SCOAT

Sport Concussion Office Assessment Tool

Sports Concussion South Africa

Name: _____

Sport: _____

Team: _____

Position: _____

Age: [ ] Gender: M [ ] F [ ]

Years of education completed [ ]

Date & Time of Injury: _____

Mechanism of Injury: _____

Removed from play:
Immediately [ ]

After [ ] minutes

• Completed game for [ ] minutes after injury

LOC   Y [ ]   N [ ]   Duration [ ] (minutes)

Amnesia – retrograde [ ] (minutes)

– anterograde [ ] (minutes)

Use of protective equipment

Headgear   Y [ ]   N [ ]

Mouthguard   Y [ ]   N [ ]

Dentist fitted [ ]   Off-the-shelf [ ]

RED FLAGS

Immediate admission, CT/MRI Brain scan & neurosurgical consultation if ANY of the following are present

1. Headaches that worsen [ ]
2. Severe neck pain [ ]
3. Looks very drowsy [ ]
4. Can't recognise people or places [ ]
5. Deteriorating consciousness [ ]
6. Increasing confusion or irritability [ ]
7. Repeated vomiting [ ]
8. Slurred speech [ ]
9. Focal neurological signs [ ]
10. Weakness / numbness in limbs [ ]
11. Unusual behaviour change [ ]
12. Seizures [ ]

Prescribed Management & Compliance Record
(e.g. physical exertion, school attendance, cognitive rest etc.)

Post-match   (Date   ): _____
_____
_____

Visit 1   (Date   ): _____
_____
_____

Visit 2   (Date   ): _____
_____
_____

Visit 3   (Date   ): _____
_____
_____
_____

Potential Modifying Factors for Protracted Recovery

Previous concussions		Co-morbid physical conditions	
Date(s)	Symptom duration	Headache	
		Migraine	
		• Personal	
		• Family	
		Epilepsy	
		Thyroid dysfunction	
Is less force required to cause recent concussions?		Encephalitis	
Yes [ ] No [ ]		Meningitis	
Developmental Hx		**Co-morbid psych conditions**	
Learning disability		Anxiety	
Attention deficit / Hyperactivity		Depression	
Other (explain)		Sleep disorder	

Medications
e.g. anti-depressants, anti-epileptic, migraine, psychostimulants, thyroid etc.

_____
_____
_____
_____

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Symptom Evaluation

Score your feelings

- On the day of injury (colour _____)
- Consult 1 (colour_____)
- Consult 2 (colour_____)
- Consult 3 (colour_____)

	None	Mild		Moderate		Severe	
	0	1	2	3	4	5	6
Physical							
Headache							
"Pressure In head"							
Nausea & Vomiting							
Dizziness							
Blurred Vision							
Photo-phobia							
Phono-phobia							
Poor balance							
Feeling "slow"							
"Feeling like in a fog"							
Fatigue							
Drowsiness							
Cognitive							
Poor concentration							
Poor memory							
Confusion							
Emotional							
Sad or depressed							
More emotional							
Irritable							
Nervous / Anxious							
Sleep							
More							
Less							
Difficulty falling asleep							

Do symptoms worsen with physical activity?	Yes		No	
Do symptoms worsen with mental activity?	Yes		No	

If you know this patient, how is the athlete behaving compared to his / her usual self?

No different	
Somewhat different	
Very different	
Unsure	

In what way?_____

Cognitive Assessment

Standardized Assessment of Concussion (SAC)[2]

Orientation (1 point for each incorrect 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? (within 1 hour)	0	1
Orientation score		**of 5**

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

List	Trial 1		Trial 2		Trial 3		Alternative Word Lists		
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			**of 15**						

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 error. Stop after incorrect on both trials. The digits should be read at the rate of one per second.

Digit lists			Alternative digit lists		
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

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 any error or delay > 3 secs

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

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[2] McCrea M, Randolph C, Kelly J. Standerdized Assessment of Concussion: Manual for administration, scoring and interpretation. Waukesha, Wisconsin, USA

Balance examination[3]

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

Balance 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 an 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.

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

Condition Total errors

Condition	
Double Leg Stance (feet together)	of 10
Single leg stance (non-dominant foot)	of 10
Tandem stance (non-dominant foot at back)	of 10
Balance examination score (Total no. of errors)	**of 30**

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

Cognitive assessment - Delayed recall

Standardized Assessment of Concussion (SAC)

"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 forgotten.

List	Score	Alternative Word Lists		
elbow	0 1	candle	baby	finger
apple	0 1	paper	monkey	penny
carpet	0 1	sugar	perfume	blanket
saddle	0 1	sandwich	sunset	lemon
bubble	0 1	wagon	iron	insect
Total				
Delayed recall score				**of 5**

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). 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."

Which arm was tested: ☐ Left   ☐ Right

Scoring: **5 correct repetitions in < 4 seconds to pass**

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 1.**

Coordination score	**of 1**

Examination
score 1 point for every abnormal finding

General

BP __/__mmHg		Normal	Abnormal
Pulse ____/min		Normal	Abnormal

Associated injuries

Neck		Yes	No
Maxillofacial		Yes	No
Musculoskeletal		Yes	No

Neurological

Pupils		Normal	Abnormal
Cranial nn		Normal	Abnormal
Sensory		Normal	Abnormal
Motor		Normal	Abnormal
Details			
Examination score	of 7		

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Computerised Cognitive Screening

Test used

Player code

Baseline done ☐ No ☐ Yes   Date

Parameter measured	Result

Neuroimaging

Investigation ☐ CT ☐ MRI

Indication

Result

Recommended management

Medication

Physiotherapy

Exercise rest

Exercise prescription

Cognitive rest

Referral:

• Formal neuropsychological assessment ☐

Details

• Neurologist ☐

Details

• Neurosurgeon ☐

Details

Given to patient :

• Observation sheet ☐

• Medical certificate ☐

• RTP protocol ☐

This scoring system has greater clinical significance during serial assessments where it can be used to document either a decline or an improvement in neurological functioning.

Scoring data from the SCOAT, SCAT2 or SAC 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.

Date tested				
Days post-injury				
Test domain	**Score**			
Symptom score / 132				
Physical signs score / 7				
Balance examination score / 30				
Coordination score / 1				
Subtotal / 170				
Orientation score / 5				
Immediate memory score / 15				
Concentration score / 5				
Delayed recall score / 5				
SAC subtotal / 30				
SCOAT total / 200				

Final clinical checklist before RTP:

SCOAT score 0
i.e. asymptomatic, normal exam ☐

Computerised cognitive screen returned
to baseline or age-equivalent norms ☐

Exercise stress test completed
 asymptomatically ☐

Modifying factors considered ☐

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