



Updates on Sports Related Concussion from the 6th International Conference on Concussion in Sport

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Over the last 20 years, the Concussion in Sport Group has met periodically to develop statements guiding the assessment and management of sports-related concussions. The most recent meeting of the group took place in Amsterdam, Netherlands, in October 2022 and produced updated and freely available, evidence-informed tools to assist in the detection and assessment of sports-related concussion (SRC). These tools include: the Concussion Recognition Tool-6 (CRT6); Sport Concussion Assessment Tool-6 (SCAT6); Child SCAT6; Sport Concussion Office Assessment Tool-6 (SCOAT6); and Child SCOAT6.

The latest statement can prove clinically useful for many urgent care (UC) patients and practitioners as it specifically provides up-to-date guidance for athletes who have sustained a suspected SRC at any level of sport (ie, recreational to professional).¹ The expert panelists represented a broad array of experience and professional disciplines from Australia, Canada, Finland, Japan, South Africa, United States, United Kingdom, Switzerland, and the Czech Republic.

The group developed the “11 R’s” mnemonic to describe the steps in management of SRC: Recognize; Reduce; Remove; Refer; Re-evaluate; Rest; Rehabilitate; Recover; Return-to-Learn; Return-to-Sport; Reconsider; and Residual effects. This paradigm describes the flow of recommendations for moving athletes from concussion through recovery and return to sport and normal daily life.

The development of the new SCOAT6 and Child SCOAT6 for adult and pediatric patients also provides a

standardized and expanded age-appropriate instrument to facilitate and organize the complex and multidomain evaluation of concussion symptomatology in the subacute phase (ie, from 72 hours to a few weeks postinjury). The aim of these tools is to move toward more individualized patient treatment plans based not only on the initial injury but also their recovery trajectory—a major shift in guidelines-based concussion care.

The authors do note that the SCOAT tools are not meant to replace clinical judgment but rather to provide a standardized, yet adaptable, framework to help inform and personalize the concussion treatment for athletes. The most relevant highlights from this updated statement for UC clinicians follow.

Urgent Care Assessment

The group suggests that relevant data to collect would include the athlete’s history of prior concussions, how prior concussions were managed, and approximate time to recovery from prior traumatic brain injuries (TBIs). They emphasize the importance of reviewing the patient’s past medical history with special attention on any neuropsychological diagnoses that may affect the immediate presentation and/or recovery. Conditions warranting such attention include (but certainly are not limited to) migraine and other headache disorders, anxiety, depression, sleep disorders, and attention-deficit hyperactivity disorder.

Simple neurocognitive exams which the group recommends in the initial evaluation phase include:

- **Word recall and digit backwards tests:** The 10-word immediate recall and digit string backwards tests are recommended. If the athlete finds the word recall task too easy (eg, exhibits a ceiling effect), a 15-word list may be used.
- **Vital sign assessment:** Clinicians are advised to



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measure supine and standing blood pressures and heart rate, spaced 2 minutes apart.

- **Cervical spine assessment:** Clinicians are recommended to evaluate not only for cervical spine injury but also for range of motion and muscle spasm.
- **Neurologic exam:** Clinicians are encouraged to document a thorough neurologic exam to establish a baseline and exclude focal deficits that may require more extensive work-up (ie, emergent brain imaging). The neurological assessment evaluates cranial nerves, motor function, sensation, coordination and balance, and deep tendon reflexes.
- **Complex task assessment:** The group suggests evaluation of timed tandem gait as a single task and then more complex dual-task assessment through the addition of a simultaneous cognitive task (eg, months backwards or word recall backwards), which can offer clues to more subtle deficits.
- **Modified vestibular-ocular motor screen (VOMS):** VOMS assessment is a complex series of eye movements and head tracking activities that assess for how symptoms of concussion may be provoked. Given the complexity of this assessment, clinicians would be prudent to use an online training video or checklist to ensure all elements are evaluated.
- **Delayed word recall:** In addition to immediate recall, as discussed above, testing working memory can be achieved with a delayed recall assessment 5 minutes or more after the initial word recall task.

This is obviously a robust, and likely more comprehensive, assessment than many UC clinicians perform on patients with concussion. However, given that the “deficits” of many concussions in athletes have a propensity for subtlety, the addition of these expanded assessments offer greater sensitivity for detecting consequences of TBI. Additionally, performing these tests on the initial assessment can offer for a critical baseline which will then serve as a benchmark for subsequent progress in recovery.

Rest and Recovery

The Concussion in Sport Group concluded that best-evidence at this time does not support strict physical rest until the complete resolution of concussion-related symptoms as has previously been common practice. Instead, the group advocates for “relative rest,” which seems to be more beneficial for facilitating recovery. Relative rest allows for continuing many activities of daily living while reducing screen time.

Relative rest is indicated immediately after injury and

for up to the first 2 days after. Individuals are advised in the most recent guidelines to return to light-intensity physical activity, such as walking, that does not more than mildly exacerbate symptoms, during the initial 24–48 hours following a concussion.

The best evidence regarding cognitive rest suggests that reduced screen time in the first 48 hours after injury is warranted but may not affect recovery beyond this timepoint. The group acknowledges that this area still requires further investigation to determine the best course of action.

Referrals

The SRC group recommends that referrals to specialists in concussion management should be considered for patients in whom concussion symptoms persist beyond 1 month. Possible persistent symptoms are myriad, and the continuing experience of any warrant referral. Examples of common persistent symptoms include: cervicogenic symptoms; headache; cognitive and psychological difficulties; balance disturbances; vestibular signs; and oculomotor manifestations.

Return to Learning and Sports

Prior studies have found that immediate return to normal competition and/or cognitive tasks following SRC resulted in longer recovery times. The consensus panel now suggests a stepwise progression of increasing cognitive loads for return to learning (RTL) following a 24–48-hour period of rest, providing that doing so does not lead to further exacerbations of symptoms.

Return to sports (RTS) strategies mirror the RTL strategy. Return to gentle activities should proceed in a stepwise fashion through 6 phases. The athlete may advance to each subsequent step based on self-monitoring of symptoms in conjunction with clinician guidance as cognitive function, and neurological symptoms and signs are monitored. Practitioner clinical judgment ultimately is most important, and clinicians should feel comfortable with allowing the athlete to continue the progressive RTS steps if improving and, likewise, pausing athletes who fail to improve as expected.

Differentiating early activity (step 1), aerobic exercise (step 2), and individual sport-specific exercise (step 3) as part of the treatment of SRC can be useful for the athlete and their support network. Step 4 consists of non-contact drills, followed by full-contact practice (step 5) and subsequent return to competitive sport (step 6). ■

Reference

1. Patricios JS, Schneider KJ, Dvorak J et al. *Br J Sports Med* 2023;57:695–711. doi:10.1136/bjsports-2023-106898