The Concussion Recognition Tool 5th Edition (CRT5): Background and rationale

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ABSTRACT

The Concussion Recognition Tool 5 (CRT5) is the most recent revision of the Pocket Sport Concussion Assessment Tool 2 that was initially introduced by the Concussion in Sport Group in 2005. The CRT5 is designed to assist non-medically trained individuals to recognise the signs and symptoms of possible sport-related concussion and provides guidance for removing an athlete from play/sport and to seek medical attention. This paper presents the development of the CRT5 and highlights the differences between the CRT5 and prior versions of the instrument.

INTRODUCTION

The Concussion in Sport Group (CISG) first developed the Sport Concussion Assessment Tool (SCAT)[1] during the 2nd International Consensus Conference on Concussion in Sport, held in Prague, 2004, to serve as an educational tool for the public and to assist medical providers in evaluating sport-related concussion (SRC). The SCAT has been revised several times with the most recent in 2016, the SCAT5 for adults[2] and the Child SCAT5 for children under 13.[3] All versions of the SCAT were designed for use by healthcare professionals. However, the CISG was acutely aware that healthcare professionals are not present at most athletic events, particularly in youth or recreational leagues. The Pocket SCAT2 was published in 2009 following the 3rd International Consensus Conference in Zurich.[4] The purpose of the Pocket SCAT2 was to provide a tool for the layperson to help recognise the signs and symptoms of SRC in all age groups and to provide guidance for removing an athlete from play/sport and to seek medical attention. The Pocket SCAT2 was comprised of concussion symptoms, a brief assessment of basic memory and balance testing. The Pocket SCAT2 was revised by the CISG in 2012 following the 4th International Consensus Conference[5] and renamed the Pocket Concussion Recognition Tool (Pocket CRT). The Pocket CRT maintained the focus on use by laypersons and expanded the tool to include more complete suggestions for identifying possible concussions through the use of visible or observable signs (eg, loss of consciousness or lack of responsiveness; balance problems or motor incoordination; confusion) and symptoms (eg, headache, dizziness, visual disturbances). The basic memory function questions were retained from the Pocket SCAT2. New to the Pocket CRT was the inclusion of 'red flags' (eg, increasing confusion, repeated vomiting, seizures or convulsions) that may signal the need for emergency transport to a medical facility. Explicit instructions were also provided about what to do with athletes with suspected concussion (eg, basic first aid principles, do not move the athlete, do not remove the helmet).

METHODS

The CISG met in Berlin in 2016 at the 5th International Consensus Conference on Concussion in Sport. The consensus process followed the approach previously employed by the CISG.[6] A subset of the expert panel met on a separate day and were tasked with reviewing the Pocket CRT and asked to provide recommendations for improving the tool, which was to be named the Concussion Recognition Tool 5 (CRT5). The version number (5) was chosen to align the version number with the consensus meeting number. To be explicit, there is no CRT 2, 3 or 4. The number of the instrument refers to the number of the CISG meeting—in this case 5—Berlin (2016). Although the CRT was not the subject of a dedicated systematic review, an extensive series of related reviews were performed to inform the CRT revision process.

RESULTS

The CRT5 expert panel underscored the importance of continuing to provide a 'recognition and removal' tool for the layperson. Two key concepts guided the development of the CRT5: (1) maintain continuity with its predecessor, the Pocket CRT; and (2) improve consistency between the SCAT5 and the CRT5, while recognising the different needs/experiences of the users. With these objectives in mind, the following were included in the modifications of CRT5. The complete CRT5 can be found at the end of this article.

DISCUSSION

The CRT5 is modelled after its predecessor, the pocket CRT, and is a tool for individuals who do not have medical training to recognise possible SRC and to take appropriate steps if an SRC is suspected. Although complementary to the SCAT5, the CRT5

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Box 1 CRT5 Modifications

- A greater emphasis on the goals of the CRT5: Recognise and Remove.
- An expressed statement that the CRT5 is not to be used to diagnose concussion.
- An expansion of the Red Flags section including emphasis on calling an ambulance.
- Instruction that the presence of any red flag requires immediate medical attention.
- Clarification that if no red flags are present, continued use of the tool is warranted.
- A list of visible signs and symptoms of concussion that is consistent with the SCAT5.
- A list of symptoms divided into different types (eg, somatic, cognitive, emotional) to facilitate identification of possible concussion, and language appropriate for both adults and children.
- Change from Memory Function to 'Awareness' questions with instructions that the questions should only be used in athletes more than 12 years of age.
- Emphasis added on explicit instruction that any athlete suspected of concussion should be immediately removed from play and should not return to activity until assessed medically.
- Cautions issued regarding acute management and restrictions on behaviours (eg, drinking alcohol, driving, use of drugs).

serves a different purpose and is not to be used in the medical diagnosis of concussion. Rather, it is to be used by laypeople as guide in the recognition of signs and symptoms of possible concussion and to assist with transferring such athletes to an appropriate health professional. Very little research has been conducted on the utility or efficacy of these tools in improving the detection and management of SRC. It is our goal to widely disseminate the CRT5 in multiple languages and we hope that research groups embrace the task of assessing the utility of this tool.

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Competing interests For full author disclosures and competing interests see the online supplementary folder ICMJE forms on the *BJSM* website (http://dx.doi.org/10.1136/bjsports-2017-097508).

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