Child SCOAT6™

Supplement: Guidelines to using the Child Sport Concussion Office Assessment Tool 6 (Child SCOAT6)™

Context and Purpose of the Child Sport Concussion Office Assesment Tool 6 (Child SCOAT 6)

The Child Sports Concussion Office Assessment Tool 6 (Child SCOAT6) is to be used in the sub-acute setting, typically from 72 hours after injury. The Child SCOAT6 is designed to be used with the Child Sports Concussion Assessment Tool, Version 6 (Child SCAT6) where this has been completed for an athlete on the sideline, or within 72 hours of the injury.

The Child SCAT6 and Child SCOAT6 are for use in athletes ages 8-12 years. The SCOAT6 is available for use in athletes ages 13 years and over. Importantly, symptoms associated with concussion may overlap with those associated with other clinical diagnoses; clinical judgement should be used to determine the most appropriate diagnosis.

Who can use the Child SCOAT6?*

The Child SCOAT6 is developed for use by qualified medical practitioners. Its use is recommended during the days to weeks after the injury, in a quiet, private, clinical consultation room setting, using limited equipment. Some components may be used by other health care practitioners with the appropriate qualifications, training and experience. Health care professionals (HCP) should reflect on their personal knowledge and competencies and engage other HCP in the event that components of the tool fall outside of their knowledge base and scope of practice.

What is the Child SCOAT6?

The Child SCOAT6 is a multidisciplinary clinical screening, evaluation and management tool for use with sports-related concussion (SRC).

Equipment Required

- Quiet room
- 3 Chairs (Examiner, Patient, Parent/Guardian)
- Examination bed
- Sphygmomanometer
- Torch light/flashlight
- Ophthalmoscope
- Stopwatch
- Pins or toothpicks
- 3m line or tape for marking the line on the floor
- Tape measure
- Tendon hammer
- Tongue depressor with 14-point font for VOMS
- Metronome (freely available in App form)

Video links to demonstrate each test to be developed

How can it be used?

The Child SCOAT6 can be used in the following ways:

- Diagnosis – assists in the diagnostic process by helping to distinguish concussion symptoms and signs from other primary and secondary conditions.
- Evaluation – assembles tools for comprehensively assessing critical domains potentially affected by SRC.
- Management – initiating individualised intervention plans to address the affected domains and co-morbidities with the aim of optimising function and returning to school, sport, family and social life.
- Referral – identify children who may require referral to expert clinicians for specialised diagnosis, treatment and rehabilitation.
- Serve as a medical document for recording significant clinical findings, interventions and outcomes to help achieve best possible case management and follow-up.
- Serving as a foundation for modifications based on cultural, linguistic, and other local factors.
- Serving as a potential source of (de-identified) data for SRC research.
- Understanding that clinical settings, expertise and time pressures vary, the Child SCOAT6 is meant as a guide and all components may not necessarily be completed in every scenario; those aspects recommended in all cases as part of an office assessment are coloured in green on the Child SCOAT6. Components that are optional are coloured in orange in the Child SCOAT6. The clinician should use clinical judgement based on the symptoms and clinical findings which optional items to use in each individual case.

Blue: Complete only at first assessment

Green: Recommended part of assessment

Orange: Optional part of assessment

* In reviewing studies informing the SCOAT6 and Child SCOAT6, the period defined for the included papers was 3–30 days. HCPs may choose to use the Child SCOAT6 beyond this timeframe but should be aware of the parameters of the review.

Developed by: The Concussion in Sport Group (CISG)

Supported by:

International Olympic Committee · FEI · FIA · FIFA · IIHF · World Rugby

History

The template provided is a guide. Users may make additional historical notes guided by clinical indications.

Symptoms

The first 21 symptoms correlate with those contained in the Child SCAT6, and allow for comparison between the symptoms recorded on the day of consultation with those at the time of injury and previous consultations related to the same injury. The additional 11 symptoms correlate with symptoms that may evolve in the days and weeks following SRC, and assist in monitoring symptom evolution and resolution.

Concussion-related symptoms may also be associated with other medical conditions and should be interpreted in the context of the injury, the athlete's baseline symptoms (where recorded), and the medical context.

PACE Self-Efficacy Questionnaire- Self Report (Optional)

Instructions

Administration, Scoring & Interpretation of PACE-Self Efficacy scale Administration

Prior to administration, explain to the person that they are to rate how confident they feel now in doing the listed actions as they relate to their concussion. Indicate that there are no right or wrong answers, just their feeling of confidence.

Time frame for rating: past several days up to 1 week.

"Rate your degree of confidence over the past several days that you can do the following actions now. Tell us by writing a number from 0 (Not confident I can do it) to 10 (Highly Confident I can do it) in the box next to each action statement. First, practice by rating your confidence in lifting a 10 pound (or 5 kg) weight, and then a 250 pound (or 115 kg) weight."

Scoring

(1) Total up the ratings for each of the 4 individual Scales and record them in the "Scale/ Mean Total" box.

(2) Divide each Scale Total score by the number of items in the respective scale to generate a "Scale/ Mean Total" score.

(3) Add the 4 "Scale/ Mean Total" scores together and divide by 4 to produce the "PACE-SE Total Mean Score".

(4) Record it in the "PACE-SE Total Mean Score" box.

Interpretation

The PACE-SE scores indicate the degree of the patient's confidence in their actions affecting recovery. Two scores are available to guide interpretation:

(1) The **Level of Confidence score** (0-10 range) reflects the degree to which the patient feels confident in the various PACE domains from Low (<20%tile), Moderate (20-80%tile), High (>80%tile).

(2) **Confidence change over time** is established by subtracting PACE-SE scores from an earlier visit (e.g., Visit 1) from a later visit (e.g., Visit 2), with the difference reflecting significant worsening, no change or significant improvement in confidence.

a. Level of Confidence score

Table 1	Age 10-12			Age 13+		
Mean Scale Score	**Low**	**Moderate**	**High**	**Low**	**Moderate**	**High**
Total Mean Score	**<5.2**	**5.3 - 8.7**	**>8.7**	**<5.5**	**5.5 - 8.7**	**>8.7**
Manage my Stress Mean	**<4.3**	**4.4 - 9.0**	**>9.0**	**<4.0**	**4.1 - 8.7**	**>8.7**
Manage my Activity Mean	**<4.5**	**4.5 - 9.2**	**>9.2**	**<4.8**	**4.8 - 8.8**	**>8.8**
Seek Adult Assist Mean	**<4.8**	**4.8 - 9.5**	**>9.5**	**<5.3**	**5.3 - 9.5**	**>9.5**
Maintain Positive Outlook Mean	**<5.5**	**5.5 - 9.5**	**>9.5**	**<5.8**	**5.8 - 9.5**	**>9.5**

b. Confidence change over time: Reliable Change Index (RCI) values were generated for the PACE Total Mean Score and 4 Mean Scale scores to establish statistical evidence for the degree of change in the scores.

To examine if the patient's confidence levels represent a significant change over time, subtract the scores from the earlier clinic visit from the later visit (e.g., Visit 2 – Visit 1). The table below indicates the degree to which the patient's ratings from one clinic visit to the next reflects a Significant Worsening, No Change, or Significant Improvement.

PACE-SE Total Mean Score: RCI calculations indicates that a 2-point difference exceeds the 80% CI for change.

PACE-SE 4 Mean Scale scores: RCI calculations indicate a range between 2.3 to 2.8 points for the 4 scales.

PACE Self-Efficacy Questionnaire- Self Report (Continued)

Table 2	Difference in PACE-SE Mean scores (age 10+)		
Mean Scale Score	**Significant Worsening**	**No Change**	**Significant Improvement**
Total Mean Score (80% CI=1.9)	**≤ -2.0**	**-1.99 to 1.99**	**≥2.0**
Manage my Stress (80% CI=2.8)	**≤ -2.9**	**-2.8 to 2.8**	**≥2.9**
Manage my Activity (80% CI=2.4)	**≤ -2.5**	**-2.4 to 2.4**	**≥2.5**
Seek Adult Assist (80% CI=2.4)	**≤ -2.5**	**-2.4 to 2.4**	**≥2.5**
Maintain Positive Outlook (80% CI=2.3)	**≤ -2.4**	**-2.3 to 2.3**	**≥2.4**

Verbal Cognitive Tests

Immediate Memory

Document the time at which the Immediate Word Recall Test was completed to ensure that at least 5 minutes have passed before the Delayed Recall Test is performed. The examiner should choose one word list (List A, B or C) for the 3 trials to test on each day, and on different assessment days, use a different word list.

The words should be read out clearly, in a monotone voice and at a rate of one word per second. Complete all 3 trials regardless of score on previous trials.

Say ***"I am going to test how you learn new information. I will read you a list of words and when I am done, repeat back as many words as you can remember, in any order."*** The words must be read at a rate of one word per second.

Trials 2 & 3 MUST be completed regardless of score on trial 1 & 2.

Trials 2 & 3: 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."***

Record the time the 3rd trial was completed. **Do NOT** inform the athlete that delayed recall will be tested.

Score 1 pt. for each correct response. Total score equals sum across all 3 trials.

Digits Backwards

Choose one column of digits, either A, B, C, and administer the digits as follows:

Say ***"I am going to read a string of numbers and when I am done, you repeat them back to me in reverse order of how I read them to you. For example, if I say 7-1, you would say 1-7. So, if I said 6-8 you would say? (8-6)"***

Begin with first 2-digit string. The numbers should be read out loud clearly, in a monotone voice at a rate of one digit per second.

If correct, circle "Y" for correct and go to next string length. If incorrect, circle "N" for the first-string length and read trial 2 in the same string length. One point possible for each string length. Stop after incorrect on both trials (2 N's) in a string length. The digits should be read at the rate of one per second.

Days in Reverse Order

Say ***"Now tell me the days of the week in reverse order as quickly and accurately as possible. Start with the last month and go backward. So, you will say Sunday, Saturday ... Go ahead"***

Record number of errors and Time to Completion. 1 point if no errors and completion under 30 seconds.

Symbol Digit Modalities Test

The child uses the key for the symbols representing digits 1 to 9. The child writes the digit representing each symbol in the box directly under each symbol. The first 10 symbols (up to the double line) are used for practice. The child is then given 90 seconds to complete as many numbers as possible. The score is the total number of correct responses.

Age	Very Low	Low	Normal	High	Mean	SD	N
8	0-18	19-21	22-36	37-110	29.04	7.07	106
9	0-21	22-25	26-40	41-110	33.07	7.66	161
10	0-24	25-29	30-47	48-110	38.61	9.29	167
11	0-30	31-34	35-52	53-110	43.37	8.62	137
12	0-25	26-32	33-60	61-110	46.36	13.86	120

Score level intervals: Very Low :[0, Mean – 1.5(SD)]; Low :[Very Low, Mean -1(SD)]; Normal : [Low, High]; High :[Mean+1.5(SD), Max]

Orthostatic Test

Take the child's blood pressure and pulse via digital sphygmomanometer, at the following times:

- after lying supine for 2 minutes; and then
- after standing unsupported for 2 minutes.

An option is to perform an additional assessment between lying and standing: After sitting upright for 2 minutes

The child is asked if they experience any symptoms such as:

- Dizziness or light-headedness
- Fainting.
- Blurred or fading vision.
- Nausea.
- Fatigue.
- Lack of concentration.

The criteria for:

- Orthostatic hypotension: a drop in systolic blood pressure ≥ 20 mmHg between supine and standing positions.
- Orthostatic tachycardia: an elevation in heart rate of ≥30 bpm when transitioning between the supine and standing positions, in the absence of orthostatic hypotension.

Cervical Spine Assessment

Palpate the cervical spine itself from the occipital protuberance to the prominence of the T1 spinous process. Tenderness is documented according to the subjective reporting of pain by the patient and spasm according to objective palpation by the examiner.

With the athlete sitting on the edge of the examination bed, observe active range of motion (ROM) into cervical flexion, extension, lateral (side) flexion, and rotation left and right.

Next palpate the paravertebral muscles and spinous processes segmentally and note muscle spasm or tenderness.

Neurological Examination

Abridged Cranial Nerve Exam

Cranial Nerve 1: Olfactory Nerve

- Subjective- Do you have any issues with smell?
- Objective- have a smell that players can identify (coffee, mint, or vanilla) test sense of smell each nostril with eyes closed.

Cranial Nerve 2: Optic Nerve

Briefly shine a pen/torch light into each pupil.

Pupils Equal And Reactive (PEARL)- pupil equal and reactive to light. Examine – pupillary constriction.

Consensual reflex – look for constriction of a pupil when light is shone into the other eye.

Visual fields – Using red hat pin or finger, assess each visual field quadrant of each eye separately.

Cranial Nerve 3, 4 & 6: Eye Movement

Examine position of the eye lid, and eye tracking with athlete's head still and examiner's finger drawing an "H" and an "X"

Cranial Nerve 5: Sensory

Examine sense of touch in 3 anatomical regions

- Forehead, above both eyes
- On both check bones
- On both sides of the jaw line

Motor - examine opening the mouth and side-to-side movements of the mandible. Jaw jerk

Cranial Nerve 7: Facial Nerve

Look for symmetry in the following movements:

- Raise eyebrows
- Close eyes tight
- Puff cheeks
- Big smile
- Purse lips
- Tight closed lips

Cranial Nerve 8: Gross hearing test

Whisper a number in each ear while clicking fingers in opposite ear.

Cranial Nerves 9 & 10:

Inspect uvula's symmetrical movement when saying "Ahhhhh"

Cranial Nerve 11: Trapezius and SCM Control

Athlete performs a shoulder shrug against resistance followed by neck rotation against resistance (if no neck pain or tenderness detected).

Cranial Nerve 12: Tongue

Stick tongue out – make sure it protrudes

Finger to Nose

Say ***"I am going to test your coordination now. Please sit comfortably on the chair with your eyes open and your right index/ pointer finger touching the tip of my pen. When I say go, I would like you to touch the tip of your nose, and then touch the tip of the pen 5 times, as quickly and as accurately as possible, and then do it again 5 times with your eyes closed."*** After completing the right hand, repeat with the left hand.

Limb Strength

Test upper and lower limb strength against resistance in seated position

- Shoulder
- Elbow flexion and extension
- Wrist extension and flexion
- Hands/fingers
- Hip flexion and extension
- Knee extension and flexion
- Foot dorsi and plantar flexion

Deep Tendon Reflex

Test in seated position and test left and right sides using a tendon hammer

Biceps – limb relaxed, finger over the tendon

Brachioradialis (supination) - 3cm proximal to radial styloid process

Triceps - patient flexes forearm at the elbow; support flexed elbow in your non-dominant hand; tap the triceps tendon just above the elbow with the narrow end of the reflex hammer.

Patellar – in a seated position, legs over end of exam bed, just below inferior pole of patella

Ankle/Achilles – slightly dorsiflex the ankle

Instructional Video

Sensation

Test upper and lower limbs using a soft (gauze, cotton wool) and sharp (pin or toothpick) object.

Balance - Modified Balance Error Scoring System (mBESS)

Say ***"I am now going to test your balance. Please take your shoes off (if applicable), roll up your pant legs above ankle (if applicable), and remove any ankle taping (if applicable). This test will consist of three twenty second tests with different stances."***

For younger children, the examiner may demonstrate the stance if the child has difficulties understanding the instructions.

Double Leg Stance

Say ***"The first stance is standing with your feet together with your hands on your hips and with your eyes closed. You should try to stay 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."***

Single Leg Stance

Say ***"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. Lift up your other foot so it's off the floor. Again, you should try to maintain stability for 20 seconds with your hands on your hips and your eyes closed. I will be counting the number of times you move out of this position. If you stumble out of this position, open your eyes and return to the start position and continue balancing. I will start timing when you are set and have closed your eyes."***

Tandem Stance

Say ***"Now stand heel-to-toe with your non-dominant foot in back. Your weight should be evenly distributed across both feet. You should try to stay in that position for 20 seconds with your hands on your hips and your eyes closed. I will be counting the number of times you move out of this position. If you 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."***

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

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

- Moving the hands off of the iliac crests
- Opening the eyes
- Step stumble or fall
- Abduction or flexion of the hip beyond 30°
- Lifting the forefoot or heel off of the testing surface
- Remaining out of the proper testing position for greater than 5 seconds

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

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

On Foam

Where available, a foam pad may be used to perform the BESS using the same sequence of 3 tests. This increases the sensitivity.

Foam Pad (Power Systems Airex Balance Pad 81000 or similar).

Dimensions: Length: 25cm Width: 25cm Height: 6cm

The purpose of the foam pad is to create an unstable surface and a more challenging balance task.

Tandem Gait

Test Setup

- Secure a strip of athletic tape (3m in length) on the ground in a straight line.
- Have the child remove their shoes ± socks.

Familiarization

- Instruct the child they will be asked to walk heel-to-toe in a forward direction, along the line on the floor, with their hands on their hips.
  - **Example:** ***"You are going to walk heel-to-toe along this line with your hands on your hips the whole time. When you get to the end, you will do a 180 degree turn and return back to where you started, still walking heel-and-toe."***
- First perform a practice test
  - Explain that they should walk as fast as they can to the end and turnaround, without stepping off the line, touching a table or wall for support, or separating their heel and toe during the test.

Single-Task Trials

- Instruct the patient to perform a single-task trial, where they will be timed
  - **Example:** ***"Now let's do the same thing, but this time I will time you. Remember, go as fast as you can without making a mistake"***
- Start the test over if they have a failure (if they step off the line or touch a nearby item for support).
- Record the single task trial 1 time on the tracking sheet.
- Repeat up to three single-task trials.
- Trial time is recorded as the time from when the practitioner says "start" until the patient walks down, back, and their back heel crosses the original start line.

Complex Gait

Instructions

Set-up as for Tandem Gait

The child walks forward five steps tandem gait heel-to-toe, with eyes open, then continue forward five steps with eyes closed.

Then have the child walk backwards five steps tandem gait heel-to-toe, with eyes open, then continue backwards five steps with eyes closed.

Say: ***"Please walk heel-to-toe quickly five steps, then continue forward with eyes closed for five steps, then walk backwards with eyes open five steps then continue backwards with eyes closed five steps."***

For eyes closed, say: ***"I will tell you when to walk backwards and when to stop".***

For each of the 4 conditions (forward/backward, eyes open/closed) score:

1 point for each step off the line, 1 point for truncal sway

Total score (Forward + Backward) : ≤4 may be normal, ≥5 may be concussed.

Dual Task Trials

Only perform if the child successfully completes complex tandem gait.

The Dual-Task cognitive task should be selected based on the individual child's maths ability. For example, Serial 3s Subtract may be most appropriate for older children; however, a smaller integer (e.g. 2) may be selected if the child cannot complete the practice trial by subtracting 3's. If the child can't complete the practice trial and an integer other than 3 is selected for the test, make note of this change.

Practice Trial

Say ***"Now, while you are walking heel-toe, I will ask you to count backwards out loud by 3s. For example, if we started at 100, you would say 100, 97, 94, 91. Let's practice counting. Starting with 95, count backward by 3s until I say "stop"."***

Examination Trials

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

Dual Task Trials (Continued)

Outcomes to Record

- Single-task trials: average time to tandem gait test completion.
- Dual-task trials: average time to tandem gait test completion, correct/total cognitive responses.
- If the patient does step off the line, or touches a nearby item for support, the test would be considered a failure and the test should be restarted.

Record on the testing sheet the number of failures that occur in each condition.

Normative Scores

There are limited normative data for children ages 8-12 years, however, preliminary data suggest the following as a general guide.

Single-task tandem gait time with no mistakes:

- Normal range (fastest 75%): <25.9 seconds
- Slower than average (75%-90%ile): 25.0 – 30.4 seconds
- Very slow (>90%ile, or slowest 10%): >30.4 seconds

Dual-task tandem gait time:

- Normal range (fastest 75%): <35.0 seconds
- Slower than average (75%-90%ile): 35.1 – 47.8 seconds
- Very slow (>90%ile, or slowest 10%): >47.8 seconds

Video examples of the single and dual task tests available at https://vimeo.com/716025718/b6124c8f83

Visio-Vestibular Examination

Smooth Pursuits

The patient follows the examiner's finger as it moves horizontally, progressing more rapidly and stopping in the center of the patient's visual field, for 5 total repetitions.

Abnormalities include EITHER patient-reported symptom provocation OR physical signs.

Fast Saccades

The patient rapidly moves his or her eyes between the examiner's fingers (held either shoulder-width apart for horizontal saccades or between the mid-forehead and sternal notch for vertical saccades).

Abnormalities include patient-reported symptom provocation after 20 or fewer repetitions.

Gaze Stability Testing

(The angular vestibular-ocular reflex)

The patient shakes his or her head "yes"(for vertical gaze stability) or "no" (for horizontal gaze stability) while fixing his or her eyes on the examiner's finger. Abnormalities include patient-reported symptom provocation after 20 or fewer repetitions.

Near-Point of Convergence Testing

The patient is asked to identify the distance where small print letters (generally assessed using a graspable object with approximately size ten font print, such as the writing on the side of a pen or pencil) become double.

An abnormality occurs when there is doubling of letters seen at >6cm from the patient's forehead.

Left and Right Monocular Accommodation

The patient is asked to determine the distance where small print letters (generally assessed using a graspable object with approximately size ten font print, such as the writing on the side of a pen or pencil) become blurry.

An abnormal examination occurs at ≥ 10 cm (≤ 12 years old) (see table for age specific norms).

5 years old: >=8.5 cm	10 years old: >=9.5 cm	15 years old: >=10.8 cm
6 years old: >=8.7 cm	11 years old: >=9.8 cm	16 years old: >=11.1 cm
7 years old: >=8.9 cm	12 years old: >=10.0 cm	17 years old: >=11.4 cm
8 years old: >=9.1 cm	13 years old: >=10.3 cm	18 years old: >=11.7 cm
9 years old: >=9.3 cm	14 years old: >=10.5 cm	

Visio-Vestibular Examination (Continued)

Complex Tandem Gait

(If not tested earlier in Balance)

The patient walks both forwards and backwards with his or her eyes open and closed for 5 steps each. A point is given for each step off the straight line (0-5 for each of the four maneuvers) or sway (raising of arms for stability or any truncal movement off a vertical line extending from the crown of the subject's head to the midline between his or her feet, 0-1 for each of the four maneuvers); total possible score 0-24

An abnormal examination occurs at a score of ≥ 5 out of 24

PROMIS Instruments

To find the total raw score for a short form with all questions answered, sum the values of the response to each question. For example, for the 8-item form, the lowest possible raw score is 8; the highest possible raw score is 40. Use the table to translate the total raw score into a T-score. The T-score rescales the raw score into a standardized T-score with a mean of 50 and a standard deviation (SD) of 10. Therefore, a person with a T-score of 40 is one SD below the mean.

A higher PROMIS T-score represents more of the concept being measured. For negatively-worded concepts like anxiety, a T-score of 60 is one SD worse than average. By comparison, an anxiety T-score of 40 is one SD better than average.

Anxiety Screen

Pediatric Anxiety – Short Form 8a - v2.0

Short Form Conversion Table		
Raw Score	T-Score	SE*
8	33.5	5.9
9	38.0	4.9
10	40.6	4.7
11	43.0	4.4
12	44.9	4.2
13	46.7	4.0
14	48.3	3.9
15	49.8	3.8
16	51.2	3.8
17	52.5	3.7
18	53.8	3.7
19	55.1	3.7
20	56.3	3.7
21	57.5	3.7
22	58.7	3.7
23	59.9	3.7
24	61.0	3.7
25	62.2	3.7
26	63.4	3.7
27	64.5	3.7
28	65.7	3.6
29	66.9	3.6
30	68.1	3.6
31	69.3	3.7
32	70.6	3.7
33	71.8	3.7
34	73.2	3.7
35	74.6	3.8
36	76.0	3.8
37	77.6	3.9
38	79.3	4.0
39	81.1	3.9
40	83.3	3.8

SE* = Standard Error on T-Score

Depression Screen

Pediatric Depressive Symptoms – Short Form 8a - v2.0

Short Form Conversion Table		
Raw Score	T-Score	SE*
8	35.2	5.8
9	40.4	4.6
10	43.2	4.2
11	45.5	3.9
12	47.4	3.7
13	49.1	3.5
14	50.6	3.3
15	52.0	3.2
16	53.3	3.2
17	54.5	3.1
18	55.7	3.1
19	56.8	3.0
20	57.9	3.0
21	59.0	3.0
22	60.0	3.0
23	61.1	3.0
24	62.1	3.0
25	63.1	3.0
26	64.1	3.0
27	65.1	3.0
28	66.1	3.0
29	67.2	2.9
30	68.2	2.9
31	69.3	3.0
32	70.3	3.0
33	71.4	3.0
34	72.6	3.0
35	73.8	3.1
36	75.1	3.2
37	76.5	3.3
38	78.1	3.5
39	79.9	3.6
40	82.4	3.7

SE* = Standard Error on T-Score

Sleep Disturbance

Pediatric Sleep Disturbance – Short Form 4a - v1.0

Short Form Conversion Table			
Raw Score	T-Score	SE*	Theta Score
4	38.8	6.0	-1.12
5	45.4	4.0	-0.46
6	48.8	3.4	-0.12
7	51.5	3.1	0.15
8	53.7	3.0	0.37
9	55.8	3.0	0.58
10	57.9	3.1	0.79
11	60.0	3.1	1.0
12	61.9	3.1	1.19
13	63.7	3.2	1.37
14	65.5	3.2	1.55
15	67.5	3.1	1.75
16	69.3	3.1	1.93
17	71.2	3.1	2.12
18	73.3	3.3	2.33
19	75.5	3.4	2.55
20	79.1	3.8	2.91

SE* = Standard Error on T-Score Metric

Sleep-Related Impairment

Pediatric Sleep-Related Impairment – Short Form 4a - v1.0

Short Form Conversion Table			
Raw Score	T-Score	T-Score SE*	Theta Score
4	38.3	6.0	-1.17
5	44.7	4.1	-0.53
6	47.8	3.7	-0.22
7	50.6	3.1	0.06
8	52.9	2.9	0.29
9	55.1	2.8	0.51
10	57.2	2.8	0.72
11	59.5	2.9	0.95
12	61.9	2.9	1.19
13	64.1	3.0	1.41
14	66.1	3.1	1.61
15	68.4	3.0	1.84
16	70.7	3.0	2.07
17	73.0	3.1	2.30
18	75.7	3.3	2.57
19	79.6	3.9	2.96

SE* = Standard Error on T-Score Metric

Fear Avoidance Behaviour

A measure to identify fear avoidance behaviour, which may contribute to poorer outcomes/persisting symptoms post-concussion, which may benefit from psychological intervention.

Delayed Recall

The delayed recall should be performed after a minimum 5 minutes have elapsed since the end of the Immediate Recall section.

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

Exercise Test Protocols

Graded exercise protocols may be used for both symptom provocation and as a treatment intervention. Before starting, exclude contra-indications including cardiac condition, respiratory disease, significant vestibular symptoms, motor dysfunction, lower limb injuries, and cervical spine injury. For athletes whose symptoms include dizziness and poor balance, a stationary bike test is more appropriate.

Validated protocols include the Buffalo Concussion Treadmill Test (BCTT) and the Buffalo Concussion Bike Test (BCBT)

Record the protocol used, HR, RPE, overall condition (VAS) and symptoms for every stage.

Protocol:		**Name/Patient ID:**		
Min	**HR (bpm)**	**RPE**	**Overall Condition (0-10)**	**Symptoms/Observations**
Rest				
1 min				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
1 min recov				
2 min recov				

Acknowledgements and References

Protocols

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