

FRIDAY NOVEMBER 17TH, 2023

What's New in Your Concussion Tool Belt: Review of the SCAT6, the SCOAT6, and the CRT6

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OBJECTIVES

- Analyze the concussion evaluation tools presented in the 6th Consensus statement on concussion in sport
- Choose and perform appropriate tests and measures in the management of pediatric sports related concussion

I have no financial disclosures.



Sideline Assessment

SCAT6™

Sport Concussion Assessment Tool
For Adolescents (13 years +) & Adults

What is the SCAT6?

13+ years

Key Points

- Any athlete with suspected concussions (HCPs). The
- Any athlete
- FROM PLAY

8-12 years

Child SCAT6™

Sport Concussion Assessment Tool
For Children Ages 8 to 12 Years

What is the SCAT6?

The Child SCAT6 is a standardised tool for evaluating concussions in children ages 8-12 years, and designed for use by

Key Points

- Any child with suspected concussions **REMOVED FROM**



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SCAT6, Immediate/On-Field Assessment **CHANGES**

➤ Red flags

- n/t more than 1 arm or in the legs
- GCS <15
- Visible deformity of the skull

➤ Observable signs

- Falling unprotected to the surface
- Impact seizure
- High risk mechanism of injury (sport-dependent)

➤ Cervical spine assessment

- Is there tenderness to palpation?

➤ Coord & Occ/Motor Screen

- Finger to nose testing
- Smooth pursuits
- Extraocular eye movements



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SCAT6, Off-Field Assessment Overview

- Symptom evaluation (22)
 - Child SCAT6 different symptoms list and includes parent's symptom evaluation
- Orientation
- Immediate memory
 - 10 word list
- Digits backwards
 - 3-6 digits
- Months in reverse order
- Balance examination (mBESS)
 - non-dominant foot (tandem behind)
- Tandem Gait
- Delayed recall – 10 word list



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SCAT6, Off-Field Assessment CHANGES

➤ Symptom Evaluation

- Time elapsed since suspected injury

➤ Immediate Memory

- 5 word list removed
- 10 word list - A,B, or C

➤ Digits Backwards

- List D, E, and F removed

➤ Modified BESS (mBESS)

- Optional addition: On Foam

➤ Months in Reverse Order

- Time to complete - only awarded point if under 30 seconds



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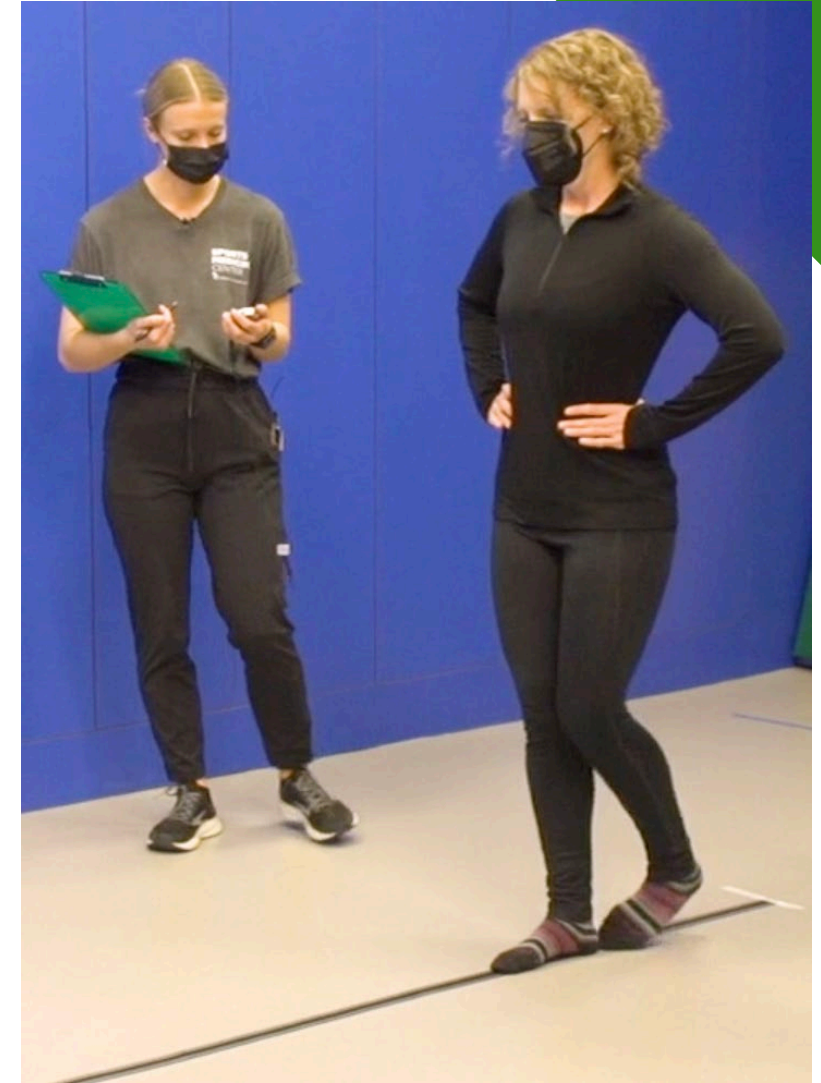
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SCAT6, Off-Field Assessment CHANGES

- ***NEW – Timed Tandem Gait**
 - 3 metre-long (~10 feet) line on the floor secured with athletic tape
 - Athlete walks heel-to-toe quickly to the end of the line
 - Turns at the end and returns to start
- ***NEW – (Optional) Dual Task Gait**
 - Tandem gait while counting backwards by 7's
 - Child SCAT6 backwards by 3's
 - Fastest time recorded out of 3 trials
- Additional testing domains added to Decision section



Sport Concussion Office Assessment Tool (SCOAT6)

SCOAT6™

Sport Concussion Office Assessment Tool
For Adults & Adolescents (13 years +)

Child SCOAT6™

Sport Concussion Office Assessment Tool
For Children Ages 8 to 12 Years

- Used in conjunction with SCAT6, or used as initial evaluation
- Sub-Acute phase – 72 hours to 30 days post-injury
- Child SCOAT6 – 8 to 12 years old



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Patricios, Schneider, Dvorak, *et al*, 2022

Included in the SCOAT6

- Symptoms evaluation - Same as SCAT6 + abnormal HR + excessive sweating
- Word Recall and Digit Backwards test: 10 word list (QR code with 15 word list if exhibiting ceiling effect)
- Months in reverse order (Timed <30 sec)
- Orthostatic BP & HR (after 2 min supine, then after 1 min standing) (Senthinathan, 2017; Patricios, 2023)
- Cervical spine ROM and palpation
- Cranial & spinal neurological exam
 - Cerebellar function
 - Deep tendon reflex



Cranial
Nerve
Exam

Patricios J, et al. Br J Sports Med
2023



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Included in the SCOAT6 (Cont.)

- Modified BESS – foam optional
- Single Task Tandem Gait
 - (Optional) Complex Tandem Gait - Heel-toe gait 5 steps forward eyes open + 5 steps forward eyes closed. Repeat backwards.
 - Total score ≤ 4 may be normal, ≥ 5 may be concussed
- (Optional) Dual Task Tandem Gait
- Modified VOMS
- Delayed recall 5 min post immediate recall

Dual Task
Video



Patricios J, et al. Br J Sports Med
2023



Visual Guide
to mVOMS

Patricios J, et al. Br J Sports Med
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Normative Tandem Gait Scores

Single-task tandem gait time with no mistakes:

- Normal range (fastest 75%): <11.7 seconds
- Slower than average (75%-90%ile): 11.8 – 12.5 seconds
- Very slow (>90%ile, or slowest 10%): >12.5 seconds

Dual-task tandem gait time:

- Normal range (fastest 75%): <14.4 seconds
- Slower than average (75%-90%ile): 14.5 – 16.3 seconds
- Very slow (>90%ile, or slowest 10%): >16.3 seconds



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Patricios, 2023

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To be used by non-medically trained individuals for the identification and immediate management of suspected concussion.

CRT6™



Concussion Recognition Tool

To Help Identify Concussion in Children, Adolescents and Adults



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Included in the CRT6.....

Red Flags: CALL AN AMBULANCE

If **ANY** of the following signs are observed or complaints are reported after an impact to the head or body the athlete should be immediately removed from play/game/activity and transported for urgent medical care by a healthcare professional (HCP):

- **Neck pain or tenderness**
- **Seizure, 'fits', or convulsion**
- **Loss of vision or double vision**
- **Loss of consciousness**
- **Increased confusion or deteriorating conscious state (becoming less responsive, drowsy)**
- **Weakness or numbness/tingling in more than one arm or leg**
- **Repeated Vomiting**
- **Severe or increasing headache**
- **Increasingly restless, agitated or combative**
- **Visible deformity of the skull**

- **Visible Clues of Suspected Concussion**
- **Symptoms of Suspected Concussion**
- **Awareness questions**

Any athlete with a suspected concussion should be – IMMEDIATELY REMOVED FROM PRACTICE OR PLAY and should NOT RETURN TO ANY ACTIVITY WITH RISK OF HEAD CONTACT, FALL OR COLLISION, including SPORT ACTIVITY until ASSESSED MEDICALLY, even if the symptoms resolve.