



# A **roadmap**

for developing  
and implementing  
**concussion management**  
**policies** and **protocols**  
in sport

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PREVENTION

IDENTIFICATION

MANAGEMENT

TOOLS  
&  
EXPERTISE

DISSEMINATION  
&  
EDUCATION

EVALUATION &  
REVIEW

# Introduction

## Target audience

Any group or organisation aiming to adapt and implement a concussion management policy or protocol in a specific sport or context (school-based and non school-based).

## Where can valid information about concussion management be found? How is that information incorporated into protocols?

The scientific evidence regarding concussion management is periodically reviewed by panels of clinical experts and is published in consensus documents such as the International Consensus Conference on Concussion in Sport.<sup>1</sup> Concussion management policies should include a requirement to periodically review and update concussion management protocols. Specific protocols should evolve to integrate any new medical and scientific advances and include new expert recommendations. Integrating these changes, combined with the learned experience through using the protocol in a specific context, are the reasons for defining a review process as an essential part of the protocol itself.

## Disclaimer

Although the present document contains specific elements of information that were considered current as of July 2016, the Canadian Concussion Collaborative (CCC)<sup>2</sup> acknowledge that the most current emerging research may add to or replace these guidelines. Therefore, this document is not intended to replace seeking help from a trained medical professional with adequate concussion expertise in the process of adapting and implementing a protocol. A revised version of this document will be produced following the publication of the new recommendations of the next Consensus Conference on Concussion in Sport in 2017.

## About policies and protocols<sup>3,4</sup>:

“Policy” and “protocol” are sometimes used interchangeably; however, they are two very different words which will be used in this document as defined below:

**Policy:** Usually stated in broad terms, a policy describes certain objectives. A concussion management policy can contain sport-specific elements (e.g., a policy from a sport federation) or be applicable within a specific context (e.g., a government policy for school boards). As a result of having more widespread application, policies are changed or altered less frequently. An example of a concussion management policy is the Policy/Program memorandum of the Ontario Ministry of Education on “School Board Policies on Concussion.”<sup>5</sup>

**Protocol:** A protocol details the steps or methodology for how to fulfill the policy objective in a specific context. While a sport governing body may adopt a broad-based policy (or injury management philosophy), a single protocol is likely to be ineffective for athletes competing at all levels within that sport. For example, the specific protocol required for national-level athletes may be considerably different from that for club-level athletes, given the resources available to each. Expertise or previous experience provides the underlying support for the steps prescribed in effective protocols. As a result, protocols are more prone to regular change.



# Introduction cont.

## The roadmap to sport-specific concussion management:

Several Canadian health organisations concerned with concussions (known collectively as the CCC) have suggested that the process for developing or adapting a concussion management protocol should aim to achieve several outcomes<sup>6</sup>. These outcomes will be used to further detail the multi-faceted considerations that should guide the development of concussion management policies and the contextual implementation of specific concussion management protocols.

### 1. Prevention

Create an environment that will minimize concussion incidence and complications through multiple preventive strategies.

### 2. Identification

Promote an environment that will optimize the early identification of possible (or presumed) concussions by all athletic stakeholders. This includes: athletes, coaches, trainers, teachers, parents and healthcare professionals.

### 3. Management

Optimize the management of concussed athletes in the sport, academic, family, work and personal spheres of their life based on current best practices and contextually available resources.

### 4. Tools and Expertise

Access to proper expertise and tools that can guide the gradual return to normal physical work and academic/learning activities will help minimize the risk of persistent, recurrent or chronic consequences of concussions.

### 5. Dissemination and Education

Plan a communication and education strategy that will keep all stakeholders involved and informed about the concussion management protocol on a periodic basis (minimally once a year).

### 6. Evaluation and Review

A periodic process of evaluation and review of the protocol should be established as an explicit part of a policy or protocol.

## Important Terms:

**Return to Play:** Return-to-play (RTP) protocols refer to all physical activity, not only the activity during which the concussion occurred. The first phase is a return to light aerobic activity, and the final phase is a return to full exertion, or a competitive event.

**Return to Learn:** Individuals who sustain a concussion may require cognitive rest for the brain to heal. Return-to-learn (RTL) protocols guide the individual from total cognitive rest to a full return to their learning environment.

**Environment:** The surroundings in which an individual lives, including, but not limited to, where they play, train, are educated and spend recreation time.





# Prevention

The first objective is to create an environment that will minimize concussion incidence and complications through multiple prevention strategies.

Considering the context (level of participation, specificity of the environment, the nature of the sport, and the resources available) the following question should be addressed in developing a concussion management protocol:

**How can the incidence and complications of concussions be minimized through preventive considerations?**

These recommendations may include, but are not limited to:

- a. Implementing robust, venue-specific Emergency Action Plans<sup>7</sup>,
- b. Introducing age limitations for intentional contact in sport, and other age-appropriate modifications,
- c. Implementing and applying safe rules of play,
- d. Encouraging fair play and respect<sup>8</sup>,
- e. Providing adequate protective equipment,
- f. Ensuring adequate facilities and a safe environment,
- g. Reducing contact during training,
- h. Educating all stakeholders (e.g., parents, athletes, coaches, etc.) about concussion and its management.



# Identification

The second objective is to promote an environment that will optimize the early identification of possible or presumed concussions by all athletic stakeholders. This includes athletes, coaches, trainers, teachers, parents and healthcare professionals.

Considering the context (level of participation, the environment, the nature of the sport, and the resources available) the following questions should be addressed in developing a concussion management protocol:

**a. Who can contribute to the identification of concussions?**

The following stakeholders can be contributors:

- i. Athletes, including teammates and self-reporting
- ii. Coaches
- iii. Parents
- iv. Health care professionals
- v. School staff
- vi. Officials
- vii. Others (such as spectators, media)

**b. How can each of these stakeholders contribute to concussion identification?**

All stakeholders have the potential to improve concussion identification, including athletes themselves who should be aware of the importance of reporting symptoms.

**c. What should each of these stakeholders know about concussions to improve concussion identification?**

A list of key organizations that maintain up-to-date information and tools useful for the identification and management of concussions can be found on the CCC webpage: <http://casem-acmse.org/education/ccc/>.

**d. How will presumed concussions be documented when they occur?**

The formal documentation of the identification of a concussion is the initial step of a structured management for each episode.

**e. How and when can the stakeholders learn about their role to improve the identification of concussions?**

All aspects related to education and communication of the protocol should be integrated under Dissemination and Education hereafter.

# Management



The third objective is to optimize the management of (i.e., obtain the best outcome for) concussed athletes in their sport, academic, family, work and personal spheres.

Considering the context (level of participation, the environment, the nature of the sport, and the resources available) the following questions should be addressed in developing a concussion management protocol:

**a. Once a concussion has been identified, how can the following key elements be implemented?**

- i. Emergency management (e.g., when is it necessary to refer to an emergency medical facility?),
- ii. Immediate removal from play and no RTP on the same day,
- iii. Early management (on-field vs. primary care facility) with immediate referral for those with “red flags” identified in the Concussion Recognition Tool<sup>9</sup>,

**WARNING:** All children, adolescents, and adults with a suspected concussion should undergo evaluation and medical clearance by a medical doctor (MD) who is qualified for concussion management whenever possible. It is acknowledged that in communities with insufficient access to MDs qualified for concussion management, this may not be feasible. In such cases, a licensed healthcare professional properly prepared for concussion management should be designated to contribute to timely evaluations and decisions in the context of a medically supervised concussion management protocol.

- iv. Symptom monitoring / follow up medical management,
- v. Gradual RTL<sup>10</sup>, which must precede RTP,  
**NOTE:** This encompasses return to cognitive activity in general.
- vi. Gradual RTP, including school activities such as physical education and recess,
- vii. Management of persistent, worsening or new manifestations (multi-disciplinary collaboration/referral).

**b. Can concussion management be integrated into existing health care processes in your context?**

For example, a school board could integrate concussion management into its general injury management processes. In a sport environment, concussion management can be part of a more general Emergency Action Plan<sup>7</sup>.

**c. How will concussion follow-up be managed and documented?**

Consider using a tool to document each key step of the process. Such a tool should identify the criteria for each step and, if indicated, who can authorize passage to the next step.

# Tools and Expertise



Access to proper expertise and tools that can guide the gradual return to normal physical work and academic/learning activities will help minimize the risk of persistent, recurrent or chronic consequences of concussions. Again, contextually available resources will determine specifics, but the goal is to optimize the use of available resources and eventually dedicate additional resources to improve concussion management.

Considering the context (level of participation, the environment, the nature of the sport, and the resources available) the following questions should be addressed in developing a concussion management protocol:

a. How can pre-participation evaluation (PPE)<sup>11</sup> be implemented?

- i. How and when can a PPE relevant to concussion be obtained?
- ii. What should be documented in the PPE?

**WARNING:** Depending on sport characteristics, PPE should address a number of issues that are beyond the scope of this document. Only concussion-related considerations are described in the present document.

Minimally, a relevant history of health issues (including date, symptoms and duration of any episode of concussion) and baseline symptoms should be obtained. The Background and Symptom parts of the SCAT3 tool can be used for that purpose, even in environments that do not have professional health resources.

b. Which tools can support the implementation of the protocol?

- i. Make use of tools for immediate management by on-field providers and for follow-up management,
- ii. Adopt, adapt, or design a tool to document each step of the concussion management process. Such a tool should include:
  - Each step of the process:
    - a. On-field management
    - b. Referral as needed
    - c. Persistent or increasing symptoms management
    - d. Follow-up management, including RTL and sport-specific RTP
  - The criteria for each step,
  - Who can authorize passage to the next step,
  - Space for signature and date when authorization is needed.

# Tools and Expertise



## c. How can access to concussion expertise be facilitated?

**WARNING:** Concussion expertise is not easy to define as it is not yet a standard constituent of the basic curriculum of regulated health professions. It is the combined result of individual professional development, clinical experience and collaboration between disciplines. For that reason, the CCC also developed a tool to facilitate the identification of a proper concussion management environment. This tool, entitled “4 Characteristics of Good Concussion Care”<sup>12</sup>, can be used to help identify qualified environments and individuals in a specific setting.

- i. Does your environment have the need and resources for licenced on-field health professionals with concussion-related expertise?
- ii. Are there multidisciplinary concussion clinics with teams of licenced health professionals in your area?

## d. Which assessment tools can help health professionals make RTL and RTP decisions?

- i. Return-to-play decisions by health professionals should be based on multiple considerations. These include relevant medical history, symptoms, cognitive testing, and balance examination. Recall that RTL must precede RTP.
- ii. The SCAT3 (or Child SCAT) is an example of a tool that can be used to manage concussions and to guide RTP, but is only one part of management.
- iii. Systematic use of innovative assessment tools is becoming increasingly promoted in the healthcare marketplace. At the time of this publication, there is no definitive scientific evidence to support the systematic use of such tools or baseline testing<sup>13</sup>. Healthcare providers should only consider adopting assessment tools to supplement the SCAT3/Child SCAT for which scientific evidence supports their clinical utility. In these instances, qualified professional resources should be committed to ensure the adequate use of these tools as additional support to concussion management.





# Dissemination & Education

Any environment that implements a concussion management program must plan for a communication and education strategy that will keep all stakeholders involved and informed about the concussion management protocol on a periodic basis (minimally once a year). Although Emergency Action Plan<sup>7</sup> development is beyond the scope of this document, education about concussion and emergency management in general can benefit from an integrated dissemination strategy.

Considering the context (level of participation, the environment, the nature of the sport, and the resources available) the following questions should be addressed in developing a concussion management and education protocol:

- a. **What are the opportunities and optimal format to educate each stakeholder category about their respective roles in the concussion management protocol?**

List all stakeholders that can potentially contribute in the targeted implementation environment.

- i. Athletes (including teammates)
- ii. Coaches
- iii. Parents
- iv. Health care professionals
- v. School staff
- vi. Officials
- vii. Others (such as spectators and media representatives)

- b. **Should formal educational requirements for some stakeholder categories be implemented?**

For coaches or any relevant stakeholder, formal qualification requirements such as the Concussion Awareness Program of The Coaching Association of Canada<sup>14</sup> can be integrated into concussion management policies and protocols.

# Evaluation and Review



A periodic process of evaluation and review of the protocol should be established as an explicit part of a policy or protocol.

Considering the context (level of participation, specificity of the environment), the nature of the sport, and the resources available the following questions should be addressed in developing a concussion management protocol:

- a. **Based on the periodic review and update of concussion management recommendations (such as the International Consensus Conference on Concussion in Sport!), how and when should the protocol be updated?**

Establishing a working relationship and collaboration with a qualified health professional close to the targeted environment can facilitate this process.

- b. **Based on lessons learned from the use of the protocol in the target environment, can the protocol be improved?**

This should be an annual process since each year of implementation is likely to reveal areas where processes can be optimized. This is especially important over the first few years of implementation. Updates to protocol should consider expert recommendations and changes to best practices.

# Endnotes

1. McCrory P, Meeuwisse W, Aubry M, et al. Consensus statement on concussion in sport-the 4th International Conference on Concussion in Sport, held in Zurich, November 2012. *Clin J Sport Med.* 2013; 23: 89–117. [http://journals.lww.com/cjsportsmed/Fulltext/2013/03000/Consensus/Statement\\_on\\_Concussion\\_in\\_Sport\\_the-4th.1.aspx](http://journals.lww.com/cjsportsmed/Fulltext/2013/03000/Consensus/Statement_on_Concussion_in_Sport_the-4th.1.aspx) (accessed July 2016)
2. Canadian Concussion Collaborative. <http://casem-acmse.org/education/ccc/> (accessed July 2016)
3. Policy vs. Procedure: A Guideline. <http://policy.calpoly.edu/cappolicy.htm> (accessed July 2016)
4. Difference Between Policy and Protocol. <http://www.differencebetween.com/difference-between-policy-and-vs-protocol/> (accessed July 2016)
5. Ontario Ministry of Education. School board policies on concussion. Policy/Program Memorandum No.158; March 19, 2014. <http://www.edu.gov.on.ca/extra/eng/ppm/158.pdf> (accessed July 2016)
6. Frémont P, Bradley L, Tator CH, Skinner J, Fischer LK. from the Canadian Concussion Collaborative. Recommendations for policy development regarding sport-related concussion prevention and management in Canada. *British J Sport Med* 2015; 49: 88–89. <http://bjsm.bmj.com/content/49/2/88> (accessed July 2016)
7. A venue-specific EAP is meant to define, with considerations for the specific environment and resources, the procedures to be used in the event of the scope of medical emergencies that can occur in a specific sport. For more on EAP, see: <http://natajournals.org/doi/pdf/10.4085/1062-6050-48.4.12> (accessed July 2016)
8. True Sport. [www.truesportpur.ca/](http://www.truesportpur.ca/) (accessed July 2016)
9. Concussion Recognition Tool. <http://bjsm.bmj.com/content/47/5/267.full.pdf> (accessed July 2016)
10. Purcell L.K. Sport-related concussion: Evaluation and management (Position statement by the Canadian Paediatric Society). *Paediatric Child Health* 2014; 19: 153-8. <http://www.cps.ca/documents/position/sport-related-concussion-evaluation-management> (accessed July 2016)
11. A pre-participation evaluation (PPE) is meant to document, for each participating individual, any health issue (e.g., past injuries or chronic condition such as asthma or allergies) that is relevant to a specific context of participation. For more on PPE, see: <https://www.ncaa.org/sites/default/files/NATA-Position-Statement-PPEs-and-Disqualifying-Conditions.pdf> (accessed July 2016)
12. “4 Characteristics of Good Concussion Care” can be found on the CCC webpage. <http://casem-acmse.org/education/ccc/> (accessed July 2016)
13. Baseline testing refers to a measure obtained with an assessment tool prior to the participation of an individual in an activity at risk of concussion. The objective of baseline testing is to provide a reference measure that can facilitate the interpretation of the same measure in the event of a concussion.
14. Coaching Association of Canada. Concussion Awareness. <http://www.coach.ca/concussion-awareness-s16361> (accessed July 2016)

This is a document from the Canadian Concussion Collaborative (CCC).  
The CCC is composed of members from the following organisations:

Canadian Academy of Sport and Exercise Medicine (CASEM)

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Canadian Association of Emergency Physicians (CAEP)

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Canadian Athletic Therapists Association (CATA)

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Canadian Centre for Ethics in Sport (CCES)

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Canadian Chiropractic Association (CCA)

•

Canadian Medical Association (CMA)

•

Canadian Paediatric Society (CPS)

•

Canadian Physiotherapy Association (CPA)

•

Canadian Psychological Association (CPA)

•

College of Family Physicians of Canada (CFPC)

•

National Emergency Nurses Association (NENA)

•

Ontario Medical Association Sport Medicine Section (OMA)

•

Parachute (includes the former Think First)

•

Royal College of Chiropractic Sports Sciences (Canada)

For more information about the CCC,  
see: <http://casem-acmse.org/education/ccc>

