Critical Response:
Concussion Recognition
& Emergency Protocols
for Life-Threatening On-Field Scenarios

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- ⚠️ **Disclaimer**
- The purpose of this presentation is to provide an **introductory overview** of concussion diagnosis, evaluation, and management. It is intended for **educational purposes only** and **does not constitute formal training or certification** in concussion care.
- **This content does not qualify attendees to independently diagnose, manage, or clear athletes with concussions.** Clinical decisions should always be made **within the provider's scope of practice**, legal authority, and level of training.

CONCUSSION

The American Chiropractic Board of Sports Physicians (ACBSP) defines a sports related concussion (SRC) as "**a traumatic brain injury** caused by a direct blow to the head, neck or body resulting in an impulsive force being transmitted to the brain that occurs in sports and exercise-related activities. This initiates a neurotransmitter and metabolic cascade, with possible axonal injury blood flow change and inflammation **affecting brain**. Symptoms and signs may present immediately, or evolve over minutes or hours, and commonly resolve within days but may be prolonged." [1]

Important details regarding concussion include:

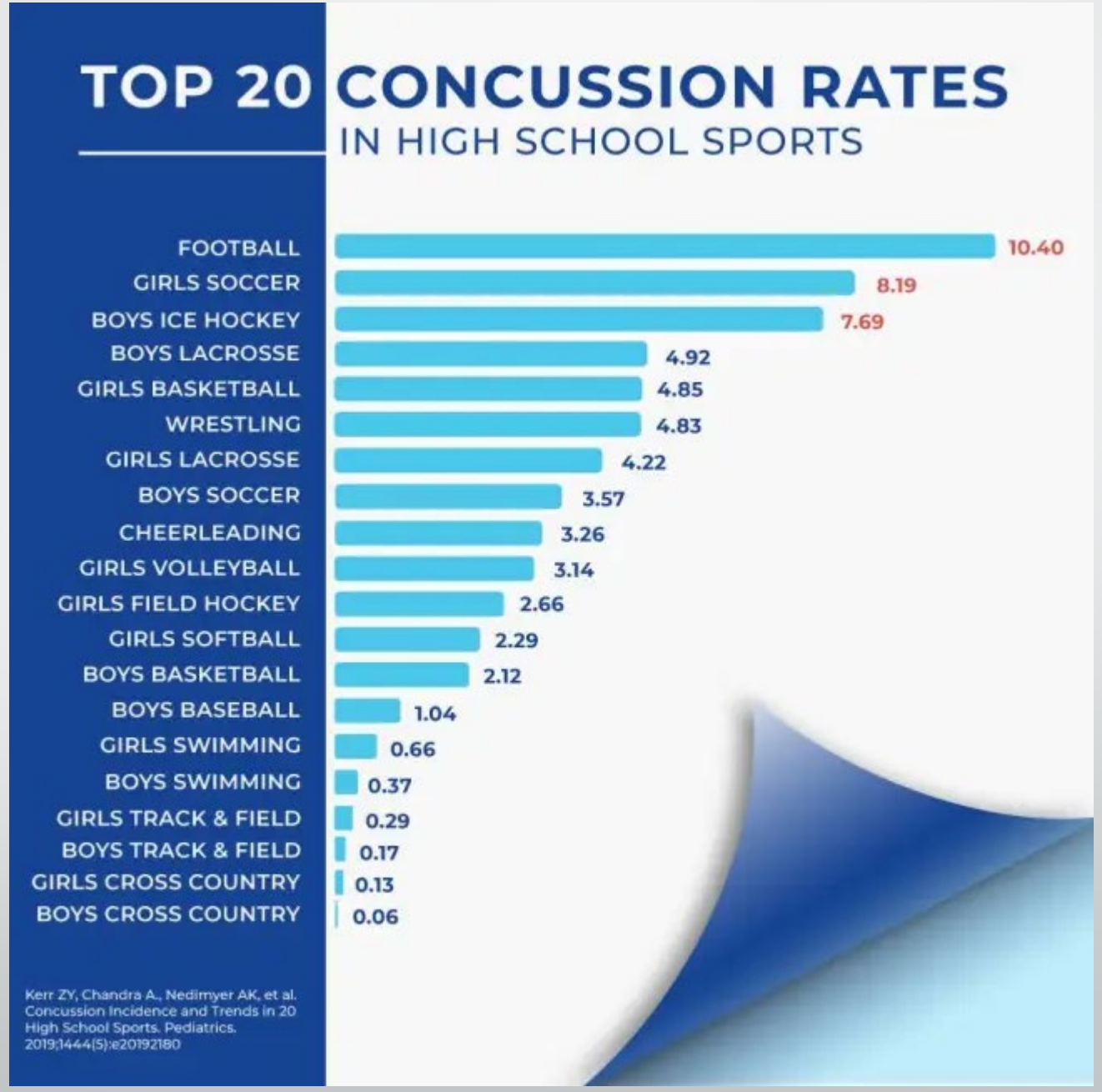
- Concussion is a mild traumatic brain injury (mTBI)
- May present immediately, or within minutes or hours
- Concussion involves a wide range of symptoms, and any one or combination of symptoms may occur, it does NOT need to include a loss of consciousness
- Symptoms cannot be explained by drug, alcohol, medication, other injuries, psychological factors or other medical conditions
- Standard imaging is NEGATIVE with a concussed individual
- 80% of concussions resolve with no supportive treatment within 10 days in adults
- Most importantly, a concussed athlete is always removed from play the day of the injury, with no exceptions.

Found in the British Journal of Sports Medicine

June 2023 Volume 57, Issue 11

According to the CDC, 1.6 to 3.8 million SRC each year

10% of all contact sports athletes sustain concussions yearly



Under-reporting of Concussion in Sports

2. MVA 2003 while in Chiro School

3. Kicked in head playing BVB 2014

4. 2021 Street Hockey

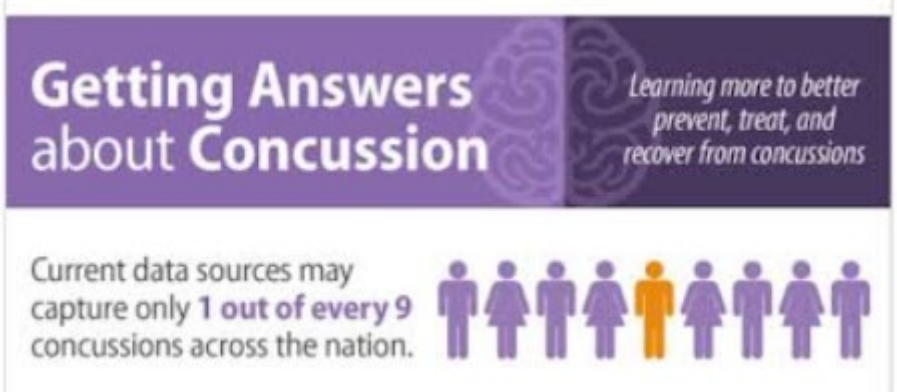
5. Knee to head BVB 2023

6. Grazed by ball 2024

7. Hit by falling object 2025

- 7 unreported concussions in 1 individual
- 4 attempted to report medically and went undiagnosed

- THESE PEOPLE WALK INTO YOUR OFFICE!!!

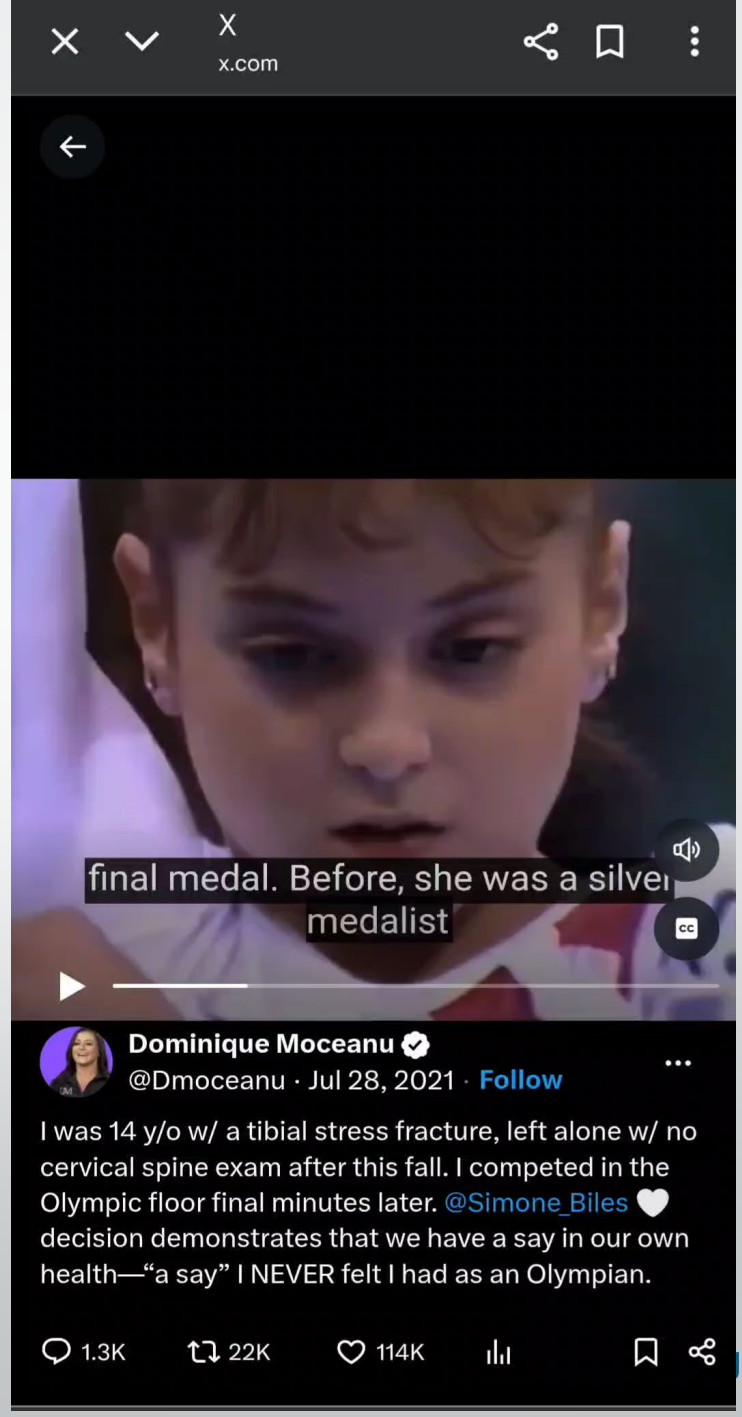


The CDC suggests approximately 50% of SRC are unreported

- 55% not reported by HS athletes
- Survey of HS football: 70% play with sx
- 40% Coaches didn't know
- 52% admit delayed sx report in Div. 1

25 years later…

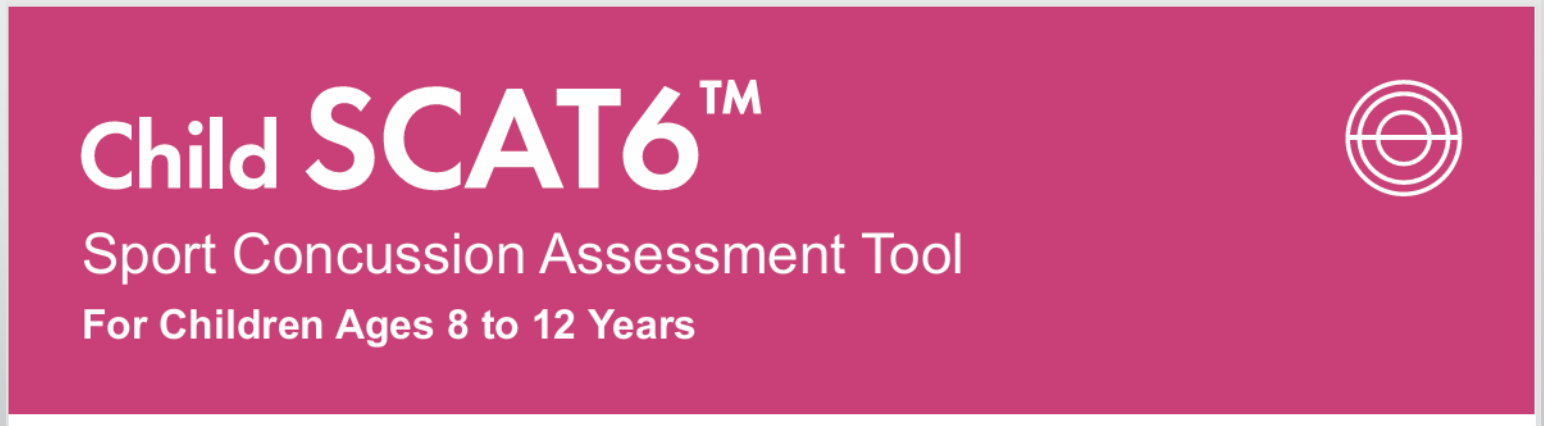
We can do better for our patients!



IDENTIFYING AND MANAGING CONCUSSION ON THE SIDELINE

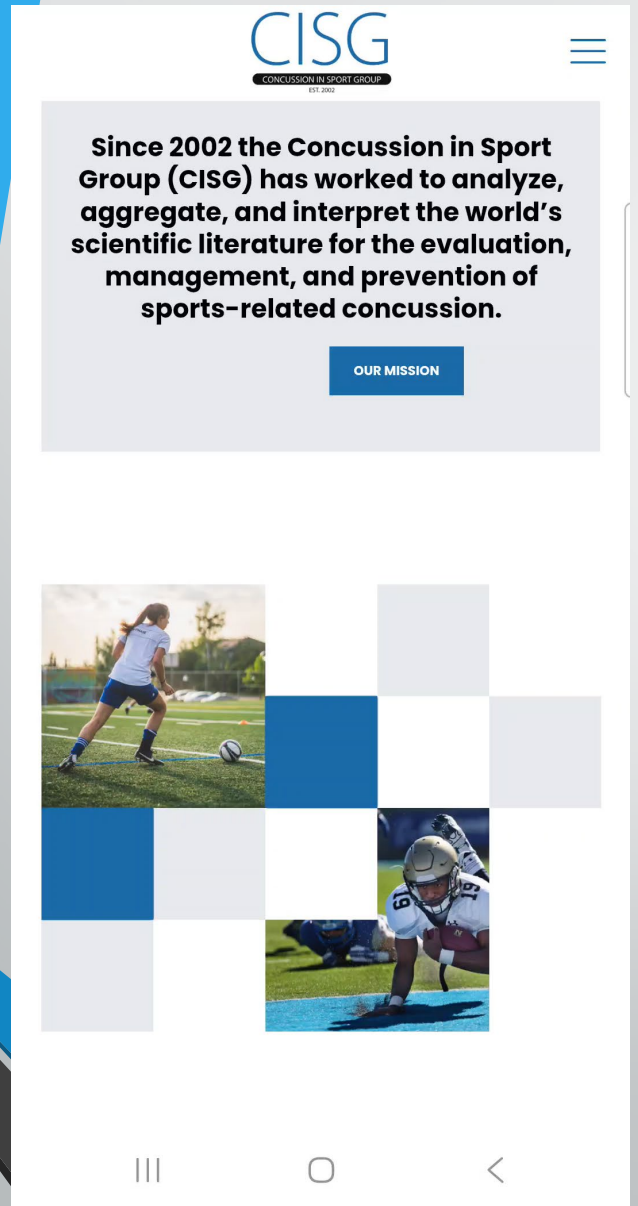
Evaluates:

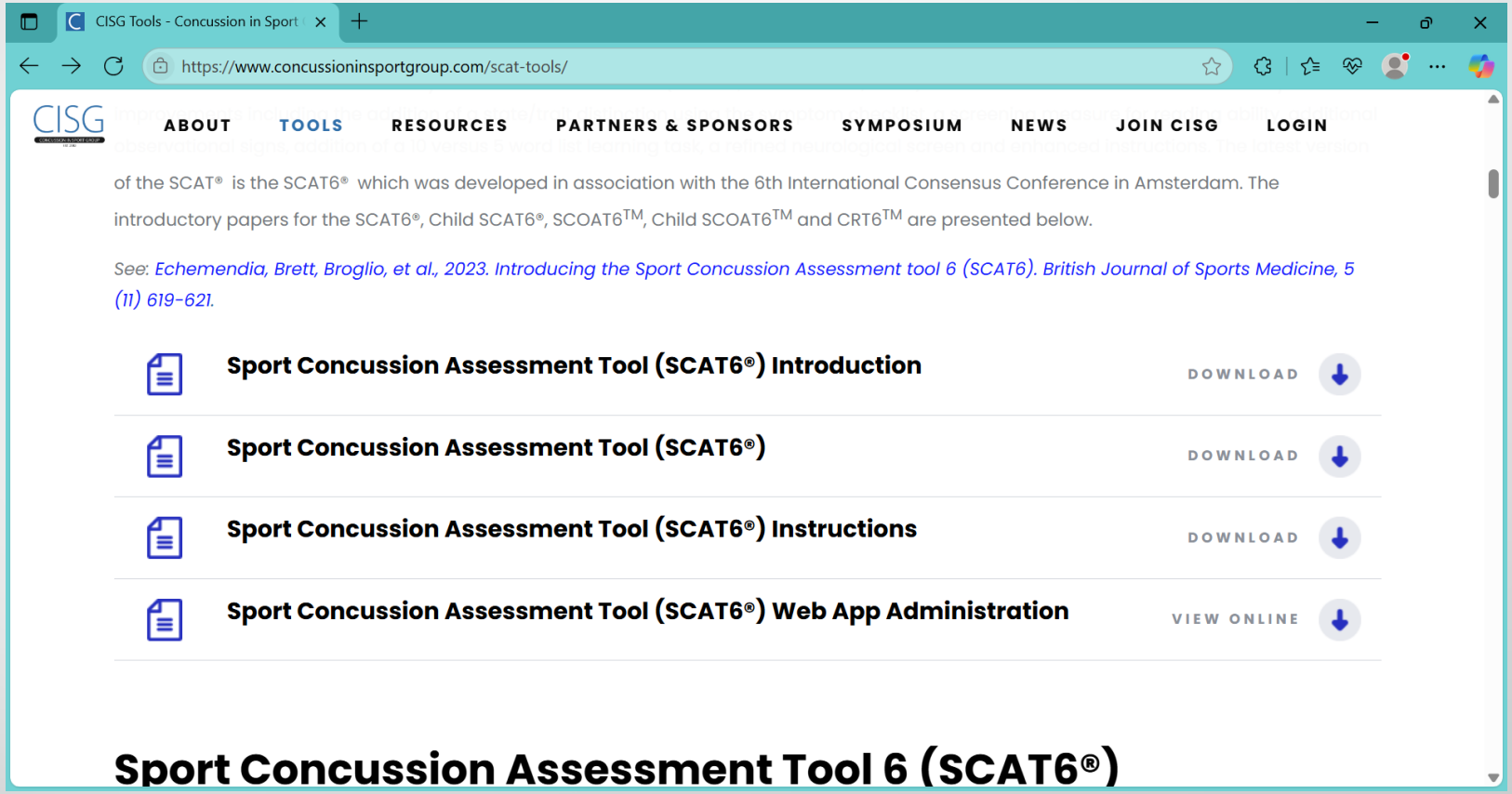
1. Orientation
2. Concentration
3. Memory
4. Balance



Web based SCAT6 is available at

www.concussioninsportgroup.com





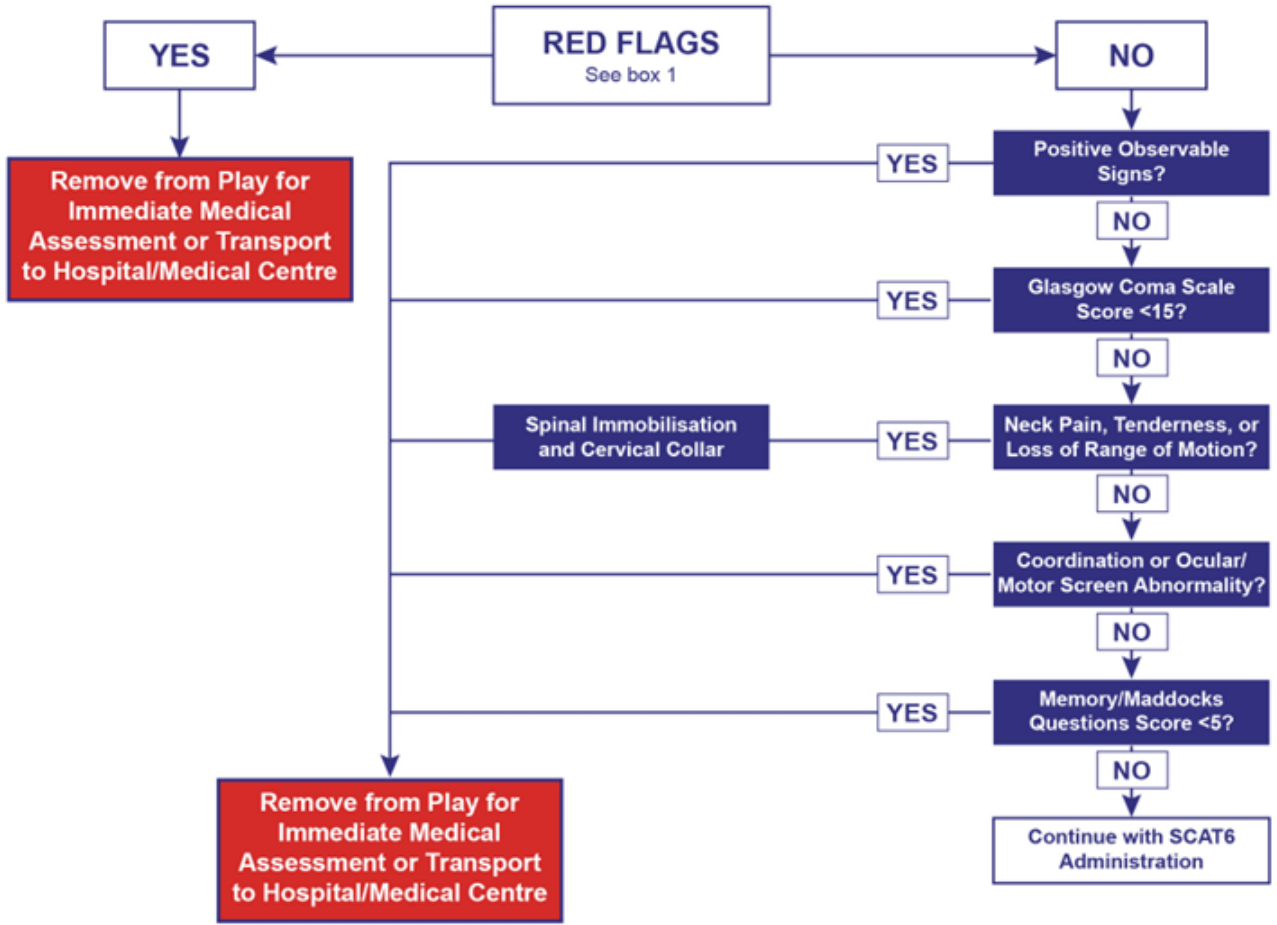
SCAT 6 begins with steps for ON FIELD assessment

Immediate Assessment/Neuro Screen (Not Required at Baseline)

The following elements should be used in the evaluation of all athletes who are suspected of having a concussion prior to proceeding to the cognitive assessment, and ideally should be completed "on-field" after the first aid/emergency care priorities are completed.

If any of the observable signs of concussion are noted after a direct or indirect blow to the head, the athlete should be immediately and safely removed from participation and evaluated by an HCP.

The Glasgow Coma Scale is important as a standard measure for all patients and can be repeated over time to monitor deterioration of consciousness. The Maddocks questions and cervical spine exam are also critical steps of the immediate assessment.



Box 1: Red Flags

- Neck pain or tenderness
- Seizure or convulsion
- Double vision
- Loss of consciousness
- Weakness or tingling/burning in more than 1 arm or in the legs
- Deteriorating conscious state
- Vomiting
- Severe or increasing headache
- Increasingly restless, agitated or combative
- GCS <15
- Visible deformity of the skull

ON FIELD continued…

Step 1: Observable Signs

Witnessed ☐ Observed on Video ☐

Lying motionless on playing surface	Y	N
Falling unprotected to the surface	Y	N
Balance/gait difficulties, motor incoordination, ataxia: stumbling, slow/ laboured movements	Y	N
Disorientation or confusion, staring or limited responsiveness, or an inability to respond appropriately to questions	Y	N
Blank or vacant look	Y	N
Facial injury after head trauma	Y	N
Impact seizure	Y	N
High-risk mechanism of injury (sport-dependent)	Y	N

Step 2: Glasgow Coma Scale

Typically, GCS is assessed once. Additional scoring columns are provided for monitoring over time, if needed.

Time of Assessment:

Date of Assessment:

Best Eye Response (E)			
No eye opening	1	1	1
Eye opening 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 (V)			
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
Localized to pain	5	5	5
Obeys commands	6	6	6

Glasgow Coma Score (E + V + M)			

Step 3: Cervical Spine Assessment

In a patient who is not lucid or fully conscious, a cervical spine injury should be assumed and spinal precautions taken.

Does the athlete report neck pain at rest?	Y	N
Is there tenderness to palpation?	Y	N
If NO neck pain and NO tenderness, does the athlete have a full range of ACTIVE pain free movement?	Y	N
Are limb strength and sensation normal?	Y	N

Step 4: Coordination & Ocular/Motor Screen

Coordination: Is finger-to-nose normal for both hands with eyes open and closed?	Y	N
Ocular/Motor: Without moving their head or neck, can the patient look side-to-side and up-and-down without double vision?	Y	N
Are observed extraocular eye movements normal? If not, describe:	Y	N

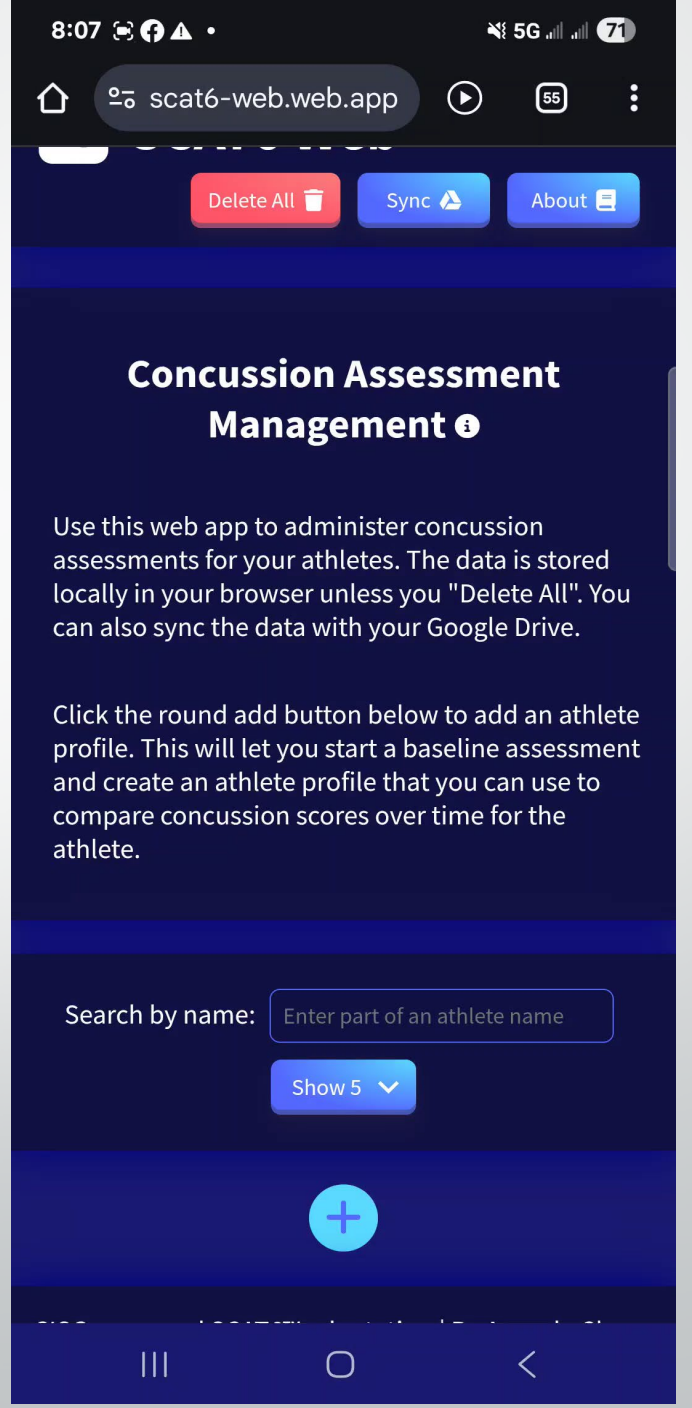
Step 5: Memory Assessment Maddocks Questions[1]

Say *"I am going to ask you a few questions, please listen carefully and give your best effort. First, tell me what happened?"*

Modified Maddocks questions (Modified appropriately for each sport; 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		/5

Note: Appropriate sport-specific questions may be substituted



Purpose of On-Field assessment:
-to ensure it is safe to move the athlete off of the field of play
-initial phase of ruling out a brain bleed or severe C-spine injury

+ FINDINGS TO ONFIELD ASSESSMENT REQUIRES IMMEDIATE REMOVAL AND POSSIBLE EMS TRANSPORT

SIDELINE EVALUATION

Athlete Name: | ID Number:

Date of Birth: | Date of Examination: | Date of Injury:

Time of Injury: | Sex: Male ☐ Female ☐ Prefer Not To Say ☐ Other

Dominant Hand: Left ☐ Right ☐ Ambidextrous ☐ | Sport/Team/School:

Current Year in School (if applicable): | Years of Education Completed (Total):

First Language: | Preferred Language:

Examiner:

Concussion History

How many diagnosed concussions has the athlete had in the past?:

When was the most recent concussion?:

Primary Symptoms:

How long was the recovery (time to being cleared to play) from the most recent concussion?: (Days)

Step 1: Athlete Background

Has the athlete ever been:

Hospitalised for head injury? (If yes, describe below)	Y N	Diagnosed with attention deficit hyperactivity disorder (ADHD)?	Y N
Diagnosed/treated for headache disorder or migraine?	Y N	Diagnosed with depression, anxiety, or other psychological disorder?	Y N
Diagnosed with a learning disability/dyslexia?	Y N		

Notes:

Current medications? If yes, please list:

Step 2: Symptom Evaluation

Baseline: ☐ **Suspected/Post-injury:** ☐ **Time elapsed since suspected injury:** _____ mins/hours/days

The athlete will complete the symptom scale (below) after you provide instructions. Please note that the instructions are different for baseline versus suspected/post-injury evaluations.

Baseline: Say *"Please rate your symptoms below based on how you typically feel with "1" representing a very mild symptom and "6" representing a severe symptom."*

Suspected/Post-injury: Say *"Please rate your symptoms below based on how you feel now with "1" representing a very mild symptom and "6" representing a severe symptom."*

PLEASE HAND THE FORM TO THE ATHLETE

Symptom	Rating
Headaches	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
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
Trouble falling asleep (if applicable)	0 1 2 3 4 5 6

Do your symptoms get worse with physical activity?	Y	N
Do your symptoms get worse with mental activity?	Y	N

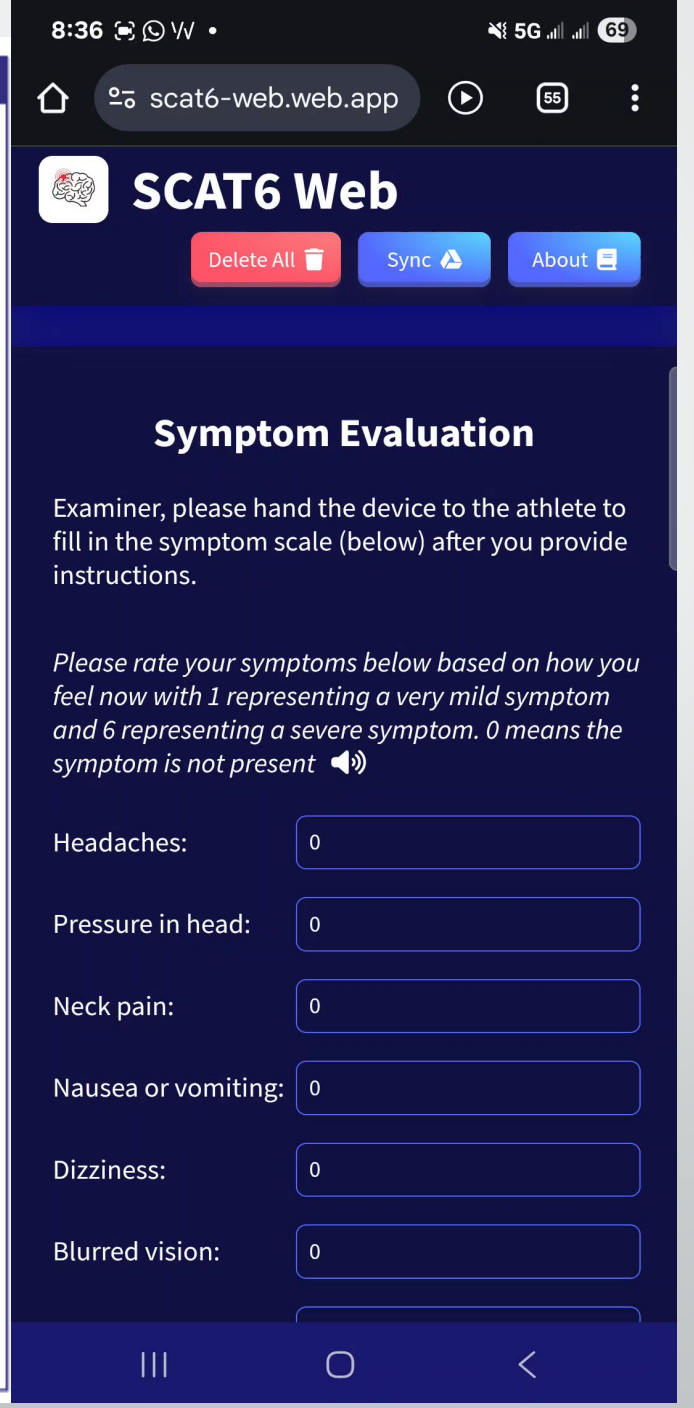
If 100% is feeling perfectly normal, what percent of normal do you feel?

If not 100%, why?

PLEASE HAND THE FORM BACK TO THE EXAMINER

Once the athlete has completed answering all symptom items, it may be useful for the clinician to revisit items that were endorsed positively to gather more detail about each symptom.

Total number of symptoms: _____ of 22 **Symptom severity score:** _____ of 132



Step 3: Cognitive Screening (Based on Standardized Assessment of Concussion; SAC)[2]

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

All 3 trials must be administered irrespective of the number correct on Trial 1. Administer at the rate of one word per second.

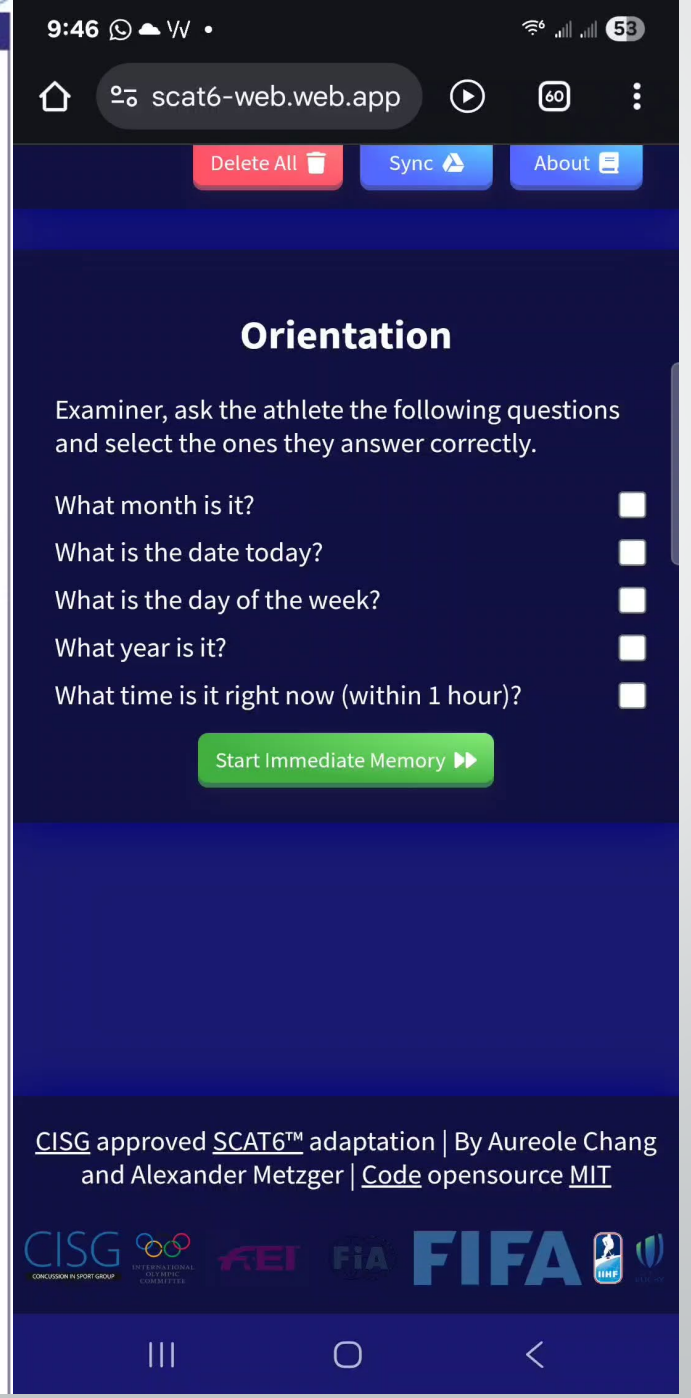
Trial 1: Say *"I am going to test your memory. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order."*

Trials 2 and 3: Say *"I am going to repeat the same list. Repeat back as many words as you can remember in any order, even if you said the word before in a previous trial."*

Word list used: A ☐ B ☐ C ☐

List A	Trial 1	Trial 2	Trial 3	Alternate Lists: List B	Alternate Lists: List C
Jacket	0 1	0 1	0 1	Finger	Baby
Arrow	0 1	0 1	0 1	Penny	Monkey
Pepper	0 1	0 1	0 1	Blanket	Perfume
Cotton	0 1	0 1	0 1	Lemon	Sunset
Movie	0 1	0 1	0 1	Insect	Iron
Dollar	0 1	0 1	0 1	Candle	Elbow
Honey	0 1	0 1	0 1	Paper	Apple
Mirror	0 1	0 1	0 1	Sugar	Carpet
Saddle	0 1	0 1	0 1	Sandwich	Saddle
Anchor	0 1	0 1	0 1	Wagon	Bubble
Trial Total					

Immediate Memory Score ____ of 30 Time Last Trial Completed: ____



Step 3: Cognitive Screening (Continued)

Concentration

Digits Backward:

Administer at the rate of one digit per second reading DOWN the selected column. If a string is completed correctly, move on to the string with next higher number of digits; if the string is completed incorrectly, use the alternate string with the same number of digits; if this is failed again, end the test.

Say *"I'm 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. So, if I said 9-6-8 you would say? (8-6-9)"*

Digit list used: A ☐ B ☐ C ☐

List A	List B	List C			
4-9-3	5-2-6	1-4-2	Y	N	0 1
6-2-9	4-1-5	6-5-8	Y	N	
3-8-1-4	1-7-9-5	6-8-3-1	Y	N	0 1
3-2-7-9	4-9-6-8	3-4-8-1	Y	N	
6-2-9-7-1	4-8-5-2-7	4-9-1-5-3	Y	N	0 1
1-5-2-8-6	6-1-8-4-3	6-8-2-5-1	Y	N	
7-1-8-4-6-2	8-3-1-9-6-4	3-7-6-5-1-9	Y	N	0 1
5-3-9-1-4-8	7-2-4-8-5-6	9-2-6-5-1-4	Y	N	
			Digits Score		of 4

Months in Reverse Order:

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

Start stopwatch and CIRCLE each correct response:

December November October September August July June May April March February January

Time Taken to Complete (secs): _____ **Number of Errors:** _____

1 point if no errors and completion under 30 seconds

Months Score: _____ of 1

Concentration Score (Digits + Months) _____ of 5

Step 4: Coordination and Balance Examination

Modified Balance Error Scoring System (mBESS)[3] testing

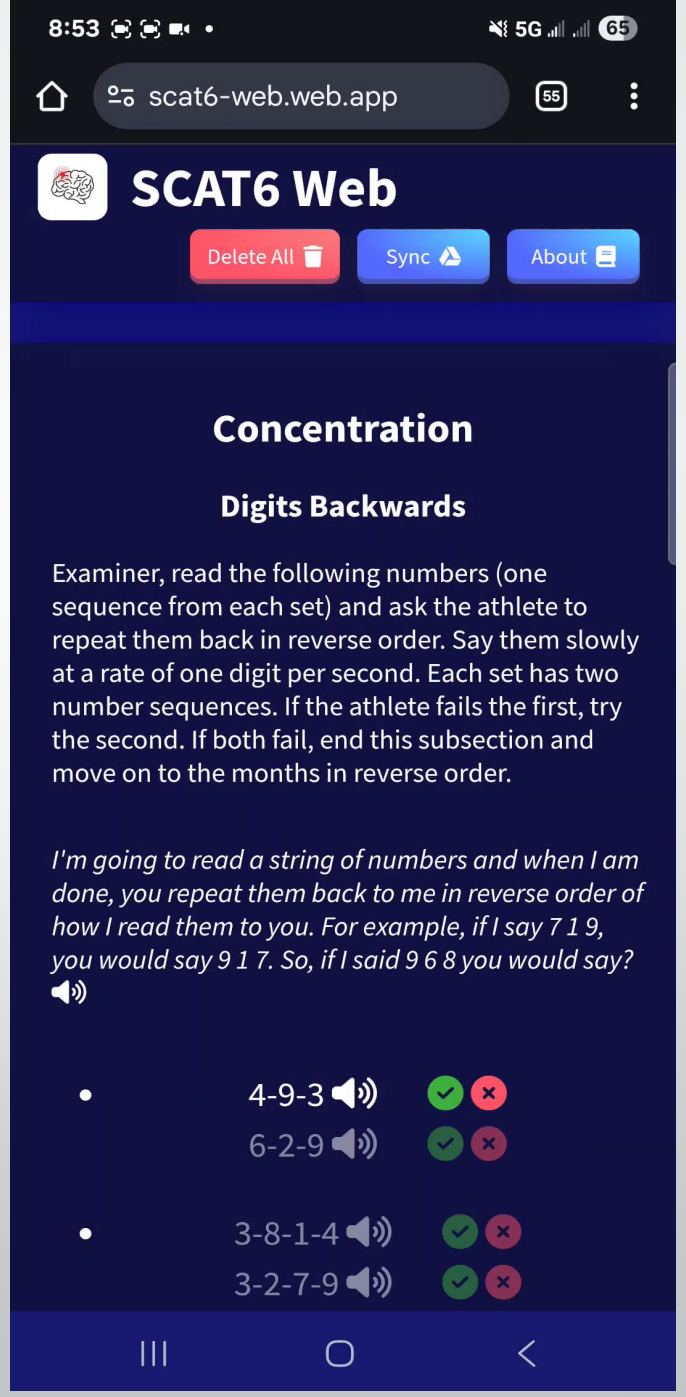
(see detailed administration instructions)

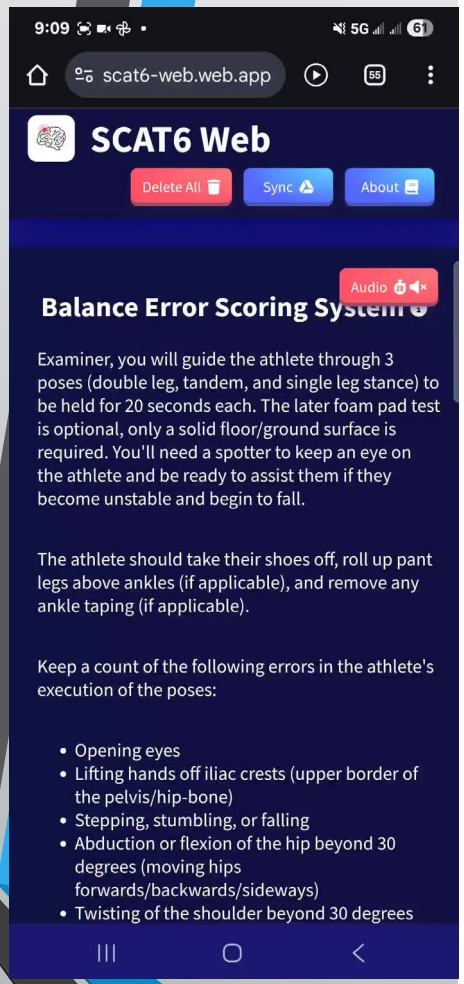
Foot Tested: Left ☐ Right ☐ (i.e. test the **non-dominant** foot)

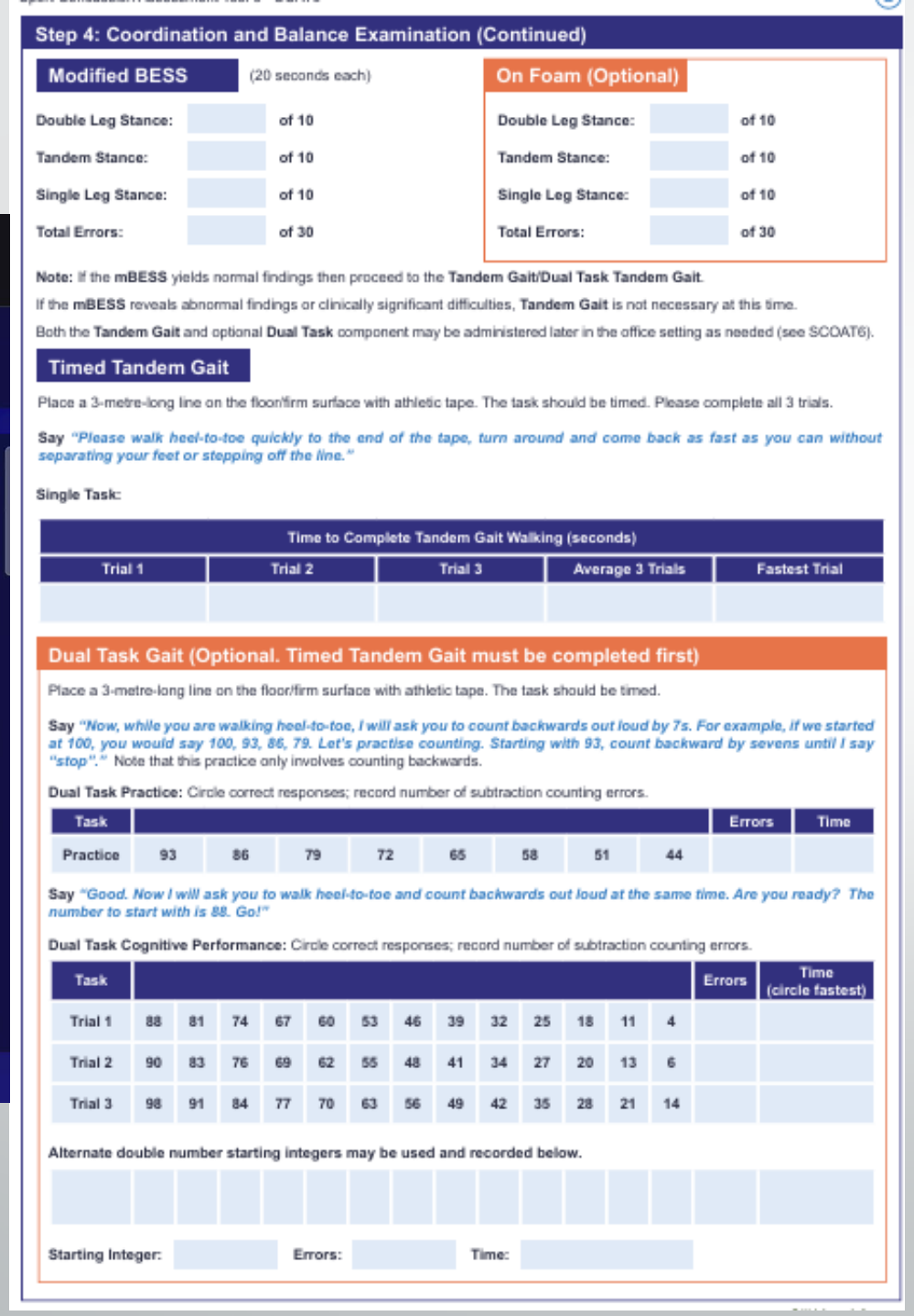
Testing Surface (hard floor, field, etc.): _____

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

OPTIONAL (depending on clinical presentation and setting resources): 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) with the same instructions and scoring.







Step 4: Coordination and Balance Examination (Continued)

Modified BESS (20 seconds each)

Double Leg Stance:		of 10
Tandem Stance:		of 10
Single Leg Stance:		of 10
Total Errors:		of 30

On Foam (Optional)

Double Leg Stance:		of 10
Tandem Stance:		of 10
Single Leg Stance:		of 10
Total Errors:		of 30

Note: If the **mBESS** yields normal findings then proceed to the **Tandem Gait/Dual Task Tandem Gait**.

If the **mBESS** reveals abnormal findings or clinically significant difficulties, **Tandem Gait** is not necessary at this time.

Both the **Tandem Gait** and optional **Dual Task** component may be administered later in the office setting as needed (see SCOAT6).

Timed Tandem Gait

Place a 3-metre-long line on the floor/firm surface with athletic tape. The task should be timed. Please complete all 3 trials.

Say *"Please walk heel-to-toe quickly to the end of the tape, turn around and come back as fast as you can without separating your feet or stepping off the line."*

Single Task:

Time to Complete Tandem Gait Walking (seconds)				
Trial 1	Trial 2	Trial 3	Average 3 Trials	Fastest Trial

Dual Task Gait (Optional. Timed Tandem Gait must be completed first)

Place a 3-metre-long line on the floor/firm surface with athletic tape. The task should be timed.

Say *"Now, while you are walking heel-to-toe, I will ask you to count backwards out loud by 7s. For example, if we started at 100, you would say 100, 93, 86, 79. Let's practise counting. Starting with 93, count backward by sevens until I say "stop"."* Note that this practice only involves counting backwards.

Dual Task Practice: Circle correct responses; record number of subtraction counting errors.

Task									Errors	Time
Practice	93	86	79	72	65	58	51	44		

Say *"Good. Now I will ask you to walk heel-to-toe and count backwards out loud at the same time. Are you ready? The number to start with is 88. Go!"*

Dual Task Cognitive Performance: Circle correct responses; record number of subtraction counting errors.

Task														Errors	Time (circle fastest)
Trial 1	88	81	74	67	60	53	46	39	32	25	18	11	4		
Trial 2	90	83	76	69	62	55	48	41	34	27	20	13	6		
Trial 3	98	91	84	77	70	63	56	49	42	35	28	21	14		

Alternate double number starting integers may be used and recorded below.

Starting Integer: **Errors:** **Time:**

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

Tandem Gait Fail:
1. Step off the line
2. Have separation between heel and toe
3. Touch or grab examiner or an object

Step 4: Coordination and Balance Examination (Continued)

Were any single- or dual-task, timed tandem gait trials not completed due to walking errors or other reasons?

Yes ☐ No ☐

If yes, please explain why:

Step 5: Delayed Recall

The Delayed Recall should be performed after **at least 5 minutes** have elapsed since the end of the Immediate Memory section: **Score 1 point for each correct response.**

Say *"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:

Word list used: A ☐ B ☐ C ☐

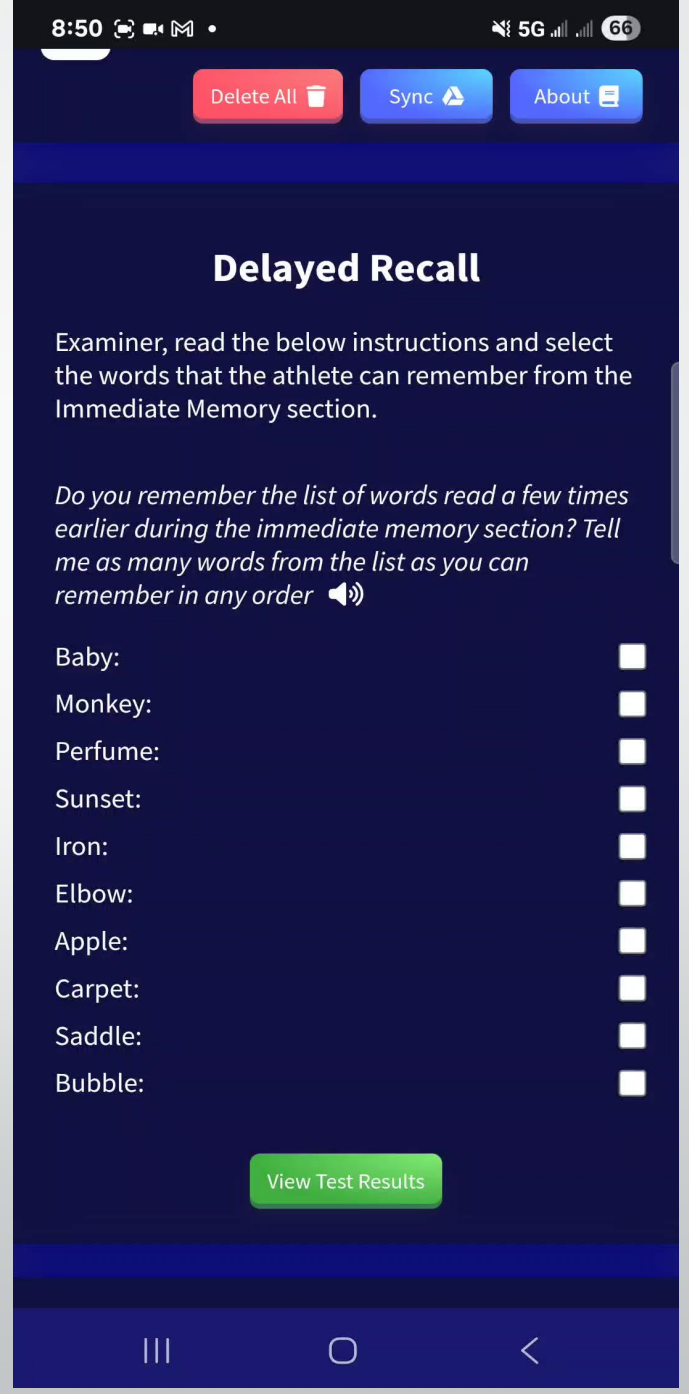
List A	Score	Alternate Lists: List B	Alternate Lists: List C
Jacket	0 1	Finger	Baby
Arrow	0 1	Penny	Monkey
Pepper	0 1	Blanket	Perfume
Cotton	0 1	Lemon	Sunset
Movie	0 1	Insect	Iron
Dollar	0 1	Candle	Elbow
Honey	0 1	Paper	Apple
Mirror	0 1	Sugar	Carpet
Saddle	0 1	Sandwich	Saddle
Anchor	0 1	Wagon	Bubble
Delayed Recall Score	of 10		

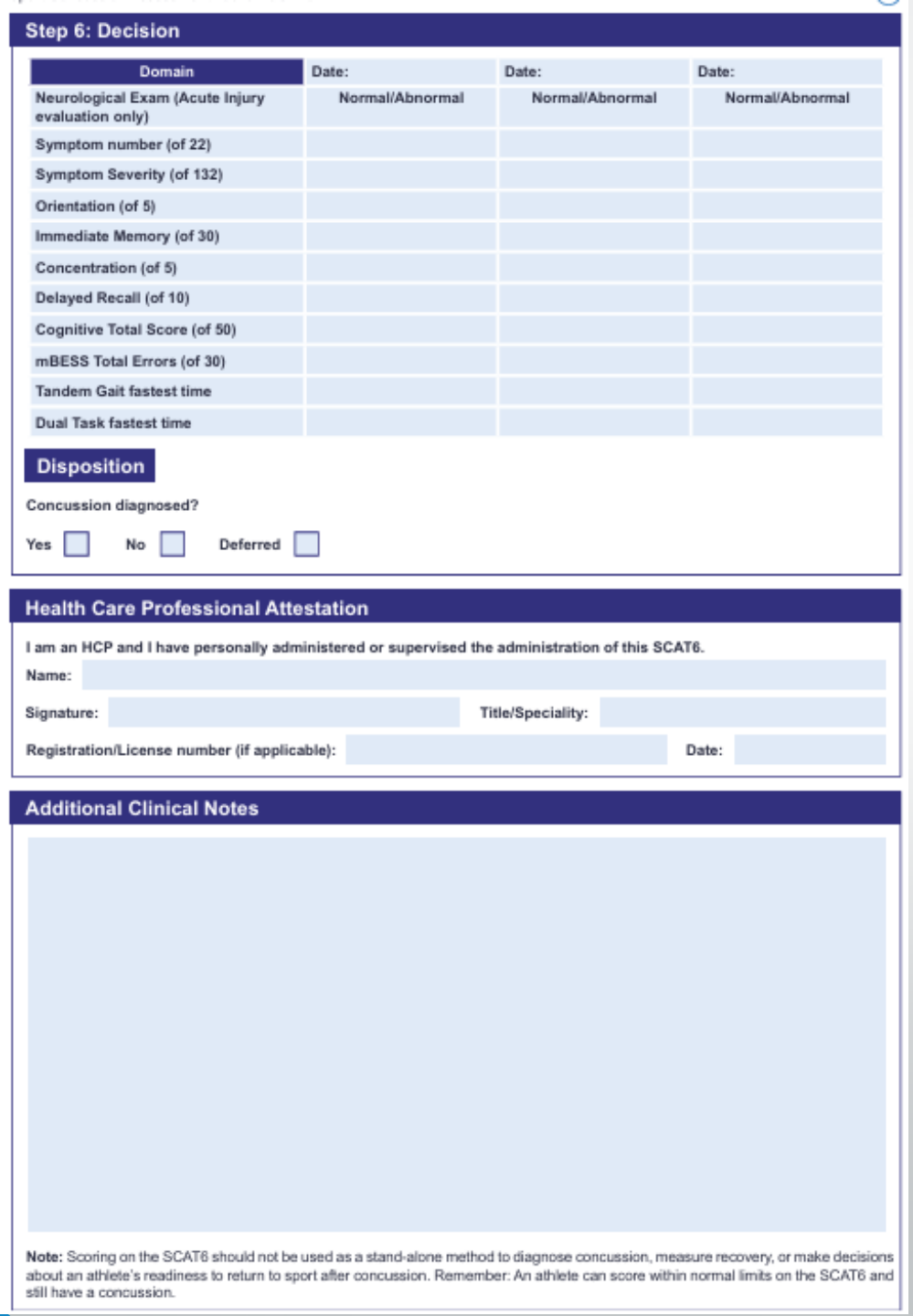
Total Cognitive Score

Orientation:		of 5
Immediate Memory:		of 30
Concentration:		of 5
Delayed Recall:		of 10
Total:		of 50

If the athlete was known to you prior to their injury, are they different from their usual self?

Yes ☐ No ☐ Not applicable ☐ (If different, describe why in the clinical notes section)





Step 6: Decision

Domain	Date:	Date:	Date:
Neurological Exam (Acute Injury evaluation only)	Normal/Abnormal	Normal/Abnormal	Normal/Abnormal
Symptom number (of 22)			
Symptom Severity (of 132)			
Orientation (of 5)			
Immediate Memory (of 30)			
Concentration (of 5)			
Delayed Recall (of 10)			
Cognitive Total Score (of 50)			
mBESS Total Errors (of 30)			
Tandem Gait fastest time			
Dual Task fastest time			

Disposition

Concussion diagnosed?

Yes ☐ No ☐ Deferred ☐

Health Care Professional Attestation

I am an HCP and I have personally administered or supervised the administration of this SCAT6.

Name:

Signature: Title/Speciality:

Registration/License number (if applicable): Date:

Additional Clinical Notes

Note: Scoring on the SCAT6 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 sport after concussion. Remember: An athlete can score within normal limits on the SCAT6 and still have a concussion.

Any athlete with a suspected concussion should not be left alone for the following few hours. Serial monitoring should take place at this time, along with further evaluation at 24-48 hours post-injury.

Norms/Increased Risk (IR):

Symptom #: **<2**/>3

Symptom severity:**<25,** 26-75 moderate, >76 high risk

Orientation: **4-5**/0-4

Immediate memory: **20-30**/0-20

Concentration: **4-5**/0-4

Delayed Recall: **6-10**/0-5

Cognitive Total: **40-50**/0-40

mBess: **0-6**/6-30

Tandem Gait: **13-16**/ 21-27

Dual Task: **18-23**/30-37

IDENTIFYING AND MANAGING CONCUSSION: IN OFFICE

The Standard Tool of Assessment 3 days to 30 days Post-Injury

When to Remove from Play

- Always the day concussion is SUSPECTED
- Once diagnosed, begin RTL and RTP protocols

Playing through a concussion can lead to:
- Prolonged recovery
- Worsened symptoms
- Increased risk of future concussion at a lower threshold of force
- Second Impact Syndrome: severe brain swelling, possible herniation, neurological damage, paralysis, or death

Lystedt Law exists in all 50 states: Athletes removed due to suspected concussion require written medical clearance from a qualified professional to return to sport.

Return-to-Learn (RTL) Strategy

Facilitating RTL is a vital part of the recovery process for student-athletes. HCPs should work with stakeholders on education and school policies to facilitate academic support, including accommodations/learning adjustments for students with SRC when needed. Academic support should address risk factors for greater RTL duration (e.g., social determinants of health, higher symptom burden) by adjusting environmental, physical, curricular, and testing factors as needed. **Not all athletes will need a RTL strategy or academic support**. If symptom exacerbation occurs during cognitive activity or screen time, or difficulties with reading, concentration, or memory or other aspects of learning are reported, clinicians should consider implementation of a RTL strategy at the time of diagnosis and during the recovery process. When the RTL strategy is implemented, it can begin following an initial period of relative rest (Step1: 24-48 hrs), with an incremental increase in cognitive load (Steps 2 to 4). Progression through the strategy is symptom limited (i.e., no more than a mild exacerbation of current symptoms related to the current concussion) and its course may vary across individuals based on tolerance and symptom resolution. Further, while the RTL and RTS strategies can occur in parallel, student-athletes should complete full RTL before unrestricted RTS.

Step	Mental Activity	Activity at Each Step	Goal
1	Daily activities that do not result in more than a mild exacerbation* of symptoms related to the current concussion.	Typical activities during the day (e.g., reading) while minimizing screen time. Start with 5–15 min at a time and increase gradually.	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 schoolwork. May need to start with a partial school day or with greater access to rest breaks during the day.	Increase academic activities.
4	Return to school full time.	Gradually progress school activities until a full day can be tolerated without more than mild* symptom exacerbation.	Return to full academic activities and catch up on missed work.

NOTE: Following an initial period of relative rest (24-48 hours following injury at Step 1), athletes can begin a gradual and incremental increase in their cognitive load. Progression through the strategy for students should be slowed when there is more than a mild and brief symptom exacerbation.

*Mild and brief exacerbation of symptoms is defined as an increase of no more than 2 points on a 0-10 point scale (with 0 representing no symptoms and 10 the worst symptoms imaginable) for less than an hour when compared with the baseline value reported prior to cognitive activity.

British Journal of Sports Medicine

Return-to-Sport (RTS) Strategy

Return to sport participation after an SRC follows a graduated stepwise strategy, an example of which is outlined in Table 2. RTS occurs in conjunction with return to learn (see RTL strategy) and under the supervision of a qualified HCP. Following an initial period of relative rest (Step 1: approximately 24-48 hours), clinicians can implement Step 2 [i.e., light (Step 2A) and then moderate (Step 2B) aerobic activity] of the RTS strategy as a treatment of acute concussion. The athlete may then advance to steps 3-6 on a time course dictated by symptoms, cognitive function, clinical findings, and clinical judgement. Differentiating early activity (step 1), aerobic exercise (Step 2), and individual sport-specific exercise (Step 3) as part of the treatment of SRC from the remainder of the RTS progression (Steps 4-6) can be useful for the athlete and their support network (e.g., parents, coaches, administrators, agents). Athletes may be moved into the later stages that involve risk of head impact (Steps 4-6 and Step 3 if there is any risk of head impact with sport-specific activity) of the RTS strategy following authorization by the HCP and after resolution of any new symptoms, abnormalities in cognitive function, and clinical findings related to the current concussion. Each step typically takes at least 24 hours. Clinicians and athletes can expect a minimum of week to complete the full rehabilitation strategy, but typical unrestricted RTS can take up to one month post-SRC. The time frame for RTS may vary based on individual characteristics, necessitating an individualized approach to clinical management. Athletes having difficult progressing through the RTS strategy or with symptoms and signs that are not progressively recovering beyond the first 2-4 weeks may benefit from rehabilitation and/or involvement of a multidisciplinary team of HCP experienced in managing SRC. Medical determination of readiness, including psychological readiness, to return to at-risk activities should occur prior to returning to any activities at risk of contact collision or fall (e.g. multiplayer training drills), which may be required prior to any of steps 3-6, depending on the nature of the sport or activity that the athlete is returning to and in keeping with local laws/requirements.

Step	Exercise Strategy	Activity at Each Step	Goal
1	Symptom-limited activity.	Daily activities that do not exacerbate symptoms (e.g., walking).	Gradual reintroduction of work/school.
2	Aerobic exercise **2A – Light** (up to approx. 55% max HR) **then** **2B – Moderate** (up to approximately 70% max HR)	Stationary cycling or walking at slow to medium pace. May start light resistance training that does not result in more than mild and brief exacerbation* of concussion symptoms.	Increase heart rate.
3	Individual sport-specific exercise **NOTE:** if sport-specific exercise involves any risk of head impact, medical determination of readiness should occur prior to step 3.	Sport-specific training away from the team environment (e.g., running, change of direction and/or individual training drills away from the team environment). No activities at risk of head impact.	Add movement, change of direction.
Steps 4-6 should begin after resolution of any symptoms, abnormalities in cognitive function, and any other clinical findings related to the current concussion, including with and after physical exertion.			
4	Non-contact training drills.	Exercise to high intensity including more challenging training drills (e.g., passing drills, multiplayer training). Can integrate into team environment.	Resume usual intensity of exercise, coordination, and increased thinking.
5	Full contact practice.	Participate in normal training activities.	Restore confidence and assess functional skills by coaching staff.
6	Return to sport.	Normal game play.	

maxHR = predicted maximal Heart Rate according to age (i.e., 220-age)

Age Predicted Maximal HR= 220-age	Mild Aerobic Exercise	Moderate Aerobic Exercise
55%	220-age x 0.55 = training target HR	
70%		220-age x 0.70 = training target HR

NOTE: *Mild and brief exacerbation of symptoms (i.e., an increase of no more than 2 points on a 0-10 point scale for less than an hour when compared with the baseline value reported prior to physical activity). Athletes may begin Step 1 (i.e., symptom-limited activity) within 24 hours of injury, with progression through each subsequent step typically taking a minimum of 24 hours. If more than mild exacerbation of symptoms (i.e., more than 2 points on a 0-10 scale) occurs during Steps 1 -3, the athlete should stop and attempt to exercise the next day. If an athlete experiences concussion-related symptoms during Steps 4-6, they should return to Step 3 to establish full resolution of symptoms with exertion before engaging in at-risk activities. Written determination of readiness to RTS should be provided by an HCP before unrestricted RTS as directed by local laws and/or sporting regulations.

Florida Law Re: Return to Sport

FHSAA Sec. 40.5:
A written medical clearance from an appropriate health care provider (AHCP) is required to return to competition

AHCP: Licensed physician (MD, as per Chapter 458, Florida Statutes) or a licensed osteopathic physician (DO, as per Chapter 459, Florida Statutes)

Therefore, we must be overseen/communicate with MD or DO if we plan to aid in concussion management and RTP

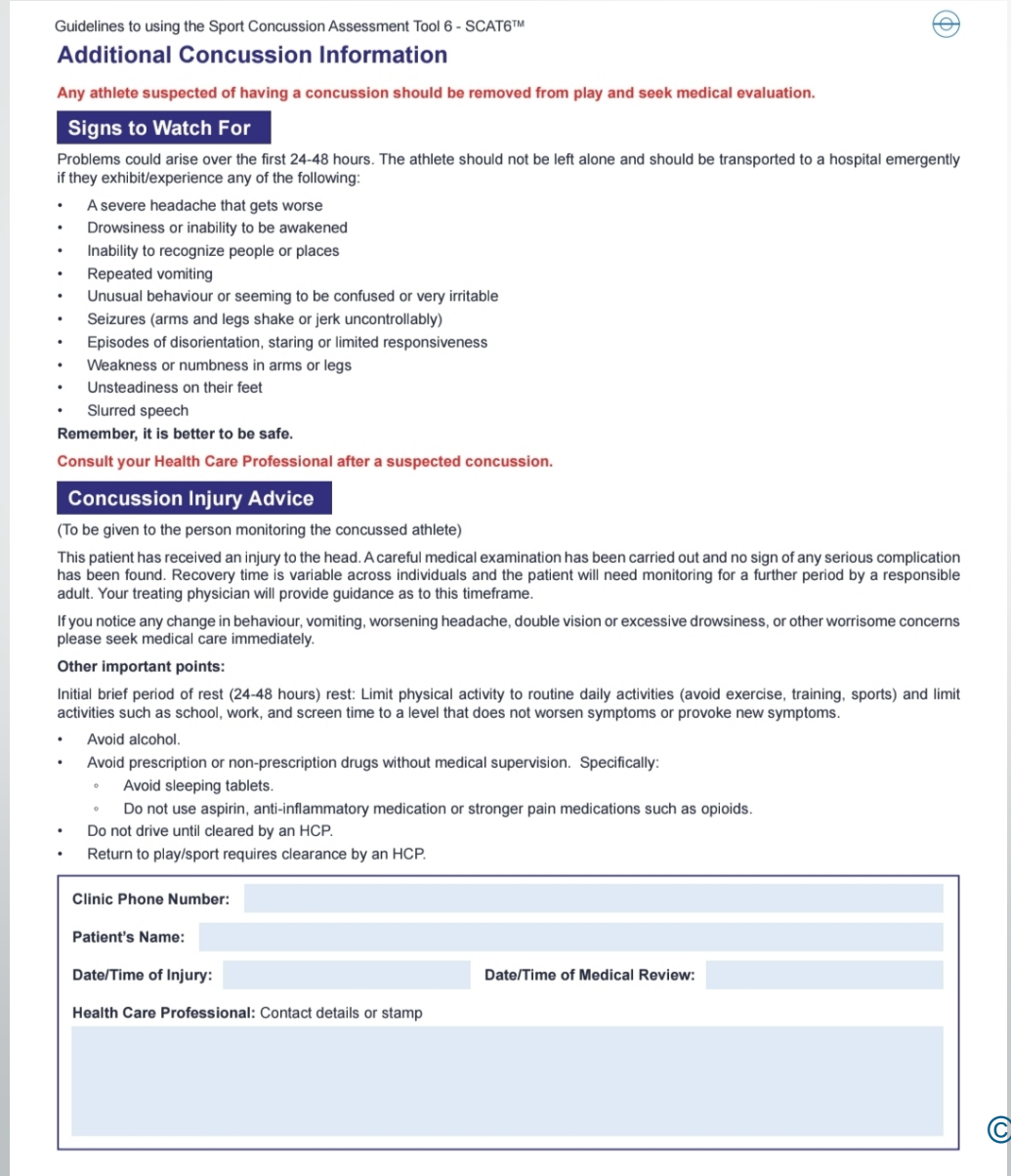
Scope of Practice: Chiropractors and Concussion

Chiropractors must work within their scope of practice, which requires additional certification to evaluate and manage concussion while remaining in scope:

- CCSP/DACBSP
- ACBSP Concussion Registry Course
- Certificate of Competency in Concussion Management
- Credentialed ImPACT Consultant (CIC)

Informing Patients and Parents

www.concussioninsportgroup.com



Guidelines to using the Sport Concussion Assessment Tool 6 - SCAT6™

Additional 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 should be transported to a hospital emergently if they exhibit/experience any of the following:

- A severe headache that gets worse
- Drowsiness or inability to be awakened
- Inability to recognize people or places
- Repeated vomiting
- Unusual behaviour or seeming to be confused or very irritable
- Seizures (arms and legs shake or jerk uncontrollably)
- Episodes of disorientation, staring or limited responsiveness
- Weakness or numbness in arms or legs
- Unsteadiness on their feet
- Slurred speech

Remember, it is better to be safe.

Consult your Health Care Professional after a suspected concussion.

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 complication 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, or other worrisome concerns please seek medical care immediately.

Other important points:

Initial brief period of rest (24-48 hours) 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 or provoke new symptoms.

- Avoid alcohol.
- Avoid prescription or non-prescription drugs without medical supervision. Specifically:
  - Avoid sleeping tablets.
  - Do not use aspirin, anti-inflammatory medication or stronger pain medications such as opioids.
- Do not drive until cleared by an HCP.
- Return to play/sport requires clearance by an HCP.

Clinic Phone Number:

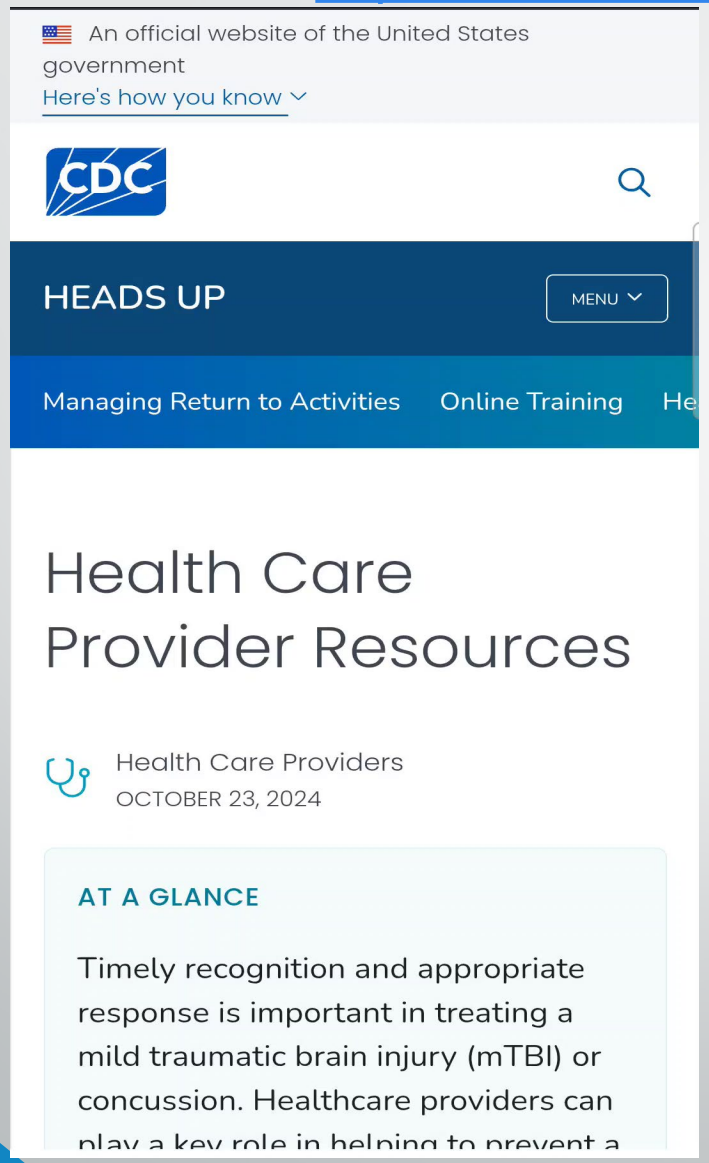
Patient's Name:

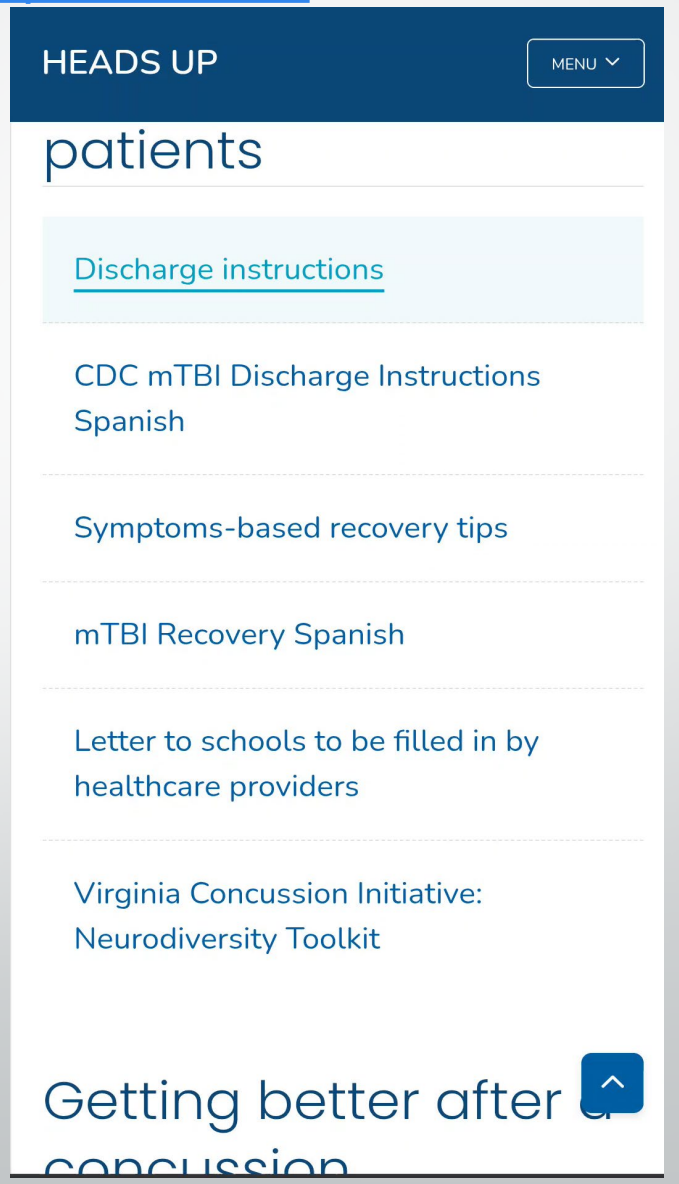
Date/Time of Injury: **Date/Time of Medical Review:**

Health Care Professional: Contact details or stamp

Informing Patients and Parents

https://www.cdc.gov/heads-up/index.html





Communication and Patient Privacy

HIPPA allows HCPs to share patient protected health information with other HCPs, such as EMS during an emergency situation, offering the minimal information needed.

In order to communicate with coaches, etc., a written/verbal consent must be obtained.

Consent should include:

1. who can receive information
2. what information can be shared (diagnosis, restrictions, RTP status)
3. duration of consent

AMERICAN CHIROPRACTIC BOARD OF SPORTS PHYSICIANS

POSITION STATEMENT ON SPORTS RELATED CONCUSSION IN ATHLETICS

The purpose of the American Chiropractic Board of Sports Physicians (ACBSP™) Concussion Registry is to provide a format for healthcare providers to voluntarily review current evidenced based information and to demonstrate competency regarding the evaluations and management of concussion in sport. The healthcare provider will review the course materials and complete an outcome evaluation. The minimum passing score is 80%. The questions for the outcome will be extracted from the course materials. The registry is not a certification. Healthcare providers who complete the course will be listed on the ACBSP Concussion Registry, which is available on the ACBSP website at www.ACBSP.com.

The management of concussion in athletics is an area of sports medicine that continually evolves. Several methods of evaluating and managing concussion that were once considered standards of care are now obsolete. The importance of providing correct clinical decisions for the assessment, management and return-to-play criteria of individuals who have sustained concussion remains one of the greatest challenges to sports medicine providers.

With respect to the qualifications of Doctors of Chiropractic and their involvement in concussion management, it is the position of the ACBSP that:

1. Doctors of Chiropractic with current ACBSP™ DACBSP® and CCSP® certificates of additional qualifications in sports medicine are qualified to manage the concussed individual in any patient population.
2. Doctors of Chiropractic may evaluate, diagnosis and manage concussed individuals. The prerequisite management skills for a concussed athlete can be supported by additional experience and education such as the American Chiropractic Board of Sports Physicians (ACBSP) Concussion Registry.
3. All healthcare providers involved in the management of concussed individuals have an obligation to maintain current knowledge of best practices in concussion management.
4. The ACBSP does not endorse specific methodology of concussion management because methods of assessment and management of concussion are in transition.

The position of the ACBSP regarding current best practices in concussion management is that:

1. Concussion may be caused by a direct blow to the head or elsewhere on the body.
2. Loss of consciousness is a key symptom but the majority of concussions do not involve a loss of consciousness.
3. Individuals with a concussion may present with a wide range of signs and symptoms such as physical signs of neurologic impairment, or/and symptoms of impaired brain function that may include abnormal behavior.
4. An athlete suspected of having sustained a concussion must be removed from play and immediately assessed by a qualified healthcare provider.
5. A concussed individual must not be allowed to return to play the same day they were concussed.
6. When evaluating a collapsed athlete on the field of play emergent concerns such as airway, breathing, circulation, spinal trauma or a more serious brain injury should be first excluded. The initial sideline examination should include a more detailed history and examination of the individual. Examination should include serial examinations and direct monitoring of the athlete's vital signs and additional assessments through a standardized concussion neurological examination.
7. Concussed individuals should not be left alone in the initial phase of their evaluation until their constellation of signs and symptoms are static and a diagnosis can be confirmed.
8. Any increase of symptoms (especially increasing headache, decreasing neurologic function, presence of a focal neurologic deficit, altered vital signs, or repeated vomiting) in a concussed individual requires an urgent evaluation in a hospital setting.
9. Any individual with signs or symptoms of concussion at rest or with exertion should not be allowed to participate in sport until their signs and symptoms have resolved.
10. A consultation from a qualified healthcare provider, including DACBSP or CCSP certified Doctors of Chiropractic, prior to returning-to-play is essential after suspected or known concussion.
11. A graded return-to-play protocol that includes exertion must be followed prior to an athlete's resumption of full sporting activity.
12. Children and adolescents should be managed more conservatively than adults and they may not be returned to sport until they are completely symptom-free which may require a longer time frame.
13. All athletes must be symptom-free at rest and with exercise prior to return-to-play.
14. The appropriate management of concussed individuals requires careful consideration in regards to the timing and management of the injury. Manual procedures for concussed individuals with clinical presentations of cervical spine and/or vestibular dysfunction may be of benefit, especially if the individual is experiencing neck pain.
15. Cases of concussion in sport where clinical recovery falls outside the expected window of recovery of ten (10) days should receive consideration for management using a multidisciplinary approach.

A recommended current reference for consensus based approach to concussion management is the *Consensus Statement on Concussion in Sport: The 4rd International Conference on Concussion in Sport* held in Zürich, November 2012. Agreement exists pertaining to principal messages conveyed within this document, the ACBSP acknowledges the science of concussion is evolving and therefore, management and return-to-play decisions remain in the realm of individualized clinical judgment. Individual management depends on the specific presentation and circumstances that are unique to each individual case. This statement reflects the current state of knowledge and will need to be modified according to the development of new knowledge. It is intended that this document will be formally reviewed and updated prior to June 1, 2016.

The ACBSP Position Statement on Sports Related Concussion in Athletics is not intended as a standard of care document, and it should not be interpreted as such.

Under Revision:
Please refer to:
https://bjsm.bmj.com/content/bjsports/51/11/838.full.pdf