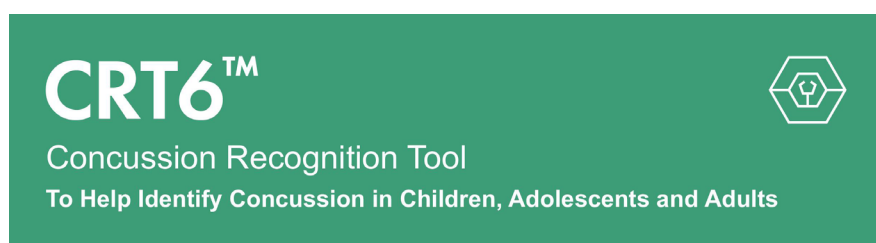


The Concussion Recognition Tool 6 (CRT6)

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What is the Concussion Recognition Tool?

A concussion is a brain injury. The Concussion Recognition Tool 6 (CRT6) is to be used by non-medically trained individuals for the identification and immediate management of suspected concussion. It is not designed to diagnose concussion.

Recognise and Remove

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

Remember

- In all cases, the basic principles of first aid should be followed: assess danger at the scene, check airway, breathing, circulation; look for reduced awareness of surroundings or slowness or difficulty answering questions.
- Do not attempt to move the athlete (other than required for airway support) unless trained to do so.
- Do not remove helmet (if present) or other equipment.
- Assume a possible spinal cord injury in all cases of head injury.
- Athletes with known physical or developmental disabilities should have a lower threshold for removal from play.

If there are no Red Flags, identification of possible concussion should proceed as follows:

Concussion should be suspected after an impact to the head or body when the athlete seems different than usual. Such changes include the presence of **any one or more** of the following: visible clues of concussion, signs and symptoms (such as headache or unsteadiness), impaired brain function (e.g. confusion), or unusual behaviour.

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CRT6

Concussion Recognition Tool

To Help Identify Concussion in Children, Adolescents and Adults

1: Visible Clues of Suspected Concussion

Visible clues that suggest concussion include:

- Loss of consciousness or responsiveness
- Lying motionless on the playing surface
- Falling unprotected to the playing surface
- Disorientation or confusion, staring or limited responsiveness, or an inability to respond appropriately to questions
- Dazed, blank, or vacant look
- Seizure, fits, or convulsions
- Slow to get up after a direct or indirect hit to the head
- Unsteady on feet / balance problems or falling over / poor coordination / wobbly
- Facial injury

2: Symptoms of Suspected Concussion

Physical Symptoms

Headache
 "Pressure in head"
 Balance problems
 Nausea or vomiting
 Drowsiness
 Dizziness
 Blurred vision
 More sensitive to light
 More sensitive to noise
 Fatigue or low energy
 "Don't feel right"
 Neck Pain

Changes in Emotions

More emotional
 More Irritable
 Sadness
 Nervous or anxious

Changes in Thinking

Difficulty concentrating
 Difficulty remembering
 Feeling slowed down
 Feeling like "in a fog"

Remember, symptoms may develop over minutes or hours following a head injury.

3: Awareness

(Modify each question appropriately for each sport and age of athlete)

Failure to answer any of these questions correctly may suggest a concussion:

"Where are we today?"

"What event were you doing?"

"Who scored last in this game?"

"What team did you play last week/game?"

"Did your team win the last game?"

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.

Athletes with suspected concussion should **NOT**:

- Be left alone initially (at least for the first 3 hours). Worsening of symptoms should lead to immediate medical attention.
- Be sent home by themselves. They need to be with a responsible adult.
- Drink alcohol, use recreational drugs or drugs not prescribed by their HCP
- Drive a motor vehicle until cleared to do so by a healthcare professional

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Contributors RJE served as the primary author and responsible for all aspects of the project, including initial preparation, coordination, review, editing and final preparation of the manuscript and CRT6 tool. All co-authors contributed to the development and critical review of the manuscript and CRT6 tool, and approved the final version of the manuscript and tool.

Competing interests OHA reports employment from University Hospitals Dorset NHS Foundation Trust (England) as a Senior Physiotherapist, and paid employment from the Football Association (England) as Para Football Physiotherapy Lead, Para Football Classification Lead, and Physiotherapist to the England

Cerebral Palsy Football squad. Unpaid roles/voluntary roles: University of Portsmouth (England) as Visiting Senior Lecturer; Para Football Foundation as Medical Unit Co-Lead; the International Federation of Cerebral Palsy Football as Medical and Sports Science Director; the International Blind Sports Association as a Medical Committee member; British Journal of Sports Medicine as Associate Editor; BMJ Open Sports & Exercise Medicine as Associate Editor; World Rugby as Institutional Ethics Committee external member; the Concussion in Para Sport Group as co-chair; and the Concussion in Sport Group as board member. CMB reports affiliations with the Cleveland Browns (National Football League) and Cleveland Monsters (American Hockey League), a board position in the Sports Neuropsychology Society, and occasional expert consulting fees. JMB reports being a part-time employee of the NHL. JMB's institution has received funding from Genzyme, and EyeGuide supporting his work, and he has served as a paid consultant to Med-IQ and Sporting KC. JSB reports receiving methods author funding for this review and Alexander Graham Bell Canada Graduate Scholarships-Doctoral Program. GAD is a member of the Scientific Committee of the 6th International Consensus Conference on Concussion in Sport; an honorary member of the AFL Concussion Scientific Committee; Section Editor, Sport and Rehabilitation, NEUROSURGERY; and has attended meetings organised by sporting organisations including the NFL, NRL, IIHF, IOC and FIFA; however has not received any payment, research funding, or other monies from these groups other than for travel costs. RJE is a paid consultant for the National Hockey League and co-chair of the National Hockey League /National Hockey League Players' Association Concussion Subcommittee, Major League Soccer's Concussion Committee and the US Soccer Federation, provides testimony in matters related to mTBI and reports a grant from Boston Children's Hospital (sub-award from the National Football League) and travel support for the CIS conference and other professional conferences, an unpaid board member of CISG and leadership roles (unpaid) in professional organizations. GG Reports grant funding from CDC TEAM and OnTRACK grants, NIMH APNA grant, royalties from PAR, consulting fees from NFL Baltimore Ravens, Zogenix International, and Global Pharma Consultancy, and travel support for professional meetings. He is a member of USA Football Medical Advisory Panel. DH reports research support from the Eunice Kennedy Shriver National Institute of Child Health & Human Development, the National Institute of Neurological Disorders And Stroke, the National Institute of Arthritis and Musculoskeletal and Skin Diseases, 59th Medical Wing Department of the Air Force, MINDSOURCE Brain Injury Network, the Tai Foundation, and the Colorado Clinical and Translational Sciences Institute (UL1 TR002535-05) and he serves on the Scientific/Medical Advisory Board of Synaptex, LLC. GF is a member of the BJSM editorial board. CM reports no financial COI. She holds leadership positions with several organizations American College of Sports Medicine, American Medical Society for Sports Medicine, Pediatric Research in Sports Medicine, Council on Sports Medicine and Fitness, American Academy of Pediatrics, Untold Foundation, Pink Concussions, Headway Foundation, and the editorial boards of Journal of Adolescent Health, Frontiers in Neuroergonomics, Exercise, Sport, and Movement. JP reports travel support for the CIS conference and other professional meetings, consulting fees and grant funding from World Rugby, and an unpaid board member of CISG and EyeGuide. He is a member of the BJSM editorial board. KJS has received grant funding from the Canadian Institutes of Health Research (CIHR), NFL Scientific Advisory Board, International

Olympic Committee Medical and Scientific Research Fund, World Rugby, Mitacs Accelerate, University of Calgary, with funds paid to her institution and not to her personally. She is an Associate Editor of BJSM (unpaid), Independent consultant to World Rugby and has received travel and accommodation support for meetings where she has presented. She coordinated the writing of the systematic reviews that informed Amsterdam International Consensus on Concussion in Sport, for which she has received an educational grant to assist with the administrative costs associated with the writing of the reviews (with funds paid to her institution). She is a member of the AFL Concussion Scientific Committee (unpaid position), Brain Canada (unpaid positions) and Board member of the Concussion in Sport Group (CISG) (unpaid). She works as a physiotherapy consultant and treats athletes of all levels of sport from grass roots to professional. JVI reports CIHR Postdoctoral Fellowship Award, UOMBRI Grant, travel stipend from CTRC and Founder of R2P™ Concussion Management. JPar reports no disclosures. SRW reports honoraria and travel support for professional meetings and leadership positions in World Federation of Athletic Training and Therapy and Outcomes, International Traumatic Brain Injury Research Initiative. RZ reports competitively-funded research grants from Canadian Institutes of Health Research (CIHR), Ontario Neurotrauma Foundation (ONF), Physician Services Incorporated (PSI) Foundation, CHEO Foundation, Ontario Brain Institute (OBI), Health Canada, Public Health Agency of Canada (PHAC), Ontario SPOR Support Unit (OSSU), Ontario Ministry of Health, and the National Football League (NFL) Scientific Advisory Board. He is Clinical Research Chair in Pediatric Concussion from University of Ottawa, and a volunteer board member the North American Brain Injury Society (NABIS). Co-founder, Scientific Director and a minority shareholder in 360 Concussion Care, an interdisciplinary concussion clinic.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; internally peer reviewed.

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To cite Echেমendia RJ, Ahmed OH, Bailey CM, *et al.* *Br J Sports Med* 2023;**57**:692–694.

Accepted 4 June 2023

Br J Sports Med 2023;**57**:692–694.
doi:10.1136/bjsports-2023-107021

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