of the turning sequences as tolerated.
Walking / jogging and ball pickup 	Pick up ball, then carry for ____ metres, next place ball back on ground. 1. Walking 2. Walking fast 3. Jogging	Perform 5 ball pick-ups with each speed 1 – 3, as tolerated.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 8

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Gaze stabilization sitting	<p>Hold ball at eye level at arms length. Move head in 1 direction first, then ball in opposite direction:</p> <ol style="list-style-type: none"> 1. Side to side 2. Up down 	<p>Perform for 30 seconds. Rest 30 seconds. Repeat 3 times for each direction. If ball blurs or moves – slow head down. Vary speed accordingly.</p>
Sitting throwing and catching ball (sport specific ball if applicable)	<p>Vary direction and speed of ball thrown:</p> <ol style="list-style-type: none"> 1. Up in air 2. At wall 3. To another person 	<p>Perform 10 repetitions for each scenario 1 - 3.</p>
Standing tandem eyes closed	<p>1 foot directly in front of other, eyes closed, visualize upright position, arms:</p> <ol style="list-style-type: none"> 1. Out to side 2. At sides 3. Across chest 	<p>Hold each arm position for 20 seconds.</p>

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 8

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Standing march and ball throw	<p>Keep eyes on ball throughout activity. While marching in place, catch a ball:</p> <ul style="list-style-type: none"> 1. From hand to hand 2. Against a wall 3. From another person 	Catch the ball 15 times for each variation 1 – 3.
Walking circles	<p>1st making a large circle. Gradually decrease circle size to smaller circle. Start to left side, repeat to right side.</p>	Make 2 circles to each left and right side. Increas speed as tolerated.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 9

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Gaze stabilization standing 	Feet apart, hold ball at eye level at arms length. Move head in 1 direction first, then ball in opposite direction: 1. Side to side 2. Up down	Perform for 30 seconds. Rest 30 seconds. Repeat 3 times for each direction. If ball blurs or moves – slow head down. Vary speed accordingly.
Sitting on compliant surface (foam / pillow) throwing / catching ball (sport specific ball if applicable) 	Vary direction and speed of ball thrown: 1. Up in air 2. At a wall 3. To another person	Perform 10 repetitions for each scenario 1 - 3.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 9

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Standing feet together on foam eyes closed 	1 foot directly in front of other, eyes closed, visualize upright position, arms. 1. Out to side 2. At sides 3. Across chest	Hold each arm position for 20 seconds.
Standing ball kick 	Standing on alternate legs, kick a ball back to starting position. Maintain balance over standing leg when: 1. A person rolls ball 2. Kicking ball against wall	Perform 5 - 10 kicks on alternate leg standing positions for 1 and 2.
Walk / jogging ball bounce 	Keep eyes on ball throughout. While bouncing ball on ground at same time: 1. Walk forward 10m then backward 10m 2. Jog forward 10m then backward 10m	Complete 3 walking and jogging skills each. Rest for 15 seconds after each skill.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 10

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Gaze stabilization standing 	In tandem stance, hold ball at eye level at arms length. Move head first, then ball in opposite direction: 1. Side to side 2. Up down	Perform for 30 seconds. Rest 30 seconds. Repeat 3 times for each direction. If ball blurs or moves – slow head down. Vary speed accordingly.
Sitting eyes closed on compliant surface (foam / pillow) 	Keep head upright. Feet flat on floor, hands out in front. Shift weight and hold:	Hold for 10 seconds in each position.
Standing on compliant surface (foam / pillow) 	Vary direction and speed of ball thrown: 1. At a wall 2. Up in air 3. To another person	Perform 10 repetitions each for 1 – 3.

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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RETURN - TO - VISION AND BALANCE 10

Name: _____ Sport: _____ Date: _____

EXERCISE	DESCRIPTION	PRESCRIPTION
Standing postural perturbations 	Maintain balance by taking one quick step only if needed. Stand feet apart. A person pushes you unexpectedly through the trunk: 1. Forward or backward 2. From the side	5 pushes on solid surface, eyes open and then closed. 5 pushes on compliant surface, eyes open and then closed. Total = 20 pushes.
Sports specific skills 	Allow athlete to perform a chosen sports specific skill. Include a quick reaction time skill.	Perform this for: _____ repetitions Or _____ minutes Increase speed of drill as tolerated

Any person with starting or worsening symptoms of concussion → stop the session → rest 24hrs → return to that specific session number.

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APPENDIX F: Functional Gait Assessment

Appendix.

Functional Gait Assessment^a

Requirements: A marked 6-m (20-ft) walkway that is marked with a 30.48-cm (12-in) width.

1. GAIT LEVEL SURFACE

Instructions: Walk at your normal speed from here to the next mark (6 m [20 ft]).

Grading: Mark the highest category that applies.

- (3) Normal—Walks 6 m (20 ft) in less than 5.5 seconds, no assistive devices, good speed, no evidence for imbalance, normal gait pattern, deviates no more than 15.24 cm (6 in) outside of the 30.48-cm (12-in) walkway width.
- (2) Mild impairment—Walks 6 m (20 ft) in less than 7 seconds but greater than 5.5 seconds, uses assistive device, slower speed, mild gait deviations, or deviates 15.24–25.4 cm (6–10 in) outside of the 30.48-cm (12-in) walkway width.
- (1) Moderate impairment—Walks 6 m (20 ft), slow speed, abnormal gait pattern, evidence for imbalance, or deviates 25.4–38.1 cm (10–15 in) outside of the 30.48-cm (12-in) walkway width. Requires more than 7 seconds to ambulate 6 m (20 ft).
- (0) Severe impairment—Cannot walk 6 m (20 ft) without assistance, severe gait deviations or imbalance, deviates greater than 38.1 cm (15 in) outside of the 30.48-cm (12-in) walkway width or reaches and touches the wall.

2. CHANGE IN GAIT SPEED

Instructions: Begin walking at your normal pace (for 1.5 m [5 ft]). When I tell you "go," walk as fast as you can (for 1.5 m [5 ft]). When I tell you "slow," walk as slowly as you can (for 1.5 m [5 ft]).

Grading: Mark the highest category that applies.

- (3) Normal—Able to smoothly change walking speed without loss of balance or gait deviation. Shows a significant difference in walking speeds between normal, fast, and slow speeds. Deviates no more than 15.24 cm (6 in) outside of the 30.48-cm (12-in) walkway width.
- (2) Mild impairment—Is able to change speed but demonstrates mild gait deviations, deviates 15.24–25.4 cm (6–10 in) outside of the 30.48-cm (12-in) walkway width, or no gait deviations but unable to achieve a significant change in velocity, or uses an assistive device.
- (1) Moderate impairment—Makes only minor adjustments to walking speed, or accomplishes a change in speed with significant gait deviations, deviates 25.4–38.1 cm (10–15 in) outside the 30.48-cm (12-in) walkway width, or changes speed but loses balance but is able to recover and continue walking.
- (0) Severe impairment—Cannot change speeds, deviates greater than 38.1 cm (15 in) outside 30.48-cm (12-in) walkway width, or loses balance and has to reach for wall or be caught.

3. GAIT WITH HORIZONTAL HEAD TURNS

Instructions: Walk from here to the next mark 6 m (20 ft) away. Begin walking at your normal pace. Keep walking straight; after 3 steps, turn your head to the right and keep walking straight while looking to the right. After 3 more steps, turn your head to the left and keep walking straight while looking left. Continue alternating looking right and left every 3 steps until you have completed 2 repetitions in each direction.

Grading: Mark the highest category that applies.

- (3) Normal—Performs head turns smoothly with no change in gait. Deviates no more than 15.24 cm (6 in) outside 30.48-cm (12-in) walkway width.
- (2) Mild impairment—Performs head turns smoothly with slight change in gait velocity (eg, minor disruption to smooth gait path), deviates 15.24–25.4 cm (6–10 in) outside 30.48-cm (12-in) walkway width, or uses an assistive device.

- (1) Moderate impairment—Performs head turns with moderate change in gait velocity, slows down, deviates 25.4–38.1 cm (10–15 in) outside 30.48-cm (12-in) walkway width but recovers, can continue to walk.

- (0) Severe impairment—Performs task with severe disruption of gait (eg, staggers 38.1 cm [15 in] outside 30.48-cm (12-in) walkway width, loses balance, stops, or reaches for wall).

4. GAIT WITH VERTICAL HEAD TURNS

Instructions: Walk from here to the next mark (6 m [20 ft]). Begin walking at your normal pace. Keep walking straight; after 3 steps, tip your head up and keep walking straight while looking up. After 3 more steps, tip your head down, keep walking straight while looking down. Continue alternating looking up and down every 3 steps until you have completed 2 repetitions in each direction.

Grading: Mark the highest category that applies.

- (3) Normal—Performs head turns with no change in gait. Deviates no more than 15.24 cm (6 in) outside 30.48-cm (12-in) walkway width.
- (2) Mild impairment—Performs task with slight change in gait velocity (eg, minor disruption to smooth gait path), deviates 15.24–25.4 cm (6–10 in) outside 30.48-cm (12-in) walkway width or uses assistive device.
- (1) Moderate impairment—Performs task with moderate change in gait velocity, slows down, deviates 25.4–38.1 cm (10–15 in) outside 30.48-cm (12-in) walkway width but recovers, can continue to walk.
- (0) Severe impairment—Performs task with severe disruption of gait (eg, staggers 38.1 cm [15 in] outside 30.48-cm (12-in) walkway width, loses balance, stops, reaches for wall).

5. GAIT AND PIVOT TURN

Instructions: Begin with walking at your normal pace. When I tell you, "turn and stop," turn as quickly as you can to face the opposite direction and stop.

Grading: Mark the highest category that applies.

- (3) Normal—Pivot turns safely within 3 seconds and stops quickly with no loss of balance.
- (2) Mild impairment—Pivot turns safely in >3 seconds and stops with no loss of balance, or pivot turns safely within 3 seconds and stops with mild imbalance, requires small steps to catch balance.
- (1) Moderate impairment—Turns slowly, requires verbal cueing, or requires several small steps to catch balance following turn and stop.
- (0) Severe impairment—Cannot turn safely, requires assistance to turn and stop.

6. STEP OVER OBSTACLE

Instructions: Begin walking at your normal speed. When you come to the shoe box, step over it, not around it, and keep walking.

Grading: Mark the highest category that applies.

- (3) Normal—Is able to step over 2 stacked shoe boxes taped together (22.86 cm [9 in] total height) without changing gait speed; no evidence of imbalance.
- (2) Mild impairment—Is able to step over one shoe box (11.43 cm [4.5 in] total height) without changing gait speed; no evidence of imbalance.
- (1) Moderate impairment—Is able to step over one shoe box (11.43 cm [4.5 in] total height) but must slow down and adjust steps to clear box safely. May require verbal cueing.
- (0) Severe impairment—Cannot perform without assistance.

(Continued)

Appendix.

Continued

7. GAIT WITH NARROW BASE OF SUPPORT

Instructions: Walk on the floor with arms folded across the chest, feet aligned heel to toe in tandem for a distance of 3.6 m [12 ft]. The number of steps taken in a straight line are counted for a maximum of 10 steps.

Grading: Mark the highest category that applies.

- (3) Normal—Is able to ambulate for 10 steps heel to toe with no staggering.
- (2) Mild impairment—Ambulates 7–9 steps.
- (1) Moderate impairment—Ambulates 4–7 steps.
- (0) Severe impairment—Ambulates less than 4 steps heel to toe or cannot perform without assistance.

8. GAIT WITH EYES CLOSED

Instructions: Walk at your normal speed from here to the next mark (6 m [20 ft]) with your eyes closed.

Grading: Mark the highest category that applies.

- (3) Normal—Walks 6 m (20 ft), no assistive devices, good speed, no evidence of imbalance, normal gait pattern, deviates no more than 15.24 cm (6 in) outside 30.48-cm (12-in) walkway width. Ambulates 6 m (20 ft) in less than 7 seconds.
- (2) Mild impairment—Walks 6 m (20 ft), uses assistive device, slower speed, mild gait deviations, deviates 15.24–25.4 cm (6–10 in) outside 30.48-cm (12-in) walkway width. Ambulates 6 m (20 ft) in less than 9 seconds but greater than 7 seconds.
- (1) Moderate impairment—Walks 6 m (20 ft), slow speed, abnormal gait pattern, evidence for imbalance, deviates 25.4–38.1 cm (10–15 in) outside 30.48-cm (12-in) walkway width. Requires more than 9 seconds to ambulate 6 m (20 ft).
- (0) Severe impairment—Cannot walk 6 m (20 ft) without assistance, severe gait deviations or imbalance, deviates greater than 38.1 cm (15 in) outside 30.48-cm (12-in) walkway width or will not attempt task.

9. AMBULATING BACKWARDS

Instructions: Walk backwards until I tell you to stop.

Grading: Mark the highest category that applies.

- (3) Normal—Walks 6 m (20 ft), no assistive devices, good speed, no evidence for imbalance, normal gait pattern, deviates no more than 15.24 cm (6 in) outside 30.48-cm (12-in) walkway width.
- (2) Mild impairment—Walks 6 m (20 ft), uses assistive device, slower speed, mild gait deviations, deviates 15.24–25.4 cm (6–10 in) outside 30.48-cm (12-in) walkway width.
- (1) Moderate impairment—Walks 6 m (20 ft), slow speed, abnormal gait pattern, evidence for imbalance, deviates 25.4–38.1 cm (10–15 in) outside 30.48-cm (12-in) walkway width.
- (0) Severe impairment—Cannot walk 6 m (20 ft) without assistance, severe gait deviations or imbalance, deviates greater than 38.1 cm (15 in) outside 30.48-cm (12-in) walkway width or will not attempt task.

10. STEPS

Instructions: Walk up these stairs as you would at home (ie, using the rail if necessary). At the top turn around and walk down.

Grading: Mark the highest category that applies.

- (3) Normal—Alternating feet, no rail.
- (2) Mild impairment—Alternating feet, must use rail.
- (1) Moderate impairment—Two feet to a stair; must use rail.
- (0) Severe impairment—Cannot do safely.

TOTAL SCORE: _____ **MAXIMUM SCORE 30**

^a Adapted from Dynamic Gait Index.¹ Modified and reprinted with permission of authors and Lippincott Williams & Wilkins (<http://lww.com>).

APPENDIX G: Motion Sensitivity Test

MOTION SENSITIVITY TESTING

Date: _____

Intensity	0-5	Duration	< 5 s = 0 5-10s = 1 11-30s = 2 >30s = 3	Score = Intensity + duration
	0 = none			
	5 = severe			

Baseline symptoms	Intensity	Duration	Score
1. Sitting to supine			
2. Supine to L side			
3. Supine to R side			
4. Supine to sitting			
5. L Hallpike-Dix			
6. Up from L			
7. R Hallpike-Dix			
8. Up from R			
9. Sitting, head tipped to L knee			
10. Head up from L knee			
11. Sitting, head tipped to R knee			
12. Head up from R knee			
13. Sitting head turns (5)			
14. Sitting head pitches (5)			
15. In stance, 180° turn to L			
16. In stance, 180° turn to R			

MSQ = Total score × (# of positions) / 20.48

MSQ = _____

MSQ 0-10 mild
11-30 moderate
31-100 severe

Signature: _____

Designation: _____

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CHANGES TO THIS POLICY

The OWIA reserves the right to vary or replace this Policy at any time, and will do so as new research and future consensus statements on concussion are published.

Changes are effective upon posting on the OWIA website. When such changes are made, the OWIA will inform all interested parties by email, but nevertheless it remains the responsibility of all athletes and personnel to be informed of the most recent version of this Policy. It is recommended to visit the OWIA website to view the [current OWIA Concussion Management Policy](#), rather than relying on a printed or saved copy, which may be out of date.

DOCUMENT HISTORY

Version	Adopted by OWIA	Content reviewed / purpose
One	16/12/2015	▪
Two	30/06/2017	▪ SCAT5 update