

# Legislation for Youth Sport Concussion in Canada: Review, Conceptual Framework, and Recommendations

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**ABSTRACT:** In this article, we conduct a review of introduced and enacted youth concussion legislation in Canada and present a conceptual framework and recommendations for future youth sport concussion laws. We conducted online searches of federal, provincial, and territorial legislatures to identify youth concussion bills that were introduced or successfully enacted into law. Internet searches were carried out from July 26 and 27, 2016. Online searches identified six youth concussion bills that were introduced in provincial legislatures, including two in Ontario and Nova Scotia and one each in British Columbia and Quebec. One of these bills (Ontario Bill 149, Rowan's Law Advisory Committee Act, 2016) was enacted into provincial law; it is not actual concussion legislation, but rather a framework for possible enactment of legislation. Two bills have been introduced in federal parliament but neither bill has been enacted into law. At present, there is no provincial or federal concussion legislation that directly legislates concussion education, prevention, management, or policy in youth sports in Canada. The conceptual framework and recommendations presented here should be used to guide the design and implementation of future youth sport concussion laws in Canada.

**RÉSUMÉ:** **Législation sur la commotion cérébrale subie au cours d'activités sportives chez les jeunes au Canada : revue, cadre conceptuel et recommandations.** Nous avons procédé à une revue des mesures législatives déposées et adoptées au Canada concernant la commotion cérébrale chez les jeunes et nous présentons un cadre conceptuel et des recommandations pour d'éventuelles lois sur la commotion cérébrale subie au cours d'activités sportives chez les jeunes. Nous avons procédé à des recherches en ligne des législatures fédérale, provinciales et territoriales pour identifier les projets de loi sur la commotion cérébrale chez les jeunes qui ont été présentés ou adoptés par ces législatures. Les recherches dans Internet ont été effectuées les 26 et 27 juillet 2016. Les recherches en ligne ont permis d'identifier 6 projets de loi sur la commotion cérébrale chez les jeunes qui ont été présentés dans des législatures provinciales, dont 2 en Ontario et en Nouvelle-Écosse et une en Colombie-Britannique et au Québec respectivement. Un de ces projets de loi (le projet de loi 149 de la législature ontarienne, la loi « Rowan » présentée par un Comité consultatif en 2016) a été adopté et a maintenant force de loi en Ontario. Il ne s'agit pas véritablement d'une législation sur la commotion cérébrale, mais bien d'un cadre pour l'adoption éventuelle d'une telle législation. Deux projets de loi ont été déposés au parlement fédéral, mais aucun n'a été adopté. Actuellement, il n'existe pas de législation provinciale ou fédérale sur la commotion cérébrale qui touche directement l'éducation, la prévention, la gestion ou la politique concernant la commotion cérébrale subie lors d'activités sportives chez les jeunes au Canada. Le cadre conceptuel et les recommandations que nous présentons ici devraient servir de guide pour la conception et la mise en œuvre de futures lois sur la commotion cérébrale subie au cours d'activités sportives chez les jeunes au Canada.

**Keywords:** Sports-related concussion, Legislation, Law, Youth, Sports, Return-to-play

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## INTRODUCTION

Over the past decade, concussion has emerged as an important public health concern that affects millions of people annually worldwide.<sup>1-3</sup> Among youth, a significant proportion of injuries will occur during participation in sports and recreational activities. The majority of children and adolescents who suffer a concussion will make a complete neurological recovery and return to school and sports activities; however, concussion can lead to significant consequences, including fatal injuries from second impact syndrome and long-term effects such as postconcussion syndrome.<sup>4-6</sup> These outcomes have led all 50 American states and the District of Columbia to enact legislation that aims to optimize concussion education, prevention, and management in youth sports.<sup>7</sup> The principal components of these laws include concussion education for coaches, trainers, and athletes; immediate

removal from play of any athlete with a suspected concussion; and mandatory documentation of medical clearance by a medical professional before a return to play.<sup>8</sup> Despite evidence of increasing rates of concussion identified in numerous youth sport and recreational activities popular in Canada, there is no enacted

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concussion legislation that addresses these important issues at the present time.

In this article, we review attempts to introduce youth concussion legislation in Canada and discuss a conceptual framework and make recommendations to guide the development and implementation of future youth sport concussion laws.

#### REVIEW OF INTRODUCED AND ENACTED YOUTH CONCUSSION LEGISLATION IN CANADA

Youth concussion laws introduced and enacted in Canada were identified by online Internet searches of federal, provincial, and territorial legislature websites. Searches were carried out from July 26 and 27, 2016. Internet searches revealed six bills introduced in provincial legislation, including two in the provinces of Ontario and Nova Scotia and one each in British Columbia and Quebec.<sup>9-14</sup> Only one of these bills has been passed into provincial law, and it was not actual concussion legislation but rather a framework for possible enactment of legislation.<sup>10</sup> Two bills were introduced into federal parliament, but neither has been enacted as law.<sup>15,16</sup> A summary of the content and current status of these bills is provided in Table 1.

#### CONCEPTUAL FRAMEWORK AND RECOMMENDATIONS

At the time of this study, only the province of Ontario has passed legislation that involves concussion in youth athletes, but it is limited to a study of possible legislation. Although Ontario's Rowan's Law Advisory Committee Act (2016) represents an important initial step towards examining how the recommendations of a provincial inquest can be implemented in Ontario,<sup>10</sup> there is presently no provincial or federal concussion legislation that directly legislates concussion education, prevention, or management in youth sports in Canada.

We are in favor of youth concussion legislation to optimize concussion education, prevention, management, and policy in Canada and recommend that these laws include several important components related to youth concussions. Accordingly, we present a conceptual framework and recommendations that can be used to establish future youth concussion laws in Canada (Figure 1). Although there is wide variability among existing state youth concussion legislation in the United States, the vast majority of laws do address the three recommendations we make for Canadian youth concussion laws as discussed in the following sections.<sup>7,8</sup>

#### **Recommendation 1: All Coaches, Trainers, Parents, and Athletes Involved in Sport Should Undergo Annual Concussion Education**

Despite increased public, media, government, and academic attention focused on concussion, recent studies continue to demonstrate a persistent need for concussion education and awareness among coaches, athletes, medical trainees, and health care professionals.<sup>17-19</sup> Optimizing the primary and secondary prevention of youth concussion depends highly on educating all youth sport stakeholders on measures that can prevent concussion and more serious forms of head injury as well as how to identify and manage a youth athlete with a suspected concussion. It is important that concussion education reflects current evidence-based standards in the field and is made widely available

to all stakeholders. Concussion education should include information on the definition of concussion, potential mechanisms of injury, presenting signs and symptoms, what to do when an athlete has suffered a suspected concussion, what measures should be taken to ensure proper medical evaluation, an outline of the return-to-play guidelines and medical clearance requirements, and steps that can be taken to prevent concussions and other injuries from occurring in sport (e.g. proper equipment, adherence to rules and regulations). In Canada, evidence-based materials and resources developed by Parachute Canada and Hockey Canada meet these criteria and should be considered.<sup>5</sup> Importantly, procedures should be put in place to ensure all coaches, trainers, parents, and athletes complete this education on an annual basis. A standardized concussion information form that is signed and submitted by both the parent and athlete at the start of each season is one example that has been employed in some American states.<sup>8</sup>

#### **Recommendation 2: All Youth Athletes With a Suspected Concussion Should Be Immediately Removed From Play**

Given the risk of second-impact syndrome and prolonged recovery associated with premature return to play following a concussion,<sup>5</sup> it is imperative that all youth athletes with a suspected concussion be immediately removed from play and not be allowed to return to any sporting activity on the same day that a suspected concussion has occurred. Although the formal diagnosis of concussion should be left to a medical doctor, all youth sport stakeholders including athletes, parents, teachers, coaches, and officials are responsible for identifying and reporting athletes who demonstrate visible signs of a concussion or who report concussion symptoms. This is particularly important because many sports and recreation venues will not have access to onsite medical personnel. A concussion should be suspected in any athlete who experiences a loss of consciousness, lies motionless on the field, or demonstrates confusion, unsteadiness, or a dazed or blank look.<sup>20</sup> At present, there are available standardized assessment tools (such as the Sport Concussion Assessment Tool-3) that can assist in the sideline assessment of these athletes; however, the results of testing can be normal in the setting of acute concussion.<sup>20</sup> As such, these tools can be used by qualified health care professionals (such as athletic therapists or nurses) to document initial neurological status, but should not be used to make sideline return-to-play decisions.

#### **Recommendation 3: All Youth Athletes With a Suspected Concussion Should Undergo Evaluation and Clearance by a Knowledgeable Medical Doctor Before Returning to Sporting Activities**

To provide comprehensive evaluation of children and adolescents with a suspected concussion, a clinician must rule out more serious traumatic brain injury (TBI) and spine injuries, must rule out medical and neurological conditions that can present with concussion-like symptoms, and must make the diagnosis of concussion based on features of the clinical history and physical examination and the evidence-based use of adjunctive tests.<sup>21</sup> Patients with a diagnosed concussion should be managed according to proper return-to-learn and return-to-play guidelines.<sup>20</sup> Because medical doctors are the only licensed health professionals in Canada with the training and expertise to meet

**Table 1: Summary of introduced and enacted youth concussion laws in Canada**

Bill	Bill content	Current status
British Columbia Bill M 206-2011, Concussions in Youth Sport Safety Act, 2011	<p>HER MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:</p> <p>1 In this Act:  “Health Care Professional” means a person licensed to provide health care under one of the following Acts:  (a) a person registered as a member of a college established or continued under the <i>Health Professions Act</i>, or  (b) a member of another organization that is designated by regulation of the Lieutenant Governor in Council.  “high risk sport” means a sport in which participants may be subjected to concussion as designated by regulation.  “youth athlete” means a person under the age of 19 who participates in a high risk sport.  “youth sports organization” means an organization providing a high risk sport program participated in by youth athletes.</p> <p>2 Youth sports organizations must develop and adopt guidelines and other pertinent information and forms to inform and educate coaches, youth athletes, and their parents and/or guardians of the nature and risk of concussion and head injury including continuing to play after concussion or head injury.</p> <p>3 On a yearly basis, a concussion and head injury information sheet must be signed and returned by a youth athlete and the athlete’s parent and/or guardian prior to the youth athlete’s initiating practice or competition in a high risk sport.</p> <p>4 A youth athlete who is suspected of sustaining a concussion or head injury in a practice or game shall be removed from competition at that time.</p> <p>5 A youth athlete who has been removed from play may not return to play until the athlete is evaluated by a licensed health care professional trained in the evaluation and management of concussion and receives clearance to return to play from that health care professional. The health care professional may be a volunteer. A volunteer who authorizes a youth athlete to return to play is not liable for civil damages resulting from any act or omission in the rendering of such care, other than acts or omissions constituting gross negligence or willful or wanton misconduct.</p> <p>6 This Act comes into force by regulation of the Lieutenant Governor in Council.</p>	Introduced at first reading (2011). Bill was not introduced subsequently or enacted as law.
Nova Scotia Bill 63, Concussion Awareness Act, 2011	<p>Be it enacted by the Governor and Assembly as follows:</p> <p>1 This Act may be cited as the Concussion Awareness Act.</p> <p>2 In this Act,  (a) “school-age” means under the age of nineteen years; (b) “sport” means baseball, basketball, cheer leading, diving, field hockey, football, indoor track (pole vault), lacrosse, outdoor track (pole vault), soccer, softball and volleyball.</p> <p>3 This Act applies to all school-age participants on organized team sports and to all participants in minor sports.</p> <p>4 (1) Subject to Section 6, the Minister of Health and Wellness shall develop and make available annually to organized athletic teams in the Province with school-age children and to all minor sports organizations in the Province education on the impact of a concussion and respecting procedures designed to protect players after sustaining a head injury.  (2) The education must stress the seriousness of the long-term effects caused by a sports-related concussion.  (3) The education may consist of a classroom session, a video or printed material.</p> <p>5 (1) The Governor in Council may make regulations  (a) defining any word or expression used but not defined in this Act;  (b) respecting any matter or thing the Governor in Council considers necessary or advisable to carry out effectively the intent and purpose of this Act.  (2) The exercise by the Governor in Council of the authority contained in subsection (1) is regulations within the meaning of the Regulations Act.</p> <p>6 The moneys required for the purpose of this Act must be paid out of moneys appropriated for that purpose by the Legislature.</p>	Introduced at first reading (2011). The bill was re-introduced at first reading as (Bill 7, Concussion Awareness Act) in 2012. Neither Bill was enacted as law.
Ontario Bill 39, Education Amendment Act (concussions); 2012	<p>An Act to amend the Education Act with respect to concussions  Note: This Act amends the <i>Education Act</i>. For the legislative history of the Act, see the Table of Consolidated Public Statutes – Detailed Legislative History at <a href="http://www.e-Laws.gov.on.ca">www.e-Laws.gov.on.ca</a>.</p> <p>Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:</p> <p>1. The heading to Part XIII.1 of the Education Act is repealed and the following substituted:  PART XIII.1  PUPIL HEALTH</p> <p>2. The Act is amended by adding the following heading immediately before section 317:  Nutritional Standards</p> <p>3. Part XIII.1 of the Act is amended by adding the following section: Concussions  <i>Minister’s policies and guidelines</i> 321.  (1) The Minister may establish and require boards to comply with policies and guidelines respecting head injuries and concussions in pupils, including policies and guidelines,  (a) respecting the distribution of information to pupils, parents, guardians, board employees and volunteers about the prevention of head injuries, the identification of symptoms of concussions and the management of concussions;  (b) respecting when a pupil who is suspected of having sustained a concussion is to be removed from or prevented from further participating in intramural or inter-school athletics or any part of the health and physical education curriculum;  (c) respecting the return of a pupil who has or may have sustained a concussion to intramural or inter-school athletics or to any part of the health and physical education curriculum, or his or her return to learning;</p>	Passed 1st reading (2012). The session was prorogued and the government did not reintroduce the bill at the next session or subsequently. Bill was not enacted as law.

Table 1: Continued

Bill	Bill content	Current status
	<p>(d) respecting the responsibilities of board employees, classes of board employees, or other persons who are involved in intramural or inter-school athletics or any part of the health and physical education curriculum in relation to the prevention of head injuries, the identification of symptoms of concussions and the management of concussions;</p> <p>(e) specifying other persons, in addition to board employees, who have responsibilities described in clause (d);</p> <p>(f) respecting any other matter that a board's policies and guidelines must address;</p> <p>(g) respecting any requirements that must be included in a board's policies and guidelines.</p> <p>(2) The Minister may specify in a policy or guideline established under subsection (1) a date or dates by which boards must establish policies or guidelines under subsection (3), or parts of them.</p> <p><i>Board's policies and guidelines</i></p> <p>(3) Every board shall establish policies and guidelines respecting head injuries and concussions in pupils, and the policies and guidelines must,</p> <p>(a) be consistent with the policies and guidelines established by the Minister under subsection (1) and with any regulations made under subsection (4); and</p> <p>(b) address the matters listed in clauses (1) (a) to (f) and include any requirements described in clause (1) (g).</p> <p><i>Minister's regulations</i></p> <p>(4) The Minister may make regulations governing all aspects of head injuries and concussions in pupils, including regulations relating to any matter listed in clauses (1) (a) to (e).</p> <p><i>General or particular</i></p> <p>(5) A regulation made under subsection (4) may be general or particular.</p> <p><i>Not regulations</i></p> <p>(6) Policies and guidelines established under this section are not regulations within the meaning of Part III (Regulations) of the <i>Legislation Act, 2006</i>.</p> <p><i>No liability if person acts reasonably and in good faith</i></p> <p>(7) A board employee or volunteer who is involved in intramural or inter-school athletics or any part of the health and physical education curriculum is not personally liable in a civil proceeding for an act or omission if the person acts reasonably in the circumstances, in good faith and in accordance with the Act, regulations and with any policies and guidelines made under this section.</p> <p><i>Commencement</i></p> <p>4. This Act comes into force on a day to be named by proclamation of the Lieutenant Governor.</p> <p><i>Short title</i></p> <p>5. The short title of this Act is the <i>Education Amendment Act (Concussions), 2012</i>.</p>	
Quebec Bill 496, An Act to prevent and reduce the consequences of head injuries and concussions in students participating in school sports activities, 2013	<p>THE PARLIAMENT OF QUÉBEC ENACTS AS FOLLOWS:</p> <p>CHAPTER I OBJECT</p> <p>1. The object of this Act is to prevent and reduce the consequences of head injuries and concussions in students participating in school sports activities.</p> <p>2. In this Act, unless the context indicates otherwise, "school sports activity" means any sports activity carried out under basic school regulations or as part of educational services or extracurricular services.</p> <p>CHAPTER II POLICY</p> <p>3. To further the object set out in section 1, the Minister must propose a policy to the Government for the prevention and reduction of the consequences of head injuries and concussions in students. In addition to stating the principles on which it is based, the policy may establish a short-, medium- and long-term student support protocol as well as strategies and measures to facilitate the attainment of that object within the specified time. Not later than 1 April 2014, the Minister must publish in the Gazette officielle du Québec the policy to be proposed to the Government under this section, together with a notice inviting all interested persons to make their point of view known within the specified time.</p> <p>CHAPTER III REGULATIONS</p> <p>4. Not later than 1 April 2015, the Government must, by regulation, establish a policy for the prevention and reduction of the consequences of head injuries and concussions in students.</p> <p>The policy must cover such aspects as</p> <p>(1) the distribution of information to students, parents, school administrators, teachers and other school or private educational institution staff, governing boards, school boards, private educational institutions, and volunteers on</p> <p>(a) how to prevent and reduce the consequences of head injuries and concussions;</p> <p>(b) how to recognize and manage the symptoms of head injuries and concussions;</p> <p>(2) the immediate removal of a student who has or may have sustained a head injury or concussion from the school sports activity or the barring of a student from further participating in such an activity;</p>	Introduced at first session (2013). Bill was not introduced subsequently or enacted as law.

	<p>(3) the return of a student who has or may have sustained a head injury or concussion during a school sports activity to a sports activity or to learning once it has been authorized by a qualified health professional trained in the evaluation and treatment of head injuries and concussions;</p> <p>(4) the support protocol for students who have or may have sustained a head injury or concussion during a school sports activity;</p> <p>(5) the responsibilities of persons involved in school sports activities as well as their role in the support protocol referred to in subparagraph 4, whether they are students, parents, school administrators, teachers or other school or private educational institution staff, governing boards, school boards, private educational institutions or volunteers; and</p> <p>(6) the medical requirements to be complied with in the follow-up of a student who has or may have sustained a head injury or concussion, including the supervision required to detect any secondary complications.</p> <p>The policy applies to all schools governed by the Education Act (chapter I-13.3) or the Education Act for Cree, Inuit and Naskapi Native Persons (chapter I-14) and to all private educational institutions governed by the Act respecting private education (chapter E-9.1), except institutions that provide educational services at the college level.</p> <p>CHAPTER IV ADVISORY PANEL</p> <p>5. An advisory panel on the prevention and reduction of the consequences of head injuries and concussions in sports activities is hereby established. The role of the advisory panel is</p> <p>(1) to foster a concerted approach and coherence of action between the main stakeholders in the sports and education sectors;</p> <p>(2) to advise the Minister on measures aimed at preventing and reducing the consequences of head injuries or concussions in sports activities, including by making consensus-based recommendations to the Minister; and</p> <p>(3) to advise the Minister on the expediency of extending the application of the policy referred to in section 3 to sports federations and sports bodies referred to in the Act respecting safety in sports (chapter S-3.1) and to higher learning institutions.</p> <p>6. The panel is to be composed of a chair and not more than 11 members to be appointed by the Minister to represent the sports federations, sports bodies, school boards, private educational institutions and higher learning institutions.</p> <p>CHAPTER V FINAL PROVISIONS</p> <p>7. The Minister of Education, Recreation and Sports is responsible for the administration of this Act.</p> <p>8. This Act comes into force on (insert the date of assent to this Act).</p>	
<p>Federal Bill C-566, An Act respecting a Comprehensive Pan-Canadian Strategy on Concussion, 2014</p>	<p>An Act respecting a Comprehensive Pan-Canadian Strategy on Concussion</p> <p>Whereas concussions are increasingly recognized as a major health issue in Canada;</p> <p>Whereas concussions are serious head injuries that often result from sports and recreational activities, falls by infants and seniors, vehicle collisions and accidents in the work place, at school and at home;</p> <p>Whereas it is important to be aware of and informed about concussions, as well as their symptoms and effects, in order to recognize when they occur and to overcome diagnostic challenges that may be caused by ambiguous symptoms such as blurred vision, fatigue, headaches, nausea and vomiting;</p> <p>Whereas concussions can produce various effects, including affective, neuropsychological, psychological and physiological effects, as well as social effects, and can have significant economic impacts on victims, their families and their work;</p> <p>Whereas the impacts of concussion can be devastating and may prevent individuals from returning to their regular activities for extended periods of time, since each individual's recovery from the effects of concussion is unique and their ability to meet return-to-work, return-to-school and return-to-play guidelines varies markedly;</p> <p>Whereas the pathophysiology of concussion is not well documented and is an area in which research is constantly developing;</p> <p>Whereas determining the pathophysiology of concussion would help inform management practices;</p> <p>Whereas further concussion research is essential to improving the ability to prevent, diagnose and manage concussions;</p> <p>Whereas Canadians suffering from concussions, as well as their families and caregivers, deserve the government's support in obtaining resources to aid in their recovery and to improve their quality of life;</p> <p>And whereas the Government of Canada believes that concussion must be better addressed by implementing a Pan-Canadian Strategy on Concussion;</p> <p>Now, therefore, Her Majesty, by and with the advice and consent of the Senate and the House of Commons of Canada enacts as follows:</p> <p>SHORT TITLE</p> <p>Short title</p> <p>1. This Act may be cited as the <i>Pan-Canadian Strategy on Concussion Act</i>.</p> <p>Definitions</p> <p>2. The following definitions apply in this Act.</p> <p>“Board”</p> <p>« <i>Conseil</i> »</p> <p>“Board” means the Concussion Board established under section 6.</p> <p>“Minister”</p> <p>« <i>ministre</i> »</p> <p>“Minister” means the Minister of Health.</p> <p>PAN-CANADIAN CONCUSSION AWARENESS WEEK</p> <p>Pan-Canadian Concussion Awareness Week</p> <p>3. Throughout Canada, in each and every year, the first week of the month of June is to be known as “Pan-Canadian Concussion Awareness Week”.</p> <p>PAN-CANADIAN STRATEGY ON CONCUSSION</p> <p>Initiate discussions</p>	<p>Introduced at first reading (2014). Bill was not introduced subsequently or enacted as law.</p>

Table 1: Continued

Bill	Bill content	Current status
	<p>4. Within 30 days after this Act comes into force, the Minister must initiate discussions with the provincial and territorial ministers responsible for health for the purposes of developing a comprehensive Pan-Canadian Strategy on Concussion.</p> <p>5. The Pan-Canadian Strategy on Concussion must be designed to contribute to the prevention, diagnosis and management of concussion by</p> <ul style="list-style-type: none"> <li>(a) establishing and improving national guidelines regarding the prevention, diagnosis and management of concussions, including a recommended standard of care that reflects current best methodological, medical and psychosocial practices for concussion care;</li> <li>(b) developing preventive measures to reduce the risk of concussion including: <ul style="list-style-type: none"> <li>(i) the incorporation of neck stability and strength exercises into training for athletes and workers at risk, as well as for those who engage in activities that involve a significant risk of concussion, and</li> <li>(ii) the promotion of cost-effective measures to reduce the risk of concussion in sports that involve a significant risk of concussion;</li> </ul> </li> <li>(c) promoting optional training on concussion awareness, prevention and recognition for employees in seniors' residences, community centres and daycares, and other caregivers;</li> <li>(d) promoting the establishment of an optional program on concussion awareness, prevention, and recognition, and promoting the use of measures to prevent concussion for workers in industries that involve significant risk of concussion, as a component of existing vocational training;</li> <li>(e) developing a mandatory educational program on concussions for referees and other officials of sports that involve a significant risk of concussion to enhance athletes' safety and to place a focus on the role of referees and officials in minimizing risk, recognizing possible concussion and responding appropriately;</li> <li>(f) establishing and enforcing requirements to include mandatory concussion recognition and management training in all professional accreditation programs for coaches in Canada;</li> <li>(g) encouraging the use of consulting psychologists to create a support system for people who are suffering from the effects of concussion, especially in educational institutions, sports organizations and workplaces;</li> <li>(h) developing a template for a Centre for Excellence in Concussion Research to encourage greater investigation in all areas of concussion research, including research related to <ul style="list-style-type: none"> <li>(i) gender as a modifying factor,</li> <li>(ii) the efficacy of assessment tools, including neuroimaging,</li> <li>(iii) the window of metabolic dysfunction,</li> <li>(iv) emotional effects,</li> <li>(v) appropriate management protocols,</li> <li>(vi) the composition and utility of a biomarker database for the purposes of diagnosis and the assessment of severity, prognosis and rate of recovery, and</li> <li>(vii) thresholds for long-term effects;</li> </ul> </li> <li>(i) developing and maintaining a government website to provide Canadians with current facts, research and best practices related to the prevention, diagnosis and management of concussion, as well as other relevant resources related to concussions; and</li> <li>(j) developing a national database to track the incidence of concussion across the country, to provide data for research on trends and vulnerable groups and to facilitate the evaluation of the efficacy of the Strategy in order to identify areas for improvement.</li> </ul> <p><b>CONCUSSION BOARD</b> Establishment of the Board</p> <p>6. There is established a board, to be known as the Concussion Board. Board objective</p> <p>7. The objective of the Board is to advise and assist the Minister respecting the design and implementation of the Pan-Canadian Strategy on Concussion and to ensure the implementation and on-going review and adaptation of the Strategy to reflect change in knowledge and recommended practices. Annual meeting</p> <p>8. The Board must meet at least once annually, during Pan-Canadian Concussion Awareness Week. Report —government website</p> <p>9. (1) The Board must prepare and post, on the government website referred to in paragraph 5(i), an annual report on best practices related to the prevention, diagnosis and management of concussion, as well as relevant information related to concussions, in order to make information available to relevant recreational, work and residential establishments to assist them in maintaining current policies related to the prevention and management of concussion. Report to Minister</p> <p>(2) The Board must report on or before December 1 of every year to the Minister on the measures and resources implemented to achieve the objective set out in section 7. Tabling of report</p> <p>(3) The report referred to in subsection (2), including the Board's recommendations and reasons, must be made public, and must be sent to the Minister, who must cause a copy of the report to be laid before each House of Parliament on any of the first 15 days on which that House is sitting after the Minister receives it. Minister's response</p>	



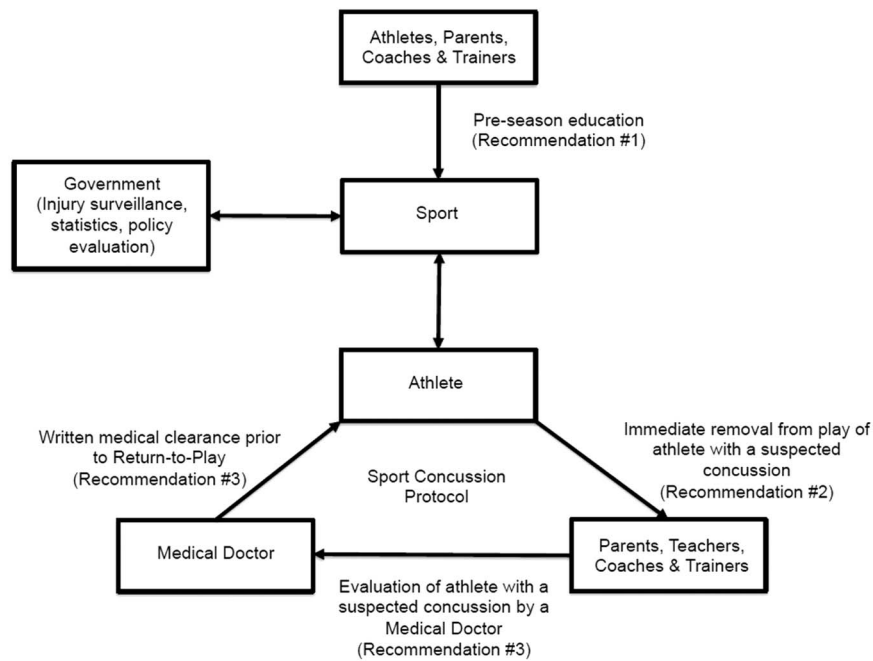
	<p>(4) The Minister must prepare and publish a response to the report received pursuant to subsection (3) and must cause a copy of the response to be laid before each House of Parliament on any of the first 15 days on which that House is sitting after the expiry of 90 days from the day on which the Minister received the report.</p> <p>Members</p> <p>10. The Board is to be composed of a maximum of 20 members appointed by the Governor in Council on the recommendation of the Minister and selected from among the following:</p> <p>(a) researchers and representatives from medical and healthcare professions — including neuropsychologists, psychologists, chiropractors and therapists — who specialize in concussions and head injuries;</p> <p>(b) stakeholders involved in all levels of sports that involve a significant risk of concussion, senior care, transportation, childcare and schools as well as those involved in other activities and industries involving a significant risk of head injuries;</p> <p>(c) manufacturers of relevant protective equipment and materials or their representatives;</p> <p>(d) current and retired athletes, trainers and coaches;</p> <p>(e) Canadians who suffer from concussions, as well as their families and caregivers; and</p> <p>(f) volunteers and employees working with advocacy or support groups or volunteer organizations involved with concussed individuals.</p> <p>Term</p> <p>11. Members of the Board are appointed to hold office for a term not exceeding four years and are eligible to be reappointed.</p> <p>Chairperson</p> <p>12. The Minister must designate one member of the Board to be the Chairperson.</p> <p>Remuneration</p> <p>13. The members of the Board must be paid remuneration as fixed by the Governor in Council and are entitled to be paid reasonable travel and living expenses incurred in the course of their duties while absent from their ordinary places of work, in the case of full-time members, or while absent from their ordinary place of residence, in the case of part-time members.</p> <p>Staff</p> <p>14. The Board may employ any officers and employees and engage the services of any agents and mandataries, advisers and experts that it considers necessary to carry out its purpose.</p>	
<p>Federal Bill C-658, An Act respecting the development of a national strategy to reduce the incidence of concussions in amateur sport, 2015</p>	<p>An Act respecting the development of a national strategy to reduce the incidence of concussions in amateur sport</p> <p>Preamble</p> <p>Whereas sport is a cultural institution that merits protection and support from the Government of Canada;</p> <p>Whereas recent medical research has demonstrated the pervasiveness of concussions in amateur sport;</p> <p>Whereas many concussions are preventable through the effective dissemination of appropriate information;</p> <p>Whereas a concerted effort by communities and governments as well as by representatives of the athletic and medical communities across Canada can make a tangible difference in preventing concussions that can result from participation in amateur sport;</p> <p>Whereas, given that concussions in amateur sport are a significant public health issue, it is important to reduce their incidence and long-term societal impacts;</p> <p>Whereas concussions have demonstrated cumulative and long-lasting effects on memory, judgment, social conduct, reflexes, speech, balance and coordination;</p> <p>Whereas it is in the interest of all Canadians that a national strategy be developed and implemented to reduce the incidence of concussions in amateur sport, to change the existing attitudes of Canadians towards them and to foster further policy development in this area;</p> <p>And whereas it is desirable for the Government of Canada, in consultation with the ministers responsible for health and sport in each province and territory, to develop a national strategy to reduce the incidence of concussions in amateur sport;</p> <p>Now, therefore, Her Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:</p> <p>SHORT TITLE</p> <p>Short title</p> <p>1. This Act may be cited as the <i>National Strategy for Concussion Reduction in Amateur Sport Act</i>.</p> <p>INTERPRETATION</p> <p>Definition of “Minister”</p> <p>2. In this Act, “Minister” means the Minister of Health.</p> <p>NATIONAL STRATEGY</p> <p>National Strategy</p> <p>3. (1) The Minister, in cooperation with the Minister responsible for the <i>Physical Activity and Sport Act</i>, representatives of the provincial and territorial governments responsible for health and sport and representatives of the athletic and medical communities, must develop and implement a national strategy that includes</p> <p>(a) the establishment of national standards — relating to the health and safety of persons participating in amateur sport — for the training of coaches and other persons involved in that area;</p> <p>(b) the establishment of guidelines regarding the prevention, identification and treatment of concussions in amateur athletes, including the criteria that must be met before these athletes are permitted to return to play after being diagnosed with a concussion;</p> <p>(c) the establishment of a national medical surveillance program to properly track incidence rates and the associated economic costs of concussions in amateur sport; and</p> <p>(d) the creation, for coaches and other persons involved in amateur sport, of a comprehensive standardized educational program on concussions that is designed to enhance participant safety at all levels of amateur sport.</p> <p>Conference</p>	<p>Introduced at first reading (2015). Bill was not introduced subsequently or enacted as law.</p>

Table 1: Continued

Bill	Bill content	Current status
	<p>(2) The Minister, in cooperation with the Minister responsible for the <i>Physical Activity and Sport Act</i>, must, within six months after the day on which this Act comes into force, convene a conference with representatives of the provincial and territorial governments responsible for health and sport and representatives of the athletic and medical communities for the purpose of developing the national strategy.</p> <p>Report to Parliament</p> <p>4. (1) The Minister must cause a copy of a report setting out the national strategy to be laid before each House of Parliament within one year after the day on which this Act comes into force.</p> <p>Publication of report</p> <p>(2) The Minister must post the report on the departmental Web site within 30 days after the day on which the report is tabled in Parliament.</p> <p>REVIEW AND REPORT</p> <p>Review and report</p> <p>5. Within five years of the tabling of the report referred to in section 4 and every three years after that, the Minister must prepare a report on the effectiveness of the national strategy, setting out his or her conclusions and recommendations regarding the strategy, and cause a copy of the report to be laid before each House of Parliament on any of the first 15 days on which that House is sitting.</p>	
Ontario Bill 149, Rowan's Law Advisory Committee Act, 2016	<p>An Act to establish an advisory committee to make recommendations on the jury recommendations made in the inquest into the death of Rowan Stringer</p> <p>Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:</p> <p>Definitions</p> <p>1. In this Act,</p> <p>“Committee” means the advisory committee established under subsection 2 (1); (“comité”) “jury recommendations” means the jury recommendations made in the inquest into the death of Rowan Stringer. (“recommandations du jury”)</p> <p>Advisory committee</p> <p>2. (1) An advisory committee is established under the name Rowan's Law Advisory Committee in English and comité consultatif de la Loi Rowan in French.</p> <p>Membership</p> <p>(2) The Committee shall be composed of no more than 15 members appointed by the Minister of Tourism, Culture and Sport and shall consist of the following:</p> <ol style="list-style-type: none"> <li>1. No more than three persons nominated by the Minister of Children and Youth Services.</li> <li>2. No more than three persons nominated by the Minister of Education.</li> <li>3. No more than three persons nominated by the Minister of Health and Long-Term Care.</li> <li>4. No more than three persons nominated by the Minister of Training, Colleges and Universities.</li> <li>5. No more than three persons nominated by the Minister of Tourism, Culture and Sport.</li> </ol> <p>Chair</p> <p>(3) The Minister of Tourism, Culture and Sport shall designate one of the members of the Committee as the chair of the Committee.</p> <p>Rules</p> <p>(4) The Committee may make rules governing the conduct and administration of its affairs.</p> <p>Mandate</p> <p>(5) The Committee shall,</p> <ol style="list-style-type: none"> <li>(a) review the jury recommendations;</li> <li>(b) review legislation, policies and best practices from other jurisdictions respecting head injuries;</li> <li>(c) make recommendations on how to implement the jury recommendations, how to prevent and mitigate head injuries in sports and how to create awareness about head injuries in sports; and</li> <li>(d) make any other recommendations that the Committee deems advisable with respect to head injury prevention or treatment.</li> </ol> <p>Reports</p> <p>(6) The Committee shall provide its recommendations in a report to the Minister of Tourism, Culture and Sport within one year after the day this Act comes into force.</p> <p>Publication</p> <p>(7) The Minister of Tourism, Culture and Sport shall table the report in the Legislature and shall publish the report on a Government of Ontario website.</p> <p>Repeal</p> <p>3. This Act is repealed one year and three months after the day it comes into force.</p> <p>Commencement</p> <p>4. This Act comes into force three months after the day it receives Royal Assent.</p> <p>Short title</p> <p>5. The short title of this Act is the <i>Rowan's Law Advisory Committee Act, 2016</i>.</p>	Passed Royal Assent. Bill was enacted as Chapter 11 of the Statutes of Ontario (2016).

\*Explanatory notes in these bills are not included this table.





**Figure 1:** A conceptual framework to guide the development and implementation of future provincial youth sport concussion laws in Canada.

these needs, all children and adolescents with a concussion should undergo evaluation and receive written medical clearance by a medical doctor before returning to sports.

Although in recent years there has been a dramatic increase in advertised concussion health care providers and clinics across Canada, research suggests that the majority of these providers do not have appropriate access to an onsite medical doctor or have access to health care professionals with licensed training in TBI (neuropsychologists, neurologists, sports medicine physicians, neurosurgeons).<sup>22</sup> In geographic regions of Canada with poor access to physicians (i.e. rural or northern communities), a licensed health care professional (such as a nurse practitioner) with prearranged access to a medical doctor can facilitate this role. More recently, the Canadian Concussion Collaborative has recommended that each sport organization develop youth concussion protocols that communicate to all stakeholders the steps that should be taken to ensure proper evaluation and medical management of children who suffer a suspected concussion during sports.<sup>23</sup>

Given the potential serious and life-threatening consequences of head injuries sustained during sports, it is imperative that provinces ensure that qualified medical resources are available to facilitate immediate evaluation (within hours of injury) and follow-up care of athletes with suspected concussion. Provinces and regions with access to physician-led multidisciplinary pediatric concussion programs or clinics operated by experts in TBI may also benefit from close collaboration between these centers and local sports organizations, emergency departments, and primary care physicians that can help facilitate timely and coordinated care of pediatric concussion patients.

### Additional Considerations

For youth concussion legislation to protect the health and safety of all youth athletes within a given province or territory, it is

recommended that provincial government leaders in health, sport, and education partner to ensure that these laws are equally applied to all youths participating in school-based sports in both public and private schools and non-school-based sports including organized private and nonorganized sport settings. An important additional consideration for youth concussion laws is the issue of compliance and law enforcement. Although there is precedence for enforcing injury prevention legislation in Canada (e.g. seat belts, bike helmets, infant car seats), the vast majority of youth concussion laws in the United States do not include a penalty for noncompliance.<sup>8</sup>

Preliminary evidence suggests that Ontario public schools have been moderately compliant with a recent nonlegislative policy (PPM 158) to enhance concussion education and management in youth athletes and that such policies were beneficial in enhancing staff and student concussion education.<sup>24</sup> However, implementation of compliance monitoring procedures will likely require additional funding and must be weighed against the risk of increasing registration fees, which could have a detrimental impact on youth sport participation. Last, it is unclear to what extent the adoption of youth concussion legislation leads to improvements in concussion recognition, reductions in injury rates, or improvements in youth concussion patient outcomes. Accurate assessment of the effectiveness of legislation will require involving the country's system of surveillance of concussions through hospital discharges, ambulatory settings such as emergency departments and doctors' offices, and consistent and thorough record-keeping at both school-based and non-school-based venues. Preliminary studies in the United States suggest that the implementation of youth concussion legislation is associated with an increase in health care utilization for pediatric concussion<sup>25,26</sup>; however, there are mixed results about what effect these laws have had on knowledge translation.<sup>27-29</sup>

## CONCLUSION

To date, there is no provincial or federal concussion legislation that has had a direct impact on Canadian youth athletes. Consequently, there remains an urgent need for legislation that can help promote the safety of youth sport and optimize concussion education, prevention, management, and policy in Canada. The conceptual framework and recommendations presented here can help government, medical, and community stakeholders identify essential issues that must be addressed in future youth sport concussion laws.

## DISCLOSURES

CHT is the founder of Think First Canada, an injury prevention organization that has joined Parachute Canada, a national charitable program devoted to injury and concussion awareness. CHT, MJE, and SB are members of the Expert Advisory Committee on concussion for Parachute Canada. CHT is also a member of the Canadian Concussion Collaborative. The authors have no financial conflicts of interest to disclose.

## STATEMENT OF AUTHORSHIP

KR, MJE, SB, and CHT conceptualized and designed the study, drafted the initial manuscript, critically reviewed and revised the manuscript, and approved the final manuscript as submitted. MJE and KR carried out data collection for the study. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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