MEDICAL REGULATIONS

1.1 CROWD DOCTOR

With effect from 1998/1999 all Doctors employed as "Crowd Doctors" must have successfully undertaken the two one-day Football Association courses in Immediate Medical Care or Pre-Hospital Care, or equivalent. From 1998/1999 onwards, all new appointees are expected to possess the Diploma in Immediate Medical Care or its equivalent.

2 MEDICAL REGULATIONS - PREMIER LEAGUE

2.1 Appointment of medical personnel:

Each club shall appoint at least one part-time Team Doctor and one part-time Crowd Doctor and employ at least one full time physiotherapist as the Senior Physiotherapist. In exceptional circumstances and with prior permission from Head of FA Medical services the club may employ a graduate Sports Therapist with an accredited degree and who is a member of a recognised professional body and with appropriate indemnity insurance.

2.2 Qualifications of Medical Personnel

The team Doctor and the Crowd Doctor appointed by a Club shall each be qualified medical Practitioners registered and licensed to practice by the GMC.

A Crowd Doctor appointed by a Club shall be a registered medical practitioner and either:

- hold the Diploma in Immediate Medical Care issued by the Royal College of Surgeons (Edinburgh) Faculty of Pre-Hospital Care ("the Faculty") or its equivalent; or
- have successfully undertaken the Faculty's Generic Crowd Doctor Training Course or its equivalent.

Team Doctor.

All newly appointed Team Doctors (not previously having held an appointment as a Team Doctor with a Club in The League or The Premier League) prior to the 1st July 2003, are required to hold a Diploma in Sports Medicine or an equivalent higher professional qualification.

2.3 The Senior Physiotherapist employed by the club must be registered with the Health Professionals Council and a Chartered Physiotherapist.

2.4 Any assistant physiotherapists or other therapists employed by a club shall be either,

(i) registered with the Health Professionals Council and a Chartered Physiotherapist,

(ii) be a graduate Sports Therapist with an accredited degree and is a member of a recognised professional body and with appropriate indemnity insurance,

(iii) Hold the Football Association Diploma in the Treatment and Management of Injuries.

2.5 Continuing Professional Development

Each therapist employed by a Club shall each calendar year undertake a minimum of 36 hours' continuing professional development (of which at least 18 hours shall be provided by means of formally approved courses) and shall maintain a record thereof and produce the same for inspection by an officer of the League on demand.

2.6 Attendance of Medical Personnel

At every League Match:

(i) The Home Club shall recruit a Team Doctor and a Crowd Doctor who shall be available throughout and for at least one hour before and one hour after the

match. Additional time of attendance may be necessary, and dictated by clinical demands.

(ii) Each participating Club shall recruit a physiotherapist who is qualified as required by 2.1 above. Attendance will be in line with the Team Doctor, and depend on clinical demands.

(iii) No person other than a participating Club's Team Doctor and therapist shall be permitted to treat Players or Match Officials on the field of play.

(iv) The Home Club shall provide a minimum of two stretchers and a team of trained stretcher-bearers to remove injured Players or Match Officials from the field of play.

At any other match in which a Club team participates (except as required under the Rules of The FA Cup or the Football League Cup) the Home Club shall procure the attendance of the holder of an Emergency Aid Certificate approved by The Football Association.

2.7 Head Injuries

All Clubs shall ensure that any Player having left the field of play with a head injury shall not be allowed to resume playing or training without the clearance of a qualified Medical Practitioner. The same provision shall apply where a head injury is sustained in training.

2.8 Medical Records

Each Club shall keep medical records in respect of its Contract Players and Students in accordance with the requirements of the Medical Committee of The Football Association and shall, from time to time, make these available for inspection by Doctors appointed by The Football Association, for the purpose of monitoring.

2.9 Where the transfer including the Temporary Transfer of the registration of a Contract Player is being negotiated between Clubs, the Club holding the registration shall as the request of the other Club provide to it the medical records of the Contract Player in question.

3 MEDICAL REGULATIONS - FOOTBALL LEAGUE

Attendance of Qualified Medical Practitioner/Physiotherapist at Matches

3.1 It is the responsibility of the Home Club in matches played under the jurisdiction of The League to ensure that a Medical Practitioner registered and licensed by the General Medical Council ('Team Doctor'); and at least one paramedic, trained in emergency medicine dedicated to on field matters, are in attendance throughout the Match. Attendance should be from one hour before, until one hour after the match.

3.1.1 Each participating Club shall procure the attendance of a physiotherapist who is qualified as required by 2.1 above

3.1.2 Where a club employs directly, or by consultancy, one or more therapist then The Senior Physiotherapist employed by the club must be registered with the Health Professionals Council and a Chartered Physiotherapist.

3.1.3 Any assistant physiotherapists or other therapists employed by a club shall be either,

(i) Registered with the Health Professionals Council and a Chartered Physiotherapist,

(ii) Be a graduate Sports Therapist with an accredited degree and is a member of a recognised professional body and with appropriate indemnity insurance,

(iii) Hold the Football Association Diploma in the Treatment and Management of Injuries.

3.2 All Clubs shall ensure that any Player having left the field of play with a head injury shall not be allowed to resume playing or training without the clearance of a qualified Medical Practitioner. The same provision shall apply where a head injury is sustained in training.

3.3 Team Doctors. All newly appointed Team Doctors (not previously having held an appointment as a Team Doctor with a Club in The League or The Premier League) prior to the 1st July 2003, are required to hold a Diploma in Sports Medicine or an equivalent higher professional qualification.

3.4 Team Doctors must fulfil a programme of Continual Professional Development (CPD) as determined from time to time by the profession; to attend education conferences and seminars organised by The Football Association and to support the medical education functions of The Football Association. A log of these activities should be kept for appraisal purposes.

3.5 Crowd Doctors. Any doctors employed as Crowd Doctors must have successfully completed the 2 day FA course in Immediate Medical Care or Pre-Hospital Care or The Diploma in Immediate Medical Care, or an equivalent.

4. MEDICAL REGULATIONS - FOOTBALL CONFERENCE

(i) The Home Club must have a qualified medical practitioner, registered and licensed by the GMC, to arrive at least 45 minutes before the match, be present throughout the match, and for an hour after the match.

The Home Doctor must visit both Home and Away Team dressing rooms before leaving the ground to check on players' status.. The name of the Doctor present at the game must be entered on the team sheet.

(ii) Each team should have a therapist that is one of the following:

a) A Chartered Physiotherapist, registered with the Health Professionals Council

b) A graduate Sports Therapist with an accredited degree who is a member of a recognised professional body and with appropriate indemnity insurance

c) A Holder of the Football Association Diploma in the Treatment and Management of Injuries.

5. MEDICAL REGULATIONS - FEEDER LEAGUES (PREMIER DIVISIONS ONLY)

(i) The Home Club must have a qualified medical practitioner who is registered and licensed to practice by the GMC, from 45 minutes prior to the match, until an hour after the match has ended.

The Home Doctor must visit both Home and Away Team dressing rooms before leaving the ground to check on players' status. The name of the Doctor present at the game must be entered on the team sheet.

(ii) Since the commencement of Season 1999/2000 a Therapist trained to the level of The Football Association intermediate Treatment and Management of Injury Course (as a minimum) must be in attendance throughout matches to attend to injured players on the field of play and in the dressing rooms. "Away" clubs should be accompanied by a Therapist as stated above for the same purpose.

6 HEAD INJURIES

All Clubs shall ensure that any player in a league match having left the field with a head injury shall not be allowed to resume playing or training without the clearance of a qualified medical practitioner. The same provision shall apply where a head injury is sustained in training.

Management of Head Injuries in Association Football

A head injury is a potentially serious injury which can lead, in a small number of cases, to significant complications. No head injury can be assumed to be trivial.

At the beginning of each season each individual club's medical team should assemble to discuss head injury management pathways and protocols. This will include confirmation of referral specialists, and their predicted availability throughout forthcoming season. It is essential to organise a clear management care pathway in order to ensure that the recovery period is managed at all stages.

Primary Training

All pitchside medical staff will have evidence of satisfactory completion of an approved training course for the emergency management of the injured player, and subsequent re-validation where appropriate.

At all times during play there must be such a person at pitchside.

Equipment

This will be in accordance with the FA requirements. A copy of concussion management guidelines and pathways together with the concussion assessment tools(SCAT 3) should be immediately available in the medical room. This will also contain contact details of nearest appropriate medical facility for onward transfer if required and head injury instruction cards.

Scalp Injuries

The bleeding scalp wound mandates removal of the player from the field of play whilst the wound is assessed and treated. Full assessment will include examination to detect possible concussive symptomatology and/or neurological deficits. The use of surgical gloves is recommended at all times. The wound should be thoroughly cleaned, inspected and closed. Tissue loss is an indication for transfer to the closest appropriate medical facility. After treatment the wound should preferably be covered with a sterile dressing. If there are no other considerations the player may return to the field of play. A clean replacement jersey may be required and all blood must be cleaned from surrounding skin.

The attending medical officer will be responsible for full documentation of the episode and make suitable arrangements for checking tetanus status, wound review, suture removal and, where deemed appropriate, prescription of antibiotics. Complex facial lacerations will require urgent specialist opinion.

Head Injury and Concussion

Suspected Concussive Injury.

Concussion can occur without evidence of either loss of consciousness or actual trauma to the head. Any player exhibiting an otherwise unexplained deterioration in playing ability must be regarded as a suspected concussive injury and managed accordingly.

Head Injury and altered conscious Level.

Any player remaining immobile and unresponsive to verbal commands following a head injury will be regarded as being unconscious and treated in accordance with established principles for extrication and management of the unconscious player. There will be no return to play during that day.

Other presentations that mandate immediate hospital referral include concussive convulsions, C.S.F. leak, focal neurological signs, and clinical suspicion of skull fracture.

A player may suffer a transient alteration of conscious level following a head injury. It should be noted that under these circumstances, "transient" may coincide with the period of time between the injury and the arrival of the medical attendant at the player's side. On-pitch assessment will include Maddocks questions as well as demonstration of conjugate gaze, "normal" visual acuity and full visual fields to confrontation. The player will only be allowed to resume play if asymptomatic and with normal co-ordination. The medical attendant should alert the coaching staff, and the player closely observed for any deterioration in playing ability.

If a deficit is observed the player must be immediately removed from the field of play and regarded as suffering from a concussive head injury. There will be no return to play that day.

Sideline treatment/assessment is permitted within the rules of the game. Two attendants should accompany the player to the sideline. Initial treatment consists of observation and fluid replacement. When it is clear that the player is fully orientated, and visual assessment is satisfactory, provocation exercising should be attempted. The player should demonstrate satisfactory timing and asymptomatic response to short sprinting episodes, followed by a series of squats/sit-ups without any accompanying dizziness, disorientation or loss of balance. Normal co-ordination should be demonstrated throughout. This should include the balance test as described in SCAT3. If the player remains asymptomatic throughout these observations and exercises, return to the field of play is allowed. SCAT 3 should be completed as a medical record.

If the player suffers a second such episode during the same game, the player must be removed from the field and treated as suffering from a concussive injury.

When a player has been removed from play due to concussive symptomatology, the episode must be fully documented (including oxygen usage) by the medical attendant and this will include the use of tools such as SCAT3 at one hour post-injury. Medical documentation will include the precise examination details that enabled the decision–making process allowing the player to return home with accompanying responsible adult rather than referral to the closest appropriate medical facility.

The concussed player must not drive home and must be accompanied by a responsible adult at all times. A head injury instruction card, containing all necessary contact telephone numbers, will be issued to the accompanying adult.

Return to Play

It is recognised that the majority of players will recover from an episode of concussion and resume playing within a 7-10 day timeframe. Each player must, however, be treated as an individual and on a "symptom" rather than "time" led basis.

A period of total physical and cognitive rest, usually of no less than a full 24 hours, will be followed by a programme of carefully monitored increasing physical activity culminating in sport-specific non-contact training manoeuvres. The sequence would thus be rest, light aerobic exercise, sport-specific exercise, non-contact training drills, full contact practice, return to play. Progress though the programme will be dictated by the player remaining symptom-free. According to the 2012 concussion consensus, postural stability testing provides a useful tool for objectively assessing the motor domain of neurological functioning, and should be considered as an addition to the assessment of athletes suffering from concussion, particularly where the symptoms or signs indicate a balance component. If a player has previously undergone testing for proprioception / postural sway, it is worthwhile comparing performance to this previous baseline as part of the overall assessment.

Prior to the resumption of contact training, the player must be symptom free and reviewed by the club medical officer. If progress to this stage has been within the expected time frame, formal neuropsychological testing is not mandatory but mental status observation is required. Computerised programmes are often useful in the player for whom English is not the first language as well as the fact that these tools can be easily applied by the club medical officer.

Neuropsychological Testing

There are a number of commercially available computerised neuropsychological testing programmes. These are particularly useful in the assessment of the concussed player for whom English is not the first language. Their usefulness is reduced if baseline (i.e. pre-injury) testing has not been performed. It is also recognised that some players satisfactorily resume playing but do not return to their original baseline scores.

Formal neuropsychological testing, whether pen-and-paper or computerised, can only be undertaken in the otherwise asymptomatic individual and does not exclude the requirement for medical assessment prior to the resumption of contact training.

Formal computerised systems might enable both the player and coaching staff, as well as the medical attendant, to identify relatively minor continuing impaired reaction times in an otherwise fully recovered footballer.

Computerised systems are also useful as an additional screening tool for off-the-pitch episodes (e.g. minor fall in a hotel room during away travel) to ascertain that the (otherwise medically satisfactory) player remains at or above neuropsychological baseline.

RED FLAGS

In the emergency situation access to the nearest appropriate medical facility will be as dictated on the head injury instruction card provided at the time of the injury.

Any concerns regarding player status mandate referral to a neurological specialist. For prolonged symptomatology (e.g.severe headache not settling with simple analgesics and total rest) referral to a neurological specialist with a specific sports related interest is indicated.

Symptomatology that would indicate a neurological referral include:

- Repeated concussive episodes with progressively less impact force or increasing recovery periods,
- Age less than 18, and
- Concomitant psychoactive medication.

Note that anticoagulant therapy is an indication for hospital admission in minor head injuries.

In those referred to the neurologist, return to play will subsequently be dictated by that specialist. It is recommended that each club identify a suitable specialist who can also advise with respect to neuropsychological and neuroradiological specialist referral where appropriate.

Any player treated for a concussive episode should be assessed by the medical officer responsible for the team, and may be asked to undertake formal neuropsychological assessment prior to the commencement of each subsequent season as a continual screening test. This is best managed with a computerised system, and whether to enter such a programme should always be the decision of the medical officer.

Age Grade Players.

It is recognised that cognitive recovery in young players may take longer to fully recover. This may mandate notification to schools, colleges regarding possible short term effect on academic performance. A return to normal activity schedule may thus be indicated in some circumstances for such individuals.

SCAT 3 form

The SCAT 3 (Sport Concussion Assessment Tool-3) is a form which helps to understand what effects a head injury might have, and how to judge whether the condition of the player is improving or worsening with time as, in practice, subtle changes can be hard to detect. If there is any deterioration in a player's condition, help should be sought immediately.

On page 4, there is a concussion injury advice 'tear-off' that should be given to the player, and filled out as required. A player who has sustained a head injury should be accompanied if allowed home, and the person with the player should hold the 'tear-off' from the end of the form, and follow the guidance thereon.

SCAT3 is suitable for players from age 14yrs to adult. For players of 13 years and under there is child SCAT3, which should be used instead.

SCAT3™

Sport Concussion Assessment Tool – 3rd Edition

For use by medical professionals only

Name | Date/Time of Injury: | Date of Assessment: | Examiner:

What is the SCAT3?[1]

The SCAT3 is a standardized tool for evaluating injured athletes for concussion and can be used in athletes aged from 13 years and older. It supersedes the original SCAT and the SCAT2 published in 2005 and 2009, respectively[2]. For younger persons, ages 12 and under, please use the Child SCAT3. The SCAT3 is designed for use by medical professionals. If you are not qualified, please use the Sport Concussion Recognition Tool[1]. Preseason baseline testing with the SCAT3 can be helpful for interpreting post-injury test scores.

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

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

What is a concussion?

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

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

SIDELINE ASSESSMENT

Indications for Emergency Management

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

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

Potential signs of concussion?

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

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

1 Glasgow coma scale (GCS)

Best eye response (E)	
No eye opening	1
Eye opening in response to pain	2
Eye opening to speech	3
Eyes opening spontaneously	4
Best verbal response (V)	
No verbal response	1
Incomprehensible sounds	2
Inappropriate words	3
Confused	4
Oriented	5
Best motor response (M)	
No motor response	1
Extension to pain	2
Abnormal flexion to pain	3
Flexion/Withdrawal to pain	4
Localizes to pain	5
Obeys commands	6
Glasgow Coma score (E + V + M)	of 15

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

2 Maddocks Score[3]

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

Modified Maddocks questions (1 point for each correct answer)

What venue are we at today?	0	1
Which half is it now?	0	1
Who scored last in this match?	0	1
What team did you play last week/game?	0	1
Did your team win the last game?	0	1
Maddocks score		of 5

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

Notes: Mechanism of Injury ("tell me what happened"?):

_____

_____

_____

_____

_____

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

BACKGROUND

Name: _____ Date: _____

Examiner: _____

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

Age: _____ Gender: ☐ M ☐ F

Years of education completed: _____

Dominant hand: ☐ right ☐ left ☐ neither

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

When was the most recent concussion? _____

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

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

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

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

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

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

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

_____

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

SYMPTOM EVALUATION

3 How do you feel?

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

	none	mild		moderate		severe	
Headache	0	1	2	3	4	5	6
"Pressure in head"	0	1	2	3	4	5	6
Neck Pain	0	1	2	3	4	5	6
Nausea or vomiting	0	1	2	3	4	5	6
Dizziness	0	1	2	3	4	5	6
Blurred vision	0	1	2	3	4	5	6
Balance problems	0	1	2	3	4	5	6
Sensitivity to light	0	1	2	3	4	5	6
Sensitivity to noise	0	1	2	3	4	5	6
Feeling slowed down	0	1	2	3	4	5	6
Feeling like "in a fog"	0	1	2	3	4	5	6
"Don't feel right"	0	1	2	3	4	5	6
Difficulty concentrating	0	1	2	3	4	5	6
Difficulty remembering	0	1	2	3	4	5	6
Fatigue or low energy	0	1	2	3	4	5	6
Confusion	0	1	2	3	4	5	6
Drowsiness	0	1	2	3	4	5	6
Trouble falling asleep	0	1	2	3	4	5	6
More emotional	0	1	2	3	4	5	6
Irritability	0	1	2	3	4	5	6
Sadness	0	1	2	3	4	5	6
Nervous or Anxious	0	1	2	3	4	5	6

Total number of symptoms (Maximum possible 22) _____

Symptom severity score (Maximum possible 132) _____

Do the symptoms get worse with physical activity? ☐ Y ☐ N

Do the symptoms get worse with mental activity? ☐ Y ☐ N

☐ self rated ☐ self rated and clinician monitored

☐ clinician interview ☐ self rated with parent input

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

Please circle one response:

no different | very different | unsure | N/A

Scoring on the SCAT3 should not be used as a stand-alone method to diagnose concussion, measure recovery or make decisions about an athlete's readiness to return to competition after concussion. Since signs and symptoms may evolve over time, it is important to consider repeat evaluation in the acute assessment of concussion.

COGNITIVE & PHYSICAL EVALUATION

4 Cognitive assessment

Standardized Assessment of Concussion (SAC)[4]

Orientation (1 point for each correct answer)

What month is it?	0	1
What is the date today?	0	1
What is the day of the week?	0	1
What year is it?	0	1
What time is it right now? (within 1 hour)	0	1
Orientation score		of 5

Immediate memory

List	Trial 1		Trial 2		Trial 3		Alternative word list		
elbow	0	1	0	1	0	1	candle	baby	finger
apple	0	1	0	1	0	1	paper	monkey	penny
carpet	0	1	0	1	0	1	sugar	perfume	blanket
saddle	0	1	0	1	0	1	sandwich	sunset	lemon
bubble	0	1	0	1	0	1	wagon	iron	insect
Total									

Immediate memory score total of 15

Concentration: Digits Backward

List	Trial 1		Alternative digit list		
4-9-3	0	1	6-2-9	5-2-6	4-1-5
3-8-1-4	0	1	3-2-7-9	1-7-9-5	4-9-6-8
6-2-9-7-1	0	1	1-5-2-8-6	3-8-5-2-7	6-1-8-4-3
7-1-8-4-6-2	0	1	5-3-9-1-4-8	8-3-1-9-6-4	7-2-4-8-5-6
Total of 4					

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

Dec-Nov-Oct-Sept-Aug-Jul-Jun-May-Apr-Mar-Feb-Jan	0	1
Concentration score		of 5

5 Neck Examination:

Range of motion Tenderness Upper and lower limb sensation & strength

Findings: _____

6 Balance examination

Do one or both of the following tests.

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

Modified Balance Error Scoring System (BESS) testing[5]

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

Testing surface (hard floor, field, etc.) _____

Condition

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

And / Or

Tandem gait[6,7]

Time (best of 4 trials): _____ seconds

7 Coordination examination

Upper limb coordination

Which arm was tested: ☐ Left ☐ Right

Coordination score of 1

8 SAC Delayed Recall[4]

Delayed recall score of 5

INSTRUCTIONS

Words in *Italics* throughout the SCAT3 are the instructions given to the athlete by the tester.

Symptom Scale

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

To be completed by the athlete. In situations where the symptom scale is being completed after exercise, it should still be done in a resting state, at least 10 minutes post exercise.
For total number of symptoms, maximum possible is 22.
For Symptom severity score, add all scores in table, maximum possible is 22 x 6 = 132.

SAC[4]

Immediate Memory

"I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order."

Trials 2 & 3:

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

Complete all 3 trials regardless of score on trial 1 & 2. Read the words at a rate of one per second. **Score 1 pt. for each correct response.** Total score equals sum across all 3 trials. Do not inform the athlete that delayed recall will be tested.

Concentration
Digits backward

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

If correct, go to next string length. If incorrect, read trial 2. **One point possible for each string length**. Stop after incorrect on both trials. The digits should be read at the rate of one per second.

Months in reverse order

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

1 pt. for entire sequence correct

Delayed Recall

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

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

Score 1 pt. for each correct response

Balance Examination

Modified Balance Error Scoring System (BESS) testing[5]

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 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."

Balance testing – types of errors

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

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

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

Tandem Gait[6,7]

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 meter 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. A total of 4 trials are done and the best time is retained. Athletes should complete the test in 14 seconds. 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. In this case, the time is not recorded and the trial repeated, if appropriate.

Coordination Examination

Upper limb coordination
Finger-to-nose (FTN) task:

"I am going to test your coordination now. Please sit comfortably on the chair with your eyes open and your arm (either right or left) outstretched (shoulder flexed to 90 degrees and elbow and fingers extended), pointing in front of you. 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."

Scoring: 5 correct repetitions in < 4 seconds = 1
Note for testers: Athletes fail the test if they do not touch their nose, do not fully extend their elbow or do not perform five repetitions. **Failure should be scored as 0.**

References & Footnotes

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

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5. Guskiewicz KM. Assessment of postural stability following sport-related concussion. Current Sports Medicine Reports. 2003; 2: 24–30.

6. Schneiders, A.G., Sullivan, S.J., Gray, A., Hammond-Tooke, G. & McCrory, P. Normative values for 16-37 year old subjects for three clinical measures of motor performance used in the assessment of sports concussions. Journal of Science and Medicine in Sport. 2010; 13(2): 196–201.

7. Schneiders, A.G., Sullivan, S.J., Kvarnstrom. J.K., Olsson, M., Yden. T. & Marshall, S.W. The effect of footwear and sports-surface on dynamic neurological screening in sport-related concussion. Journal of Science and Medicine in Sport. 2010; 13(4): 382–386

ATHLETE INFORMATION

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

Signs to watch for

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

- Have a headache that gets worse
- Are very drowsy or can't be awakened
- Can't recognize people or places
- Have repeated vomiting
- Behave unusually or seem confused; are very irritable
- Have seizures (arms and legs jerk uncontrollably)
- Have weak or numb arms or legs
- Are unsteady on their feet; have slurred speech

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

Return to play

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

For example:

Rehabilitation stage	Functional exercise at each stage of rehabilitation	Objective of each stage
No activity	Physical and cognitive rest	Recovery
Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity, 70 % maximum predicted heart rate. No resistance training	Increase heart rate
Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities	Add movement
Non-contact training drills	Progression to more complex training drills, eg passing drills in football and ice hockey. May start progressive resistance training	Exercise, coordination, and cognitive load
Full contact practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
Return to play	Normal game play	

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

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

Medical clearance should be given before return to play.

Scoring Summary:

Test Domain	Score		
	Date: _____	Date: _____	Date: _____
Number of Symptoms of 22			
Symptom Severity Score of 132			
Orientation of 5			
Immediate Memory of 15			
Concentration of 5			
Delayed Recall of 5			
SAC Total			
BESS (total errors)			
Tandem Gait (seconds)			
Coordination of 1			

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

Other important points:

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

Clinic phone number

Patient's name _____

Date/time of injury _____

Date/time of medical review _____

Treatingphysician _____

Contact details or stamp

Child-SCAT3™

Sport Concussion Assessment Tool for children ages 5 to12 years

For use by medical professionals only

What is childSCAT3?[1]

The ChildSCAT3 is a standardized tool for evaluating injured children for concussion and can be used in children aged from 5 to 12 years. It supersedes the original SCAT and the SCAT2 published in 2005 and 2009, respectively[2]. For older persons, ages 13 years and over, please use the SCAT3. The ChildSCAT3 is designed for use by medical professionals. If you are not qualified, please use the Sport Concussion Recognition Tool[1].Preseason baseline testing with the ChildSCAT3 can be helpful for interpreting post-injury test scores.

Specific instructions for use of the ChildSCAT3 are provided on page 3. If you are not familiar with the ChildSCAT3, please read through these instructions carefully. This tool may be freely copied in its current form for distribution to individuals, teams, groups and organizations. Any revision and any reproduction in a digital form require approval by the Concussion in Sport Group.

NOTE: The diagnosis of a concussion is a clinical judgment, ideally made by a medical professional. The ChildSCAT3 should not be used solely to make, or exclude, the diagnosis of concussion in the absence of clinical judgement. An athlete may have a concussion even if their ChildSCAT3 is "normal".

What is a concussion?

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

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

SIDELINE ASSESSMENT

Indications for Emergency Management

NOTE: A hit to the head can sometimes be associated with a more severe brain injury. If the concussed child displays any of the following, then do not proceed with the ChildSCAT3; instead activate emergency procedures and urgent transportation to the nearest hospital:

- Glasgow Coma score less than 15
- Deteriorating mental status
- Potential spinal injury
- Progressive, worsening symptoms or new neurologic signs
- Persistent vomiting
- Evidence of skull fracture
- Post traumatic seizures
- Coagulopathy
- History of Neurosurgery (eg Shunt)
- Multiple injuries

1 Glasgow coma scale (GCS)

Best eye response (E)	
No eye opening	1
Eye opening in response to pain	2
Eye opening to speech	3
Eyes opening spontaneously	4
Best verbal response (V)	
No verbal response	1
Incomprehensible sounds	2
Inappropriate words	3
Confused	4
Oriented	5
Best motor response (M)	
No motor response	1
Extension to pain	2
Abnormal flexion to pain	3
Flexion/Withdrawal to pain	4
Localizes to pain	5
Obeys commands	6
Glasgow Coma score (E + V + M)	of 15

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

Potential signs of concussion?

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

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

2 Sideline Assessment – child-Maddocks Score[3]

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

Modified Maddocks questions (1 point for each correct answer)

Where are we at now?	0	1
Is it before or after lunch?	0	1
What did you have last lesson/class?	0	1
What is your teacher's name?	0	1
child-Maddocks score		of 4

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

Any child with a suspected concussion should be REMOVED FROM PLAY, medically assessed and monitored for deterioration (i.e., should not be left alone). No child diagnosed with concussion should be returned to sports participation on the day of Injury.

BACKGROUND

Name: _____ Date/Time of Injury: _____

Examiner: _____ Date of Assessment: _____

Sport/team/school: _____

Age: _____ Gender: M F

Current school year/grade: _____

Dominant hand: right left neither

Mechanism of Injury ("tell me what happened"?): _____

For Parent/carer to complete:

How many concussions has the child had in the past? _____

When was the most recent concussion? _____

How long was the recovery from the most recent concussion? _____

Has the child ever been hospitalized or had medical imaging done (CT or MRI) for a head injury?	Y N
Has the child ever been diagnosed with headaches or migraines?	Y N
Does the child have a learning disability, dyslexia, ADD/ADHD, seizure disorder?	Y N
Has the child ever been diagnosed with depression, anxiety or other psychiatric disorder?	Y N
Has anyone in the family ever been diagnosed with any of these problems?	Y N
Is the child on any medications? If yes, please list:	Y N

SYMPTOM EVALUATION

3 Child report

Name: _____

	never	rarely	sometimes	often
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
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
I get tired a lot	0	1	2	3
I get tired easily	0	1	2	3

Total number of symptoms (Maximum possible 20) _____

Symptom severity score (Maximum possible 20 x 3 = 60) _____

☐ self rated ☐ clinician interview ☐ self rated and clinician monitored

4 Parent report

The child	never	rarely	sometimes	often
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 completeing tasks	0	1	2	3
has poor problem solving skills	0	1	2	3
has problems learning	0	1	2	3
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
gets tired a lot	0	1	2	3
gets tired easily	0	1	2	3

Total number of symptoms (Maximum possible 20) _____

Symptom severity score (Maximum possible 20 x 3 = 60) _____

Do the symptoms get worse with physical activity? ☐ Y ☐ N

Do the symptoms get worse with mental activity? ☐ Y ☐ N

☐ parent self rated ☐ clinician interview ☐ parent self rated and clinician monitored

Overall rating for parent/teacher/coach/carer to answer.
How different is the child acting compared to his/her usual self?

Please circle one response:

no different	very different	unsure	N/A

Name of person completing Parent-report: _____

Relationship to child of person completing Parent-report: _____

Scoring on the ChildSCAT3 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.

COGNITIVE & PHYSICAL EVALUATION

5 Cognitive assessment

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

Orientation (1 point for each correct answer)

What month is it?	0	1
What is the date today?	0	1
What is the day of the week?	0	1
What year is it?	0	1
Orientation score		of 4

Immediate memory

List	Trial 1		Trial 2		Trial 3		Alternative word list		
elbow	0	1	0	1	0	1	candle	baby	finger
apple	0	1	0	1	0	1	paper	monkey	penny
carpet	0	1	0	1	0	1	sugar	perfume	blanket
saddle	0	1	0	1	0	1	sandwich	sunset	lemon
bubble	0	1	0	1	0	1	wagon	iron	insect
Total									

Immediate memory score total _____ of 15

Concentration: Digits Backward

List	Trial 1		Alternative digit list		
6-2	0	1	5-2	4-1	4-9
4-9-3	0	1	6-2-9	5-2-6	4-1-5
3-8-1-4	0	1	3-2-7-9	1-7-9-5	4-9-6-8
6-2-9-7-1	0	1	1-5-2-8-6	3-8-5-2-7	6-1-8-4-3
7-1-8-4-6-2	0	1	5-3-9-1-4-8	8-3-1-9-6-4	7-2-4-8-5-6
Total of 5					

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

Sunday-Saturday-Friday-Thursday-Wednesday-Tuesday-Monday	0	1
Concentration score		of 6

6 Neck Examination:

Range of motion Tenderness Upper and lower limb sensation & strength

Findings: _____

7 Balance examination

Do one or both of the following tests.

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

Modified Balance Error Scoring System (BESS) testing[5]

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

Testing surface (hard floor, field, etc.) _____

Condition

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

Tandem gait[6,7]

Time taken to complete (best of 4 trials): _____ seconds

If child attempted, but unable to complete tandem gait, mark here ☐

8 Coordination examination

Upper limb coordination

Which arm was tested: ☐ Left ☐ Right

Coordination score _____ of 1

9 SAC Delayed Recall[4]

Delayed recall score _____ of 5

Since signs and symptoms may evolve over time, it is important to consider repeat evaluation in the acute assessment of concussion.

INSTRUCTIONS

Words in *Italics* throughout the ChildSCAT3 are the instructions given to the child by the tester.

Sideline Assessment – child-Maddocks Score

To be completed on the sideline/in the playground, immediately following concussion. There is no requirement to repeat these questions at follow-up.

Symptom Scale[8]

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.

On the day of injury

- the child is to complete the Child Report, according to how he/she feels now.

On all subsequent days

- 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.

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

Orientation

Ask each question on the score sheet. A correct answer for **each question scores 1 point.** If the child does not understand the question, gives an incorrect answer, or no answer, then the score for that question is 0 points.

Immediate memory

"I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order."

Trials 2 & 3:

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

Complete all 3 trials regardless of score on trial 1 & 2. Read the words at a rate of one per second. **Score 1 pt. for each correct response.** Total score equals sum across all 3 trials. Do not inform the child that delayed recall will be tested.

Concentration

Digits Backward:

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

If correct, go to next string length. If incorrect, read trial 2. **One point possible for each string length.** Stop after incorrect on both trials. The digits should be read at the rate of one per second.

Days 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 completion of the Balance and Coordination Examination.

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

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

Balance examination

These instructions are to be read by the person administering the childSCAT3, and each balance task **should be demonstrated to the child**. The child should then be asked to copy what the examiner demonstrated.

Modified Balance Error Scoring System (BESS) testing[5]

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 pant legs above ankle (if applicable), and remove any ankle taping (if applicable). This test will consist of two different parts."

(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 the child 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.

Balance testing – types of errors - Parts (a) and (b)

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

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 two 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.

OPTION: For further assessment, the same 2 stances can be performed on a surface of medium density foam (e.g., approximately 50cm x 40cm x 6cm).

Tandem Gait[6,7]

Use a clock (with a second hand) or stopwatch to measure the time taken to complete this task. 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 meter 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. **A total of 4 trials are done and the best time is retained**. 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. In this case, the time is not recorded and the trial repeated, if appropriate.*

Explain to the child that you will time how long it takes them to walk to the end of the line and back.

Coordination examination

Upper limb coordination

Finger-to-nose (FTN) task:

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. **Failure should be scored as 0.**

References & Footnotes

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

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8. Ayr, L.K., Yeates, K.O., Taylor, H.G., & Brown, M. Dimensions of post-concussive symptoms in children with mild traumatic brain injuries. Journal of the International Neuropsychological Society. 2009; 15:19 – 30.

CHILD ATHLETE INFORMATION

Any child suspected of having a concussion should be removed from play, and then seek medical evaluation. The child must NOT return to play or sport on the same day as the suspected concussion.

Signs to watch for

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

- New Headache, or Headache gets worse
- Persistent or increasing neck pain
- Becomes drowsy or can't be woken up
- Can not recognise people or places
- Has Nausea or Vomiting
- Behaves unusually, seems 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
- Has slurred speech
- Has difficulty understanding speech or directions

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

Return to school

Concussion may impact on the child's cognitive ability to learn at school. This must be considered, and medical clearance is required before the child may return to school. **It is reasonable for a child to miss a day or two of school after concussion, but extended absence is uncommon.** In some children, a graduated return to school program will need to be developed for the child. The child will progress through the return to school program provided that there is no worsening of symptoms. If any particular activity worsens symptoms, the child will abstain from that activity until it no longer causes symptom worsening. Use of computers and internet should follow a similar graduated program, provided that it does not worsen symptoms. This program should include communication between the parents, teachers, and health professionals and will vary from child to child. The return to school program should consider:

- Extra time to complete assignments/tests
- Quiet room to complete assignments/tests
- Avoidance of noisy areas such as cafeterias, assembly halls, sporting events, music class, shop class, etc
- Frequent breaks during class, homework, tests
- No more than one exam/day
- Shorter assignments
- Repetition/memory cues
- Use of peer helper/tutor
- Reassurance from teachers that student will be supported through recovery through accommodations, workload reduction, alternate forms of testing
- Later start times, half days, only certain classes

The child is not to return to play or sport until he/she has successfully returned to school/learning, without worsening of symptoms. Medical clearance should be given before return to play.

If there are any doubts, management should be referred to a qualified health practitioner, expert in the management of concussion in children.

Return to sport

There should be no return to play until the child has successfully returned to school/learning, without worsening of symptoms.
Children must not be returned to play the same day of injury.
When returning children to play, they should **medically cleared and then follow a stepwise supervised program,** with stages of progression.

For example:

Rehabilitation stage	Functional exercise at each stage of rehabilitation	Objective of each stage
No activity	Physical and cognitive rest	Recovery
Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity, 70 % maximum predicted heart rate. No resistance training	Increase heart rate
Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities	Add movement
Non-contact training drills	Progression to more complex training drills, eg passing drills in football and ice hockey. May start progressive resistance training	Exercise, coordination, and cognitive load
Full contact practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
Return to play	Normal game play	

There should be approximately 24 hours (or longer) for each stage and the child should drop back to the previous asymptomatic level if any post-concussive symptoms recur. Resistance training should only be added in the later stages.
If the child is symptomatic for more than 10 days, then review by a health practitioner, expert in the management of concussion, is recommended.
Medical clearance should be given before return to play.

Notes:

CONCUSSION INJURY ADVICE FOR THE CHILD AND PARENTS / CARERS

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

This child 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. It is expected that recovery will be rapid, but the child will need monitoring 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 transport the child to hospital immediately.

Other important points:

- Following concussion, the child should rest for at least 24 hours.
- The child should avoid any computer, internet or electronic gaming activity if these activities make symptoms worse.
- The child should not be given any medications, including pain killers, unless prescribed by a medical practitioner.
- The child must not return to school until medically cleared.
- The child must not return to sport or play until medically cleared.

Clinic phone number

Patient's name

Date/time of injury

Date/time of medical review

Treating physician

Contact details or stamp

Pocket CONCUSSION RECOGNITION TOOL™

To help identify concussion in children, youth and adults

RECOGNIZE & REMOVE

Concussion should be suspected if **one or more** of the following visible clues, signs, symptoms or errors in memory questions are present.

1. Visible clues of suspected concussion

Any one or more of the following visual clues can indicate a possible concussion:

Loss of consciousness or responsiveness
Lying motionless on ground/Slow to get up
Unsteady on feet / Balance problems or falling over/Incoordination
Grabbing/Clutching of head
Dazed, blank or vacant look
Confused/Not aware of plays or events

2. Signs and symptoms of suspected concussion

Presence of any one or more of the following signs & symptoms may suggest a concussion:

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

3. Memory function

Failure to answer any of these questions correctly may suggest a concussion.

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

Any athlete with a suspected concussion should be IMMEDIATELY REMOVED FROM PLAY, and should not be returned to activity until they are assessed medically. Athletes with a suspected concussion should not be left alone and should not drive a motor vehicle.

It is recommended that, in all cases of suspected concussion, the player is referred to a medical professional for diagnosis and guidance as well as return to play decisions, even if the symptoms resolve.

RED FLAGS

If ANY of the following are reported then the player should be safely and immediately removed from the field. If no qualified medical professional is available, consider transporting by ambulance for urgent medical assessment:

- Athlete complains of neck pain
- Increasing confusion or irritability
- Repeated vomiting
- Seizure or convulsion
- Weakness or tingling/burning in arms or legs
- Deteriorating conscious state
- Severe or increasing headache
- Unusual behaviour change
- Double vision

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 so do
- Do not remove helmet (if present) unless trained to do so.

from McCrory et. al, Consensus Statement on Concussion in Sport. Br J Sports Med 47 (5), 2013

THE LOCATION AND ADDRESSES OF NEUROSURGICAL UNITS IN ENGLAND AND WALES PROVIDING NEUROSURGICAL SERVICES AND NEUROSURGICAL CONSULTATIONS IN CASES OF HEAD INJURY

Department of Neurosurgery
Newcastle General Hospital, Newcastle upon Tyne

Department of Neurosurgery
Middlesbrough General Hospital. Middlesbrough

Department of Neurosurgery
Leeds General Infirmary, Leeds LS1 3EX

Department of Neurosurgery
Hull Royal Infirmary, Hull

Department of Neurosurgery
Preston Royal Infirmary, Preston

Department of Neurosurgery
North Manchester General Hospital, Crumpsall, Manchester

Department of Neurosurgery
Hope Hospital, Salford, Lancs

Department of Neurosurgery
Manchester Royal Infirmary, Oxford Road, Manchester

Department of Neurosurgery
Walton Hospital, Liverpool

Department of Neurosurgery
Royal Hallamshire Hospital, Sheffield

Department of Neurosurgery
Queen's Medical Centre, Nottingham

Department of Neurosurgery
North Staffordshire Royal Infirmary, Stoke on Trent

Department of Neurosurgery
Queen Elizabeth Hospital, Birmingham

Department of Neurosurgery
Midland Centre for Neurosurgery, Smethwick, West Midlands

Department of Neurosurgery
Walsgrave Hospital, Coventry

Department of Neurosurgery
The Radcliffe Infirmary, Oxford

Department of Neurosurgery
Frenchay Hospital, Bristol

Department of Neurosurgery
Heath University Hospital, Cardiff

Department of Neurosurgery
Morriston Hospital, Swansea

Department of Neurosurgery
Derriford Hospital, Derriford Road, Plymouth

Department of Neurosurgery
Southampton General Hospital, Southampton

Department of Neurosurgery
Addenbrooke's Hospital, Cambridge

Department of Neurosurgery
St Bartholomew's Hospital, London

Department of Neurosurgery
Atkinson Morley Hospital, Wimbledon, London

Department of Neurosurgery
Queen's Square, London

Department of Neurosurgery
Brook General Hospital, Shooters Hill, London SF18 4LW

Department of Neurosurgery
Oldchurch Hospital, Romford, Essex

Department of Neurosurgery
Charing Cross Hospital, Fulham Palace Road, London W6 SRF

Department of Neurosurgery
Hurstwood Park Neurological Centre, Haywards Heath, West Sussex RHI7 75T

APPENDED ALSO IS A LIST OF NEUROLOGICAL SURGEONS WITH A SPECIAL INTEREST IN HEAD INJURY WHO MAY BE AVAILABLE FOR A SECOND OPINION OR SPECIAL CONSULTATION

Mr R. Myles Gibson
35 Park Lane, Leeds, West Yorkshire LSS 2EY
Telephone: 01532 661998

Mr P. T. van Hille
Leeds General Infirmary, Great George Street, Leeds, West Yorkshire LSl 3EX
Telephone: 01532 432799

Professor Edward Hitebeock
Midland Centre for Neurosurgery and Neurology
Holly Lane, Smethwick, Warley, West Midlands B67 7JX
Telephone: 0121 558 3232

Mr Brian Cummings
Frenchay Hospital, Bristol BSI6 ILE
Telephone: 01272 565656

Mr Peter Richards
Charing Cross Hospital, Fulham Palace Road, London W6 8RF
Telephone: 0171 748 2040

Mr John Firth
Queen's Medical Centre, Nottingham

Mr Peter Crawford
Newcastle General Hospital Westgate Road, Newcastle upon Tyne NE4 6BE
Telephone: 0191 273 8811