

# Neuropsychological Screening of Sport-Related Concussion



Michael A. McCrea, PhD<sup>a,\*</sup>, Breton Asken, MS, ATC<sup>b</sup>,  
Lindsay D. Nelson, PhD<sup>a</sup>

## KEYWORDS

- Concussion • Mild traumatic brain injury • Neuropsychological testing
- Sports injuries

## KEY POINTS

- Neuropsychological assessment is a key component of the recommended multidimensional approach to evaluating athletes affected by sport-related concussion (SRC).
- There is not a “one-size-fits-all” solution to neuropsychological assessment of SRC; the scope of evaluation should be customized to the clinical setting and intended purpose.
- Neurocognitive testing should not be used as the sole basis for diagnosing concussion or determining when an athlete is fit for return to play after injury.
- Neurocognitive testing should be considered as 1 component of the multidimensional approach to concussion assessment.

## INTRODUCTION

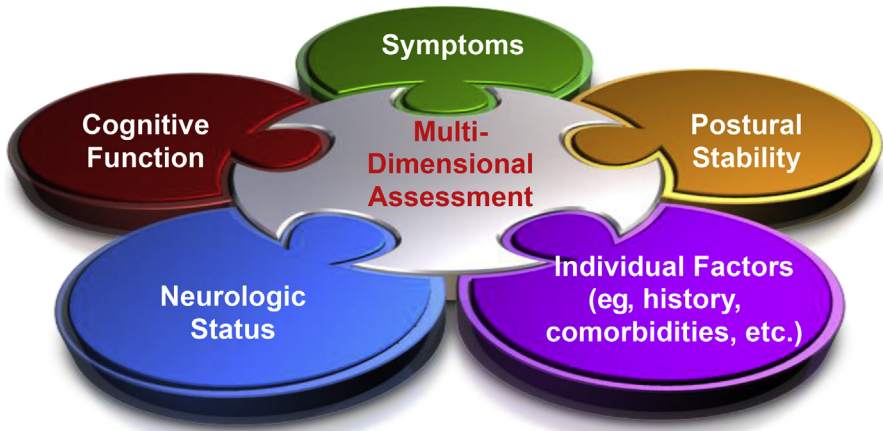
International consensus guidelines recommend a multidimensional approach to the assessment of sport-related concussion (SRC).<sup>1–4</sup> This framework is based on the theory that reliance on a single test or multiple measures in a single assessment domain will be less accurate than a multimodal assessment. At a minimum, this model integrates formal evaluation of injury signs and symptoms, neurologic status, postural stability, and neurocognitive functioning (Fig. 1). Over the past 30 years, neuropsychological assessment has been recognized as an important component in the multidimensional approach to evaluation of athletes affected by SRC.<sup>5–7</sup> The neuropsychological assessment typically involves multiple features, including survey of the somatic, cognitive, and emotional symptoms common after SRC, as well as formal

---

<sup>a</sup> Department of Neurosurgery, Medical College of Wisconsin, 8701 Watertown Plank Road, Milwaukee, WI 53226, USA; <sup>b</sup> Department of Clinical and Health Psychology, University of Florida, 1225 Center Drive, Room 3151, Gainesville, FL 32611, USA

\* Corresponding author.

E-mail address: [mmccrea@mcw.edu](mailto:mmccrea@mcw.edu)



**Fig. 1.** Multidimensional approach to the assessment of sport-related concussion.

neurocognitive testing, which may be done using brief screening measures during the acute phase or more comprehensive neurocognitive tests in the clinic setting.

Self-report symptom checklists are a simple and convenient way to screen for common concussion symptoms, but their reliability and sensitivity can be limited because athletes may fail to recognize these symptoms, may be motivated to underreport symptoms to return to play more promptly, or they may report nonspecific symptoms for reasons other than concussion.<sup>8,9</sup> In addition to symptom assessment, objective, standardized measurement of cognitive functioning can be valuable for evaluating concussed athletes and informing return to play decisions. Among the major reasons for ascertaining whether athletes are clinically recovered before returning to competition is that repeat injuries seem to be most likely while athletes are early in their recoveries.<sup>10</sup>

Traditional approaches to more formal neuropsychological testing have targeted those domains of cognitive function most susceptible to change after concussion, often characterized by deficits in memory, attention, concentration, cognitive reaction time, cognitive processing speed, and executive cognitive functions.<sup>11,12</sup> The original neurocognitive testing movement focused largely on creating abbreviated batteries based on the existing literature using tests that demonstrated adequate reliability and validity for the assessment of traumatic brain injury.<sup>13,14</sup> A tiered set of brief test batteries emerged, ranging from neurocognitive screening tools fit for use on the sports sideline to more comprehensive testing protocols for the clinic setting. Over the last 10 to 15 years, computerized neurocognitive testing (CNT) has become especially popular in the sports medicine community.<sup>15–17</sup> There are now several CNT batteries commercially available and commonly used in the assessment of athletes with SRC.

This review provides a brief overview on the role of the neuropsychologist and neurocognitive assessment of SRC, with a particular focus on brief cognitive screening tools, traditional neuropsychological testing, and newer computerized neurocognitive assessment tools.

### KEY ROLE OF THE NEUROPSYCHOLOGIST

Neuropsychologists have specialty training in the assessment of cognitive, behavioral, and emotional sequelae of traumatic brain injury and concussion, including SRC.<sup>18</sup>

Download English Version:

<https://daneshyari.com/en/article/5631930>

Download Persian Version:

<https://daneshyari.com/article/5631930>

[Daneshyari.com](https://daneshyari.com)