

**Hockey Referees: Are They Part of the Solution for Concussions in Youth Hockey?**

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## **Abstract**

Sport-related concussions affect youth (ages 5-18) athletes in many aspects including, physical (e.g., headaches), cognitive (e.g., difficulty concentrating), emotional (e.g., feeling anxious), vestibular-ocular (e.g., balance issues), and sleep-related (e.g., fatigue). Youth athletes demonstrate an unwillingness to report concussion symptoms; due to this, sports organizations should explore avenues that improve concussion recognition and the removal process for athletes with concussions. Through the application of the rule book, ice hockey officials are delegated with maintaining safety and fairness within the game. Through video interviews, 10 ice hockey officials were asked about their perceptions regarding removing athletes with concussions being added to their role. Four themes were generated from these interviews; Considerations and Importance of the Protocol, Officials' Knowledge of Concussions, Required Training, and Barriers. Officials expressed that among the many considerations needed for this protocol to be implemented, improving the knowledge of officials and other stakeholders regarding concussions and rule implementation would be required. Participants recognized that although adding this task to their role was a logical extension, there was hesitation as to its practicality. To improve athlete safety, sports organizations should explore methods such as having officials recognize symptoms and provide them with authority to remove them from the competition.

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## **Chapter One Introduction**

Youth sport participation can play an integral role in the development of youth athletes (ages 5-18). Benefits of sport participation include physical, social, and mental skill development, as well as improved academic success (Fraser-Thomas et al., 2005). However, for athletes to reap these benefits, they must remain in sport. Injury, especially concussions, can cause athletes to withdraw from sport at an early age. In Canada, ice hockey is routinely seen as the national sport, with around 400,000 youth participants annually (Hockey Canada, 2020). In efforts to help protect athletes' health, Hockey Canada has made rule changes such as the age at which body checking is permitted and penalties when players contact their opponents in the head. These efforts have reduced concussions at certain levels (Black et al., 2017); however, since the youth brain is undergoing rapid growth and development more can and should be done to decrease the incidence of concussions to avoid adverse impacts on youth development (Babikian et al., 2015).

While the field of concussion research is expansive and growing daily, little focus has been on the role of sport officials as it pertains to concussions. The research that has been done in this area is centrally focused on the officials' knowledge and their ability to recognize signs and symptoms through quantitative methods. More recent studies have started to probe sport officials' thoughts around if they should be included in concussion recognition (King & Coughlin, 2021), however the focus has not been on truly understanding the officials' perceptions of adding this to their role. Given the popularity

of ice hockey in Canada, there is a distinct lack of literature involving hockey officials when it comes to concussions, both from a knowledge and perception standpoints.

Currently, ice hockey officials' role in preventing concussions in ice hockey are to enforce body checking and head contact rules. The current study explored officials' perceptions of expanding their role to include recognition and removal of athletes demonstrating concussion signs and symptoms. Rugby officials around the world and in Canada have this authority (World Rugby Union, 2017), as it is a natural expansion of their role. Interviews were conducted with 10 ice hockey officials in Canada who have experience officiating the categories that allow body checking. These interviews were done to find out the perceptions officials had on being able to remove athletes from the game if they were suspected of having a concussion. Participants' perspectives were sought on topics such as their knowledge of concussions, whether this would fit into their role as an official, and what barriers they could foresee affecting the ability of this protocol to be successfully implemented. Ultimately, the results herein could be important to Hockey Canada (as well as other organizations), who might look to add this task to their officials' roles to improve the safety and long-term health of their athletes.

The following paper will address the current state of concussions in youth sport, particularly ice hockey and the potential for hockey officials to become an involved stakeholder in concussion recognition within Canada. Chapter 2 is an extensive literature review of concussions, the cultural influence on youth athletes and the current role sport officials have as it pertains to concussions. Chapter 3 is the manuscript containing information regarding methods, participants, and results. Chapter 4 contains additional results and discussion from the interviews that did not pertain specifically to the purpose

of this study yet were deemed important by the author. Appendices include ethics documentation, and the interview guide. The final Appendix contains the quotes from each interview categorized by theme. References are provided after each chapter.

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## **Chapter Two Literature Review**

Participation in sport comes with the inherent risk of injury including sport-related concussions (SRC). This risk is not restricted to adult athletes as youth (ages 5-18) athletes also suffer concussions related to their sport participation. SRC are associated with functional deficits in both mental and physical functioning. such as headaches, dizziness, loss of balance, and fatigue (McCrory et al., 2017). Early research focused on adult athletes; however, researchers and clinicians realized it is critical to acknowledge the differences in concussion rates and management needs for youth athletes.

As a solution to this issue, national sport organizations, researchers, and public health officials started to examine methods to reduce the concussion rate in youth sports. Early interventions focused on the education of coaches, parents, and athletes on how to recognize concussions and the importance of removing those athletes from competition. Organizations such as the Centers for Disease Control created programs to help facilitate this. Along with education about signs and symptoms and removal from competition, collision sports like North American football and rugby created programming that focused on proper tackling techniques. The goal of these education and tackling programs were to help reduce the number of concussions that occurred, concussions were still occurring in youth sports (Emery et al., 2017). Even with the educational approaches taken athletes were still not reporting signs and symptoms due to perceptions related to their health, impacts on performance, and consequence of deviating from sport societal norms (Milroy et al., 2020). With SRC still occurring in youth sport those involved in have attempted to find other solutions to improve the safety of youth athletes particularly related to concussions.

Proposed solutions to reduce concussions among youth athletes have included rule changes regarding tackling technique, head contact, and the age at which body checking and tackling are permitted. A by-product of such rule changes was that sport officials were thrust into the evolving world of youth sport concussions, as they were tasked with applying the rules intended to reduce concussions among youth athletes. What is unclear, however, is whether youth sport officials' roles should be expanded further in this regard—specifically, should youth sport officials' roles include monitoring athletes for symptoms of concussion and, potentially, removing athletes from play when they are suspected of having suffered a concussion?

### **Youth Sport Participation**

According to ParticipACTION (2018), 77% of Canadian youth (ages 5-19) participate in organized sport or physical activity. Fraser-Thomas et al. (2005) conducted a landmark study on the benefits of sport participation, noting several important findings. First, athletes experienced physical benefits with positive impacts on normal growth and development, along with increased cardiovascular fitness, muscular strength, and endurance. Second, sport participation was associated with academic success reflected in higher grades, increased attendance in classes, and post-secondary aspirations of athletes. Third, athletes had better psychological and emotional development when compared to their non-athlete peers while also displaying increased self-esteem and overall higher life satisfaction. Finally, the social constructs that youth athletes acquired from sport included cooperation, leadership skills, and responsibility, which were translated to their everyday life. For youth participants to obtain these benefits, they must remain in sport and avoid early drop out (leaving sport prior to aging out) (Reverdito et al., 2017; Turnnidge et al.,

2014). SRC are seen as a negative experience that can lead to early sport dropout (Fraser-Thomas et al., 2010; Siesmaa et al., 2011); therefore, injury prevention and management are important focal areas for youth sport.

### **Youth Sport Injuries**

Youth sport participation in Canada increased in the early 2000s; with that came an increase in sport-related injuries (Pakzad-Vaezi & Singhal, 2011). In 2011, it was reported that two-thirds of injuries among youth (ages 12-19) were related to sport (Billet & Janz, 2011). Soccer and ice hockey accounted for 37.7% of injuries suffered by youth athletes in Canada (Fridman et al., 2013)<sup>1</sup>. Overall, concussions accounted for 15% of the injuries suffered by youth athletes (Emery et al., 2017). Concussion rates are higher in youth, 11.23% (ages 5-19) than adults 3.53% (ages 20-65+), most of which is attributed to youth being more actively involved in organized sport, especially contact sports (Bang et al., 2020). In male ice hockey, concussion incidence ranged from 0.76/1000 participation hours for athletes aged 11 and 12, to 1.13/1000 participation hours for athletes aged 13 to 14, and 1.00/1000 for those aged 15 to 17 (Blake et al., 2018). Blake et al. (2018) concluded that age is a factor in concussion incidence, illustrating the need to improve prevention, recognition, and removal strategies in youth sport. One of the negative consequences of injuries is the time lost away from sport and school and, therefore, missing the associated physical, academic, psychological, and social benefits. Renton et al. (2021) found that athletes who had a high athletic identity were more likely

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<sup>1</sup> More recent injury statistics are currently not available. Longitudinal hospital record studies such as Pakzad-Vaezi & Singhal (2011) occur over several years making data dissemination of current findings difficult.



to mentally suffer when injured (e.g., experience depression or anxiety), as they felt they were letting their teams down. While musculoskeletal-based injuries allow athletes to continue socializing with their teammates, concussion symptoms can be exacerbated by the sporting environment. As such, youth athletes who are recovering from concussions typically do so away from their teammates. This leads to changes in mood and behavior, increased anxiety, and increased length of recovery (Clacy, Hermens et al., 2019). While all youth injuries require the attention of sport organizations and the sports medicine community, concussions require focused attention due to the potential life changing side effects.

### **Sport-Related Concussion**

Concussions in sport have become a priority for those involved in health, sport, and the media (Kroshus et al., 2015; Welland & Schmude, 2014). This increased priority comes from the medical and scientific communities looking for more insight through the study of concussions and increased media attention (Williams & Danan, 2016). The Concussion in Sport Group classified SRC as a traumatic brain injury caused by biomechanical forces being transmitted to the head, with symptoms that typically have a rapid onset and are reflective of a functional—rather than structural—injury (McCrory et al., 2017). There are associated short- (headache, dizziness, trouble focusing) and long-term health issues (post-concussion syndrome) that can result from SRC (McCrory et al., 2018). It is important to note that not all SRC present similarly. Numerous signs and symptoms of concussion might be present, along with a range of severity in the signs and symptoms (McCrory et al., 2018). The effects of concussions are more concerning for

youth athletes as their developing brains are more vulnerable to the biochemical changes associated with this type of injury (Babikian et al., 2015).

Though the short-term effects of concussions might seem minor, they can be detrimental and chaotic to youth athletes, through the disruption of their normal routine. Concussion symptoms are categorized into five domains: (1) somatic, (2) cognitive, (3) emotional, (4) vestibular-ocular, and (5) sleep-related (Howell et al., 2019). The first domain is somatic symptoms, which are the physical side effects resulting from a concussion. Somatic symptoms include headaches, pressure in the head, neck pain, nausea or vomiting, and dizziness. The second domain is cognitive, which relates to the ability for someone to think, reason, and remember. Cognitive symptoms of concussions are feeling slowed down, feeling “in a fog,” difficulty concentrating, and difficulty remembering. The third domain is related to the emotional responses an athlete experiences after suffering a concussion. Athletes who express feeling more emotional, irritable, sad, and nervous or anxious symptoms are suffering emotional-based symptoms. Blurred vision and balance problems fall under the fourth domain of symptoms related to the vestibular-ocular system. These symptoms affect how an athlete can navigate the environment around them. The final domain is sleep-related symptoms, which reflect how the athlete is sleeping and how they feel while awake. Sleep-related symptoms include fatigue or low energy, drowsiness, and having trouble falling asleep. The ability to participate in sport is jeopardized for athletes who suffer concussions and experience any of these symptoms across the domains. Further, it is imperative to remember that youth athletes spend most of their day in school, where concussion symptoms will detrimentally affect their ability to pay attention in class and learn (DeMatteo et al., 2015).

Over 90% of youth athletes with concussions recover within 10-14 days of injury (Morgan et al., 2015). Those who experience symptoms past this time suffer from persistent post-concussion symptoms (PPCS). PPCS is characterized by the persistent and prolonged presence of at least three concussion-based symptoms lasting longer than one to three months, depending on which criteria is used (Ellis et al., 2016; Petraglia et al., 2015). As Ellis et al. (2016) explained, the differences in the definition and diagnostic criteria, along with the lack of acknowledgment of underlying conditions, contribute to the confusion around PPCS. The authors also stated that there has been a lack of recognition of how PPCS displays in otherwise healthy youth, leaving this age group prone for misdiagnosis or improper management. Athletes with PPCS experience concussion symptoms for a longer time period. These athletes also have more time away from school and sport, which can lead to secondary negative outcomes such as depression and academic delays (Chrisman & Richardson, 2014; Purcell et al., 2019).

Another concern for athletes who suffer a concussion is second impact syndrome. This occurs when an athlete with an unresolved concussion sustains a second head injury, typically within two weeks of the initial injury or during their symptomatic period (McLendon et al., 2016; Petraglia et al., 2015). Second impact syndrome can be fatal; athletes with second impact syndrome have nearly a 50% mortality rate due to an increase in intracranial pressure caused by diffuse cerebral edema (Petraglia et al., 2015). It is believed that youth's cerebral vasculature cannot keep up with this edema, making youth athletes more at risk for adverse effects (McLendon et al., 2016). Since the second impact does not need to be major, it is imperative that concussions are recognized early and dealt

with appropriately (e.g., removal from the athletic environment and proper time to recover)—especially for youth athletes.

A common myth is that concussions can be diagnosed via medical imaging such as magnetic resonance imaging and computerized tomography scan. While there has been advancement in identifying biomarkers of acute concussions, there is still no diagnostic test or marker for early concussion diagnosis in a clinical or athletic setting (McCrory et al., 2018). Given this, it is imperative that individuals involved in youth sport can recognize concussion symptoms in athletes and take appropriate action. Only through early detection and removal from play will youth athletes be truly protected. As Williams and Danan (2016) described, concussion knowledge has advanced considerably since 2002, including how the medical community classifies and diagnoses concussions. Arnheim and Prentice (2000) showed there were 13 grading systems for the diagnosis of concussions. Across all systems, the criteria for concussion diagnosis focused on the presence of headaches, amnesia, and if a loss of consciousness occurred. It is now known that while headaches might be the most prevalent symptom, amnesia and loss of consciousness have negligible effects on the severity of each concussion. Current guidelines focus on the five domains of concussion symptoms (i.e., somatic, cognitive, emotional, vestibular-ocular, and sleep-related), emphasizing that decisions on return to play should not be governed by the symptoms displayed at the time of injury.

### **Concussion in Youth Sport**

Documented head injuries in youth sport go back as far as the 1930s in high school football in America (Williams & Danan, 2016), showing that this is not a new issue. While the nature of some sports might lead to a higher incidence of concussions,

traits common in youth can contribute to athletes not recognizing and reporting concussion symptoms and remaining in games. Knowledge of concussions, perception of the seriousness of injury and cultural influences can impact youth athletes reporting of concussion symptoms (Bretzin et al., 2020; Chandran et al., 2020). Pre-existing conditions such as ADD/ADHD, migraines, anxiety, and poor sleep habits can mirror signs and symptoms of concussions in this age group. This can make it difficult for athletes to recognize that they might have suffered a concussive injury, instead choosing to remain in their competitions. With one in four high school students having reported suffering at least one concussion while participating in sport (McCallum et al., 2020), finding ways to improve concussion recognition in youth sports could cause a major shift towards safer youth sport. In Canada organizations such as Parachute, whose vision is to decrease serious injuries and the Sport Information Resource Centre (SIRC) whose vision is to advance sport in Canada through the transfer of knowledge, have focused on educating and creating a shift in knowledge regarding concussions. SIRC provides extensive resources for stakeholders in sport focused on concussions as well as providing funding towards concussion research in Canada. More recently the province of Ontario passed Rowan's Law, and designated the last Wednesday of September as Rowan's Law Day. Rowan's Law has made concussion awareness and proper recognition within child and adolescent sport a requirement for all those involved including sport officials ('Rowan's Law (Concussion Safety)', 2018). The work that these organizations have done and continue to do have provided the foundation for sport organizations and those involved in sport to implement policies and protocols to enhance the safety of their participants specifically related to concussions.

## **Youth Ice Hockey in Canada**

In Canada over 400,000 youth athletes were registered in ice hockey (Hockey Canada, 2020a), meaning a focus on the health and safety of these athletes is imperative for the long-term health of the sport and its participants. Marar et al. (2012) found the rate of concussions was nearly 13 times higher in competitions versus practices; therefore, increasing safety within competitions is very important. Athletes who participate in ice hockey games are expected to display characteristics associated with hyper-masculinity, especially toughness (Caron et al., 2013). There is an expectation to play through an injury and put the team goals ahead of one's own health and safety (Whatman et al., 2018). The physical nature of ice hockey, combined with the culture of playing injured, leaves youth athletes in a position to suffer concussions and not properly recover from them (St Amant, 2020).

National sport organizations in Canada, including Hockey Canada, have recognized a need to reduce the number of concussions occurring in youth athletes. Youth ice hockey in Canada can be categorized in two distinct ways: leagues with body checking and leagues without body checking. One important note is to differentiate body contact and body checking as defined by the Hockey Canada Rule Book (2020b). Body contact is the unintentional contact of two players in pursuit of the puck. In contrast, body checking is where a collision between two players is used to gain an advantage over their opponent. To combat the high rates of concussions and checking-related injuries, Hockey Canada and its regional branches have taken initiatives to remove body checking from specific age and competition levels, as well as increase enforcement and penalization of contact to the head (Emery et al., 2017). Hockey Canada made rule changes to prohibit

body checking until the U15 age division based on evidence (Emery et al., 2010), where they saw a risk reduction of 1.08/1000 athlete exposures between the body checking and non-body checking groups. Hockey Canada has implemented increased penalties for players who contact or target opposing players' heads with emphasis on encouraging officials to enforce this rule due to concussions and other head trauma (Hockey Canada, 2020b). Educational programs and materials such as Hockey Canada's Concussion Awareness App aim to make it easier for coaches and athletes to learn about the signs and symptoms of concussions and the detrimental long-term effects (Hockey Canada, n.d.). Black et al. (2017) studied 1501 youth hockey players in Calgary, Alberta, aged 11-12 years, by conducting a historical cohort study comparing injury and concussion rates in this age group. Comparison was made between the first cohort (n = 883) who played when body checking was permitted to the second cohort (n = 618) who participated after the 2013 rule change. They found that the concussion incidence rate went from 2.79/1000 participation hours prior to the rule change to 1.12/1000 participation after the rule change. Based on previous provincial data, the rule change prevented an estimated 500 concussions from occurring. While this rule change has helped decrease the incidence of concussions by nearly 64% (Black et al., 2017), it is imperative to remember that we cannot fully eliminate the risk of concussions from sport.

### **Concussions and the Culture of Sport**

Education measures were undertaken by sports organizations as an initial step toward improving athlete safety however, there has not been a representative increase in the number of athletes self-reporting concussions (Kroshus et al., 2015), making it evident that more must be done to ensure the safety of youth athletes. In response,

government organizations have created education programs for athletes and coaches (Parachute, 2017; Parachute, 2018; Russell et al., 2017). The mandate of these organizations to educate athletes is imperative, as previous research has shown that coaches pressure athletes to compete even when the athletes display concussion signs and symptoms (Griffin et al., 2017; Mathema et al., 2015). This could be due to the lack of coaches' current evidence-based knowledge, how that knowledge is being translated to them, or how they interpret that knowledge (Mrazik et al., 2015). Many current hockey coaches played prior to concussions receiving mainstream attention, where "getting your bell rung" was considered normal, and returning to play with symptoms was part of the game. For many, this type of culture still exists in hockey, which puts youth athletes at risk.

Competing while injured is seen as expected behavior for youth athletes. Chrisman et al. (2013) conducted a study using focus groups comprised of 50 soccer and football athletes aged 16 to 18 years to determine the barriers and facilitators to athletes reporting concussions. They used scenarios that could occur both to the athlete or a teammate and were transferable to various sports. By using a qualitative method, they were able to draw on the athletes' experiences and perceptions specific to concussions. They found that even though high school athletes knew that concussions were dangerous, many continued to compete with concussion symptoms. Athletes expressed a desire to keep competing, that it was hard to know if they were injured, and that they did not want to let their teammates down as reasons they remained in the competition. Previous experiences with their coach when it came to injury reporting, and their coach's expectation to play injured shows how, in certain sports, there are cultural norms when it



comes to playing through injuries no matter the severity (Chrisman et al.). The behaviors of the youth athletes in Chrisman's research show that the cultural norm in their given sport is to show how tough you are and what you are willing to give of yourself for the team. Parental attitudes towards concussions and the importance of sport achievement plays a significant role in youth athletes' knowledge and actions regarding concussions, this influence can be both positive and negative when it comes to reporting symptoms and continuing to compete after sustaining a concussion (Kroshus et al., 2018; Register-Mihalik et al., 2018).

Coakley (2016) describes these behaviors as deviant overconformity that come from the expectation that athletes should play through pain and that there is an inherent risk to participating in sports (Hughes & Coakley, 1991). While some might assume that this occurs only in adult and professional sports, youth athletes are not immune to these cultural norms (Hughes & Coakley, 1991). This phenomenon demonstrates that more needs to be done to increase the welfare and health of youth athletes regarding concussions. However, athletes and coaches are not the only participants on the playing surface; sports officials are also active participants in the competitive environment. While key stakeholders such as athletes and coaches fall under the influence of deviant overconformity, sport officials do not, as they are not subjected to the same expectations of cultural behavior.

### **Sport Officials**

Sport officials (e.g., referees, umpires, and judges) are key stakeholders in sport, whose role is to enforce specific rules to ensure fairness and reduce injury for all within the competitive environment (Helsen & Bultynck, 2004). They influence the competitive

environment based on how their decisions and presence affect the flow and outcome of competition (Kraak et al., 2021) with an expectation of impartiality. Impartiality is defined as treating or affecting all equally and without bias (Merriam-Webster, n.d.), which is pertinent to the role of the sport official. Sport officials are expected to be “impartial, fair and objective” when it comes to their decision-making (Alker et al., 1973, p. 336). Along with impartiality, they are expected to make their decisions without bias and centered on fairness for all participants (Simmons, 2011). In some instances, sporting organizations have stated that sport officials are to be impartial while focusing on the welfare and protection of athletes (Football Canada, 2019). Part of the sport officials’ role is to encourage fair play among athletes to promote safety (Kaluderović, 2011; Loland, 2011). This is done through the enforcement of rules based on the inherent principle that sport officials remain impartial (Cuskelly & Hoyer, 2013). Their ability to be impartial and objective makes sport officials ideal candidates to protecting the health and welfare of athletes. The influence of sport officials in regards to fair play and a focus on health and safety led sport organizations like England Rugby to believe they can influence future behaviors of athletes and coaches (England Rugby, n.d.). This shows that sport officials are ideal candidates for recognizing injuries in athletes as their decision should not be influenced by who is displaying the symptoms.

### **Sport Officials and Concussions**

As objective participants, sport officials are ideal candidates to remove athletes with concussions from competition, yet they are often misrepresented in previous studies given the potential to reduce injury risk (King & Coughlan, 2021). Sport officials are ideally positioned in the competitive environment to recognize concussions, which is

particularly helpful as many youth sporting events do not have trained medical professionals on hand (Kroshus et al., 2017). It has been acknowledged that sport officials should have an increased role in the recognition of concussions and currently have a role in athlete safety (Clacy, Goode et al., 2019; Daugherty et al., 2020). In the Clacy, Goode et al. (2019) study, 116 current and former participants of Australian amateur rugby were surveyed regarding their role-specific responsibilities towards concussions. Questions were open-ended and focused on preventing, identifying, and treating concussions. Participant's roles included athletes, coaches, parents, management, medics, administrators, volunteers, and officials. Of the officials (n=6) who participated, 80% felt it was their responsibility to remove a concussed athlete from competition; however, only 33% felt it was their job to recognize concussions. Beyond removing athletes from competition, the rugby officials in this study discussed how “running a safe game”, “enforcing the laws of the game”, facilitating safe play, and following the guidelines regarding safety were other ways they could play a role in concussion prevention and management (Clacy, Goode et al., 2019, p. 2236).<sup>2</sup> King and Coughlan (2021) investigated the general knowledge of SRC, knowledge of signs and symptoms, attitudes of SRC and officials' role recognition, and confidence of officials in recognizing concussions. Through the use of questionnaires, 85% of the 134 officials expressed that officials could play a role in concussion recognition, however only 41% felt they could confidently implement a medical time out if they suspected a concussion.

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<sup>2</sup> It is important to note that while the findings of this study are beneficial, the sample size of officials is small (n = 6).

Organizations such as the World Rugby Union (WRU), however, have expanded sport officials' roles to take a proactive approach with respect to concussions. The WRU advertises specific guidelines for all its stakeholders (including sport officials) to follow, including how to recognize concussion symptoms and the importance of removing concussed athletes from competition (World Rugby Union, 2017). These guidelines explain why youth athletes are more at risk when suffering a concussion, how to recognize a concussion, and that any athlete displaying signs and symptoms needs to be removed from competition and training until medically assessed (World Ruby Union, 2017). Additionally, the national rugby unions in Australia, England, New Zealand, and South Africa have created policies and programs specific to sport officials, providing them the authority to remove athletes from play after a concussion is recognized (England Rugby, 2018; Rugby Australia, 2019; Rugby Smart, 2018; South African Rugby, 2019). In Australia, New Zealand, and South Africa, officials who recognize concussion signs and symptoms present a blue card to the athlete in the same way they would present a penalty card; the athlete is to be immediately removed from competition and cannot return. England Ruby does not use the card system for concussion removal; however, the same basic procedures apply as with the other unions. After removal, the athlete's name is documented and entered in a database, and athletes must receive clearance from a medical professional before they can return.

Understanding the efficacy of such programs is imperative to future implementation. There has been success with RugbySmart (New Zealand) and BokSmart (South Africa) in the prevention of injuries and increased knowledge of participants (Fraas & Burchiel, 2016). Sport officials who participated in the BokSmart program

scored high on concussion knowledge and showed appropriate attitudes towards concussion-based scenarios (van Vuuren et al., 2020). In a 2007 analysis of injury rates after the start of RugbySmart education and tackling programs, concussions were reduced by 10.7% over a two-year period (2003-2005; Gianotti et al., 2007). More recent evidence shows an increase in concussions through the blue card programs (Freitag et al., 2021). Based on the overall findings, including sport officials in the educational process, and giving them authority to remove injured athletes from competition is making rugby safer.

While some sport organizations like the WRU have taken steps to improve safety for their athletes regarding concussions, there has been an acknowledgment that concussion prevention and education requires a much larger scope. Organizations like the Centers for Disease Control in the United States of America and Parachute in Canada are using their platform to increase athletes' safety. In 2017, Parachute released the Canadian Guideline on Concussion in Sport to educate those involved in sport. One of the aims of this document was to "ensure that athletes with a suspected concussion receive timely and appropriate care" (Parachute, 2017, p. 7). Within the document, references are made to sport officials being stakeholders who need to be knowledgeable regarding concussions. Parachute designs evidence-based policies that can be implemented by governing bodies, including national sport organizations. As of April 2021, all nationally funded sport organizations in Canada were mandated to have concussion policies, many of which were based on the Parachute guidelines. However, when examining the concussion policy documents of several Canadian national sport organizations (i.e., Canada Basketball, Hockey Canada, Judo Canada, Volleyball Canada, Rugby Canada, Canada Soccer, Lacrosse Canada, and Skate Canada), it appeared that sport officials' role in concussions

was ambiguous. For instance, the policies mainly focused on educating all participants (including sport officials) on how to recognize concussions and the importance of doing so. However, there were no clear directives about whether sport officials had the authority to remove athletes from competition when they suspected concussions had occurred.

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## **Chapter 3 Manuscript**

### **Hockey Referees: Are They Part of the Solution for Concussions in Youth Hockey?**

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## **Abstract**

Concussions pose short- and long-term risks for youth (ages 5-18) athletes. Sport organizations need to find ways to ensure athlete safety, including prompt removal of athletes displaying signs and symptoms, to mitigate these risks. Collision sports such as ice hockey have a higher risk factor for concussions compared to non-collision sports. Hockey Canada has taken steps to reduce the incidence of concussions in their youth athletes; however, athletes are still suffering concussions and remaining in games. In ice hockey, officials are tasked with maintaining the athletes' safety through enforcing rules. This study interviewed 10 ice hockey officials to determine their perspectives on being able to remove athletes with suspected concussions from games. Hockey officials felt that while safety is at the root of their role, removing athletes from games due to injury would be met with numerous barriers and would require consistent training among officials about concussions and procedural expectations.

**Key Words:** officials, safety, head injury, adolescent, sport

## **Hockey Referees: Are They Part of the Solution for Concussions in Youth Hockey?**

Youth (ages 5-18) sport participation provides numerous benefits, including physical gains (e.g., improved strength, conditioning, and growth and development), development of social constructs (e.g., leadership and cooperation), academic success (e.g., higher grades and class attendance), and psychological and emotional wellness (e.g., increased self-esteem and emotional awareness) (Fraser-Thomas et al., 2005). With the increase in youth sport participation, there has been an associated increase in youth sport injuries (Pakzad-Vaezi & Singhal, 2011). Billet and Janz (2011) reported that two-thirds of injuries suffered by Canadian youth (ages 12-19) were related to sport participation. While there is an inherent risk for injury with all sports, certain sports have more associated risk (Pakzad-Vaezi & Singhal, 2011). For instance, in Canada, soccer and ice hockey accounted for 37.7% of youth sport injuries in Canada (Fridman et al., 2013). Since injuries can prevent youth athletes from participation (and serious injuries might lead to premature sport dropout), it is important to study methods to reduce injury potential and maintain health in youth athletes (Siesmaa et al, 2011).

An injury that poses a serious risk is a concussion, which accounts for 15% of youth athletic injuries (Emery et al., 2017). Sport-related concussions are classified as a traumatic brain injury caused by biomechanical forces transmitted to the head; symptoms typically have a rapid onset and are reflective of a functional—rather than structural—injury (McCrory et al., 2017). Symptoms of concussions are categorized into five domains: (1) somatic, (2) cognitive, (3) emotional, (4) vestibular-ocular, and (5) sleep-related (Howell et al., 2019). Concussion symptoms vary between individuals in both the number of signs and symptoms present and the severity of each symptom (McCrory et al., 2018). Potential

long-term effects of concussions include persistent post-concussion symptoms (the persistent and prolonged presence of at least three concussion-based symptoms for longer than one to three months; Ellis et al., 2016; Petraglia et al., 2015), which occur in 10-30% of youth who suffer concussions (Lyons et al., 2022; Morgan et al., 2015). These prolonged symptoms are impactful on the lives of youth athletes as they can delay learning and lead to increases in anxiety and depression.

Self-reporting symptoms is an integral part of concussion identification; athletes believe that there are consequences of reporting signs and symptoms of concussions to coaches, team staff, and parents (Milroy et al., 2020). In fact, 81% of youth athletes (ages 11-18) have competed while injured, and 91% have seen fellow athletes do the same. Athletes expressed that their reasoning behind this behavior was (1) the pain was bearable, (2) they enjoyed the sport and wanted to continue competing, and (3) they did not want to let their team down (Whatman et al., 2018). Even with the knowledge of the risks of concussions, high school athletes (ages 16-18) stated they would still participate if they suspected they had one (Chrisman et al., 2013). While the influence of coaches and fellow athletes can play a significant role in the thoughts and behaviors of youth athletes, parents' thoughts and behaviors still guide their children's behavior. Parents' knowledge of concussions and the weight they gave athletic performance influence youth athletes own thoughts and behaviors, especially as they relate to symptom reporting and removing themselves from competition (Kroshus et al., 2018; Register-Mihalik et al., 2018). These behaviors of non-reporting and remaining in competition are described by Coakley (2016) as deviant overconformity and come from the expectation that athletes should play through pain and that there is an inherent risk to participating in sports

(Hughes & Coakley, 1991). This phenomenon demonstrates that more needs to be done to increase the welfare and health of youth athletes regarding concussions. While key stakeholders such as athletes and coaches might be influenced by deviant overconformity or their self-interests (e.g., winning), another stakeholder operates in the competitive environment without such influences: sport officials.

### **Sport Officials and Concussions**

Sport officials (e.g., referees, umpires, and judges) are key stakeholders in sport (Ridinger et al., 2017), whose role is to enforce specific rules to ensure fairness and reduce injury for all within the competitive environment (Helsen & Bultynck, 2004). They influence the competitive environment through their decisions, and their presence affects the course of competition (Kraak et al., 2021). Sport officials are expected to make their decisions without bias, instead centered on fairness for all participants (Simmons, 2011). They are also tasked with focusing on the welfare of athletes (Football Canada, 2019). This task is a way for sport officials to give back to their given sport, which is a key component of official recruitment (Cuskelly & Hoye, 2013; Ridinger et al., 2017). This motivation to give back to sport is seen in Canadian ice hockey officials and relates to not only giving back to their sport, but also teaching skills and rules (Fowler et al., 2019). Since sport officials' are impartial, objective, focused on fair play, and the health and safety of athletes led England Rugby to add concussion recognition into their role (England Rugby, n.d.). This shows that sport officials are ideal candidates to recognize athletes' injuries, as their decisions are not influenced by factors like who is injured or when an injury has occurred during the competition.



Furthermore, sport officials are ideally positioned in the competitive environment to recognize concussions, which is particularly helpful as many youth sporting events do not have trained medical professionals on hand (Kroshus et al., 2017). It has been acknowledged that sport officials should have an increased role in the recognition of concussions and have an increased role in athlete safety. Clacy et al. (2019), for instance, found that 80% of Australian amateur rugby officials felt it was their responsibility to remove a concussed athlete from competition; however, only 33% felt it was their job to recognize concussions. In 2021, King and Coughlan found that 85% of sport officials (ice hockey, soccer, rugby, and North American football), felt that they can play an important role in concussion recognition, however only 41% felt comfortable implementing a medical timeout in the instance of a concussion (King & Coughlan, 2021). Organizations such as the World Rugby Union (WRU) have created policies and programs specific for sport officials, providing them the authority to remove athletes from play after a concussion is recognized (World Rugby Union, 2017). Such programs are largely deemed successful, with increases in athletes being removed from competition with concussion symptoms (Freitag et al., 2021) and increases in sport officials' knowledge of concussion symptoms (van Vuuren et al., 2020).

While some sport organizations like the World Rugby Union (WRU) have taken steps to improve safety for their athletes regarding concussions, there has been an acknowledgment that concussion prevention and education requires a much larger scope. Parachute is a Canadian organization whose goal is to decrease all serious injuries in Canada, with a specific focus on youth concussions. In 2017, Parachute released the Canadian Guideline on Concussion in Sport. One of the aims of this document was to

“ensure that athletes with a suspected concussion receive timely and appropriate care” (Parachute, 2017, p. 7). As of April 2021, all nationally funded sport organizations in Canada were mandated to have concussion policies. Even with Parachute stating sport officials should have a role in concussion recognition (Parachute, 2017), concussion policy documents of several Canadian national sport organizations (i.e., Canada Basketball, Hockey Canada, Judo Canada, Volleyball Canada, Rugby Canada, Canada Soccer, Lacrosse Canada, and Skate Canada) are ambiguous about the role sport officials should have within those policies.

### **Purpose**

Continuing to evolve the role of sport officials to include concussion recognition and removal builds on the already existing role of creating a safe competition environment for all athletes (Nagy et al., 2019). Additionally, the inherent nature of sport officials being impartial makes them ideal candidates for putting athlete safety above the outcome of a competition. While adding concussion removal to sport officials’ roles seems logical, it is imperative to glean sport officials’ perceptions on such a role prior to implementation. Exploring sport officials’ perceptions of such a role could elucidate an understanding of potential barriers (e.g., thoughts of the sport officials), the beliefs of athletes, coaches, parents, and administrators regarding the scope of the sport official role, and the logistics of implementing this policy including facilitators to implementation (e.g., the position sport officials have on the competitive surface, their impartiality, the nature of their role being rooted in safety, and the confidence and knowledge gained by educational programs). Thus, the purpose of this study was to explore hockey officials’

perceptions of being tasked with recognizing concussions among youth athletes and granted the authority to remove athletes suspected of concussions from the competition.

### **Methods**

This study was approved by the Interdisciplinary Committee on Ethics in Human Research at Memorial University of Newfoundland (ICEHR # 20220787-HK). Ethics approval letter can be found in Appendix A, document 1.

### **Positionality & Paradigm**

In an effort to understand hockey officials' perceptions on their role in concussion recognition, a pragmatic approach using qualitative interviews was used for this study. Martela (2015) expressed how the researcher's expertise and background will affect the viewpoint taken during analysis. As a Certified Athletic Therapist, the first author has worked predominantly with youth athletes and has worked extensively in ice hockey from on-site, clinical, and educational perspectives. Her interests came from seeing firsthand, athletes continuing to compete with suspected concussions and having worked with athletes who have sustained multiple concussions throughout their careers. Her background having worked in ice hockey allowed her to build rapport with participants and show understanding of the game and officials' role within it. Having the educational background to understand the severity of concussions and the need for quick recognition was pivotal in understanding the need for this study.

This study explored the perceptions of current ice hockey officials regarding removing athletes from competition who are displaying concussion symptoms. As this is a complex issue that could potentially involve several stakeholders, a pragmatic approach was used. Pragmatism centers on finding solutions to practical and complex real-life

issues (Giacobbi et al., 2005; Salkind, 2010). Specific to this study is that concussions are an issue in youth ice hockey and a potential solution is increasing the role of ice hockey officials in their recognition. During analysis of the interviews, the information was gleaned and analyzed with pragmatism in mind (i.e., creating tangible and meaningful information). By taking this approach, the researcher focused on the whole issue through all stages of the research process, which is integral to the pragmatic philosophy (Martela, 2015).

### **Participants**

Participants were recruited to the study using utilization-focused sampling. This form of purposive sampling allowed participants to identify factors pertinent to the topic that can be directly used in guiding policy and future practices (Patton, 2015).

Recruitment occurred through emailing the referee-in-chiefs for the provincial branches and social media posts targeting ice hockey officials in Canada, of which there are approximately 29,000 (Hockey Canada, n. d.). To ensure participants had relevant experiences and knowledge about the study purpose, they were required to meet five criteria: (1) English speaking, (2) 18 years of age or older, (3) Hockey Canada on-ice official (i.e., referee or linesperson), (4) at least five years' experience as an ice hockey official, and (5) regularly officiate ice hockey players aged 13 to 18 years old divisions. Ten participants (nine male, one female) agreed to participate, with a mean age of 33.9 years and 14.6 years' experience. All participants completed an informed consent form, see Appendix A document 2. Officials mostly worked games in U15 AA/AAA, U18 AA/AAA, and Junior A leagues—these are among the top competitive leagues for amateur Canadian ice hockey players.

## **Data Collection**

Individual, semi-structured video on-line interviews were conducted and recorded from December 2021 to February 2022. Based on Patton's (2002) recommendations, the 12-question interview guide (see Appendix A document 3) had three types of questions: (1) background, (2) experiences and feelings, and (3) summary. Background questions focused on their knowledge about concussions, for instance, "What signs or symptoms do you associate with concussions?" The second section, participants' experiences and feelings was integral to the pragmatic process and to providing practical guidance to sporting associations because creating practices that do not involve stakeholder expertise decreases policy effectiveness (Phillipson et al., 2012). A question posed in this section was, "What is your level of comfort in recognizing concussions in hockey players?" Summary questions let participants express any further thoughts on what had been discussed during the interview. An example question was, "Do you have any advice or comments if you were granted this task?" The average interview length was 44 minutes.

## **Data Analysis**

The goal of the pragmatic paradigm is to obtain meaningful results for the participants by allowing their thoughts and beliefs to be the main focus. As such, thematic analysis was used since it allows participants' thoughts and beliefs to be shown through the themes that arise during the analysis. Thematic analysis centers on "identifying, analyzing, and reporting patterns (themes) within the data" (Braun & Clarke, 2006, p.79) and includes six phases. The first phase was data familiarization, achieved by reading each interview transcript multiple times. The second phase was generating initial codes by extracting and identifying key points for analysis. Initially, 198 codes were created;

after considering the relevance to the study purpose, only 54 were included herein. Phase three consisted of searching for themes, where the ideas from phase two were categorized based on commonalities. Overall, seven themes and 40 sub-themes were generated. The fourth step was to review the themes and sub-themes and refine the data, which left four main themes and 13 sub-themes. The fifth stage was to define and name the themes, which allowed for the development of the story that each theme represented. During this stage, each theme was thoroughly explored, ensuring that each fit into the overall major theme. The sixth and final stage was to present the results and discussion ensuring that the officials' perspectives and thoughts were still evident.

### **Methodological Quality and Rigor**

Methodological quality is important to all research. While various terms are used in qualitative research (e.g., credibility and trustworthiness), rigor is used here because it reflects thoroughness in the approach. Methodological rigor in this study was established through methodological coherence, rich data, reflexivity, a pilot interview, and the use of a critical friend. Methodological coherence was obtained by applying the pragmatic lens throughout the study, including the purpose, methods, results, and writing. The pragmatic paradigm was ideal for examining the real-life issue of concussions in youth ice hockey and looking for a practical solution that prevents athletes who have concussion symptoms from competing. The choice of study design allowed for the participants' thoughts and beliefs to be the central focus. Rich data was obtained through the use of in-depth semi-structured interviews, which allowed for the extensive collection of the participants' views. Reflexivity was obtained through field notes and reflexive journaling during the interview process and the continuation of reflexive journaling during the analysis process.

Field notes were referred to during data analysis to offer expanded thoughts on the participants' perceptions. The primary author's reflexive journal was reflected on during analysis to minimize bias during the writing process. Completing a pilot interview allowed for familiarization of the interview guide and helped develop an interview style and flow. The review of the pilot interview was conducted with a current ice hockey official and reviewed by an experienced researcher and current ice hockey official who provided valuable feedback as to interview style and cultural integrity. For this study, a critical friend familiar with the study procedure and purpose was used and was essential in limiting researcher bias. The critical friend reviewed the initial data analysis to ensure continuity with coding and themes.

## **Results and Discussion**

Four major themes were generated through the analysis of the participant interviews: (1) Considerations and Importance of the Protocol, (2) Officials' Knowledge of Concussions, (3) Required Training, and (4) Barriers (see Table 1). From here in this protocol refers to adding recognition and removal of athletes with suspected concussion from competition by hockey officials.

### **Theme #1: Considerations and Importance of the Protocol**

Considerations and Importance of the Protocol that participants felt were related to the need for this protocol, why this protocol is important to improving safety of youth athletes, and what factors will influence the effectiveness of the protocol. Sub-themes were The Role of Officials, Player Safety, Variables that Influence the Need for the Protocol, and Considerations Needed to Make the Protocol Successful.

### ***The Role of Officials***

Player safety was seen as central to the role of an official: “For me, it’s the safety. It’s making sure that each player, each coach, each fan is held at a high standard in terms of safety and making sure that I do my part” (P6). Officials expressed that they can dictate safety through rule enforcement, “Enforcing the rules, the rules to create fairness in the game and protecting everyone to participate safely” (P9). While all participants agreed that safety was their role, some officials felt that the removal of players was not currently in their role and should not be added, “I think it would be very difficult to fit in with the current roles” (P3), “No, like to have a kid sit out on this? No, I don’t think so” (P8), and “[sigh] I think it’d be a little bit of a challenge to be added to the role” (P2). However, participants seemed to agree there could be a role for them concerning athlete concussions: “Overall, I think if the referee suspects...a player possibly had a concussion, if there [were] mechanics in place to deal with it, I think we could probably be part of the process, but not the full solution” (P2), and “If you talk to [manager of officiating] at Hockey Canada, that’s the first thing that will come out of his mouth: safe and fair. This would fall under the safe aspect of what the referee is responsible for delivering” (P4). Seven of the officials felt that removing an athlete with a concussion is not currently in their role as a hockey official. Eight of the participants explicitly stated that safety is one of the primary focuses as a hockey official, the other two participants did not explicitly state this yet showed that safety is a result of their actions within a competition.

### ***Player Safety***

The protocol of having officials remove athletes with suspected concussions from play falls under safety, “So this is a big one, obviously, and it would go under safety”



(P3). Overwhelmingly all participants agreed “Nothing’s more important than the player safety in a game” (P7). Participant 1 put it into perspective regarding how the other stakeholders view rule changes in ice hockey, “A lot of people think we’re trying to bubble wrap the kids and they don’t know that we actually just have a lot more evidence about what’s happening inside the brain when these injuries occur” (P1). Looking beyond the outcome of the game and how that might affect the team or player is imperative: “So it’s...short-term pain for long-term gain, in my opinion” (P3), “The more safe we can be on the ice, the better chance we have for this kid having success in the future” (P3).

### ***Variables that Influence the Need for the Protocol***

Many factors influence whether officials should be able to remove athletes with concussions from games, if this type of protocol is needed, and at what levels.

Participants believed the age and experience of the official would influence protocol efficacy. Being able to remove athletes from competition “Is the purview of adult officials to implement” (P4). Regarding experience, it was believed that life experience would play a greater role in understanding the significance of the protocol than that of referee experience, “It’s more of a life experience than it is referee specific experience” (P3).

This draws back to age being a more contributing factor than the level the official holds.

While it was felt that adult officials would have a greater understanding of concussions, officiating is divided by levels, not age. Hockey Canada has six levels of officials, level one being the lowest and level six being the highest. Some participants felt that age was more important than level but understood that the level of the official might be the determinant of certification in being able to remove an athlete from competition, “The reality is that we get kids officiating at the AAA level as early as probably age 16, maybe

some 15” (P4). Within this participant group, some felt that allowing level one officials the authority to remove athletes would improve comfort and knowledge of the officials, “Got to start it right at the—right at the beginning and get the rules ingrained in them from day one” (P8). It was also felt level two and three officials could undertake this protocol with the right education. “I mean, the majority of officials are level two anyways. So, I think you’d have to, you’d have to if you’re going to implement this, it had to start at level two” (P9).

Participants identified that player age and level would also influence the use of this protocol. Bringing the protocol into categories that allowed body checking and are more competitive were deemed as appropriate places to start: “Once you get into the 16, 17, 18 and above age range, where there’s checking, so, you know, serious or semi-serious players” (P5), “Whatever level body checking starts” (P7). Even though body checking occurs only at the older and more competitive levels, it was acknowledged that concussions do not solely occur at these levels. “But I guess the other way to look at it is regardless of hitting or not like there’s always I guess that potential for a situation where an individual, I guess, may get a concussion” (P2).

Determination of where the protocol is needed was also affected by the knowledge of the bench staff. Some leagues require qualified health professionals to be on the bench, often leading to comments like, “I think it falls more on the medical staff that’s required to be on the bench, especially in the high-performance program” (P7). For ice hockey officials working recreational leagues, there was not as much confidence in the bench staff’s ability to recognize and responsibly manage concussions: “It’s the designated safety person on the team and the vast majority of them are not medically trained” (P1).

This lack of trained staff whose sole purpose is to manage the players' health and wellness affected the officials' confidence in the team staff's ability to properly recognize and remove an athlete.

Another variable related to officials that emerged through discussion was their personal knowledge, mainly what they understood about concussions. This knowledge might have come from experiencing concussions as athletes, "I played hockey growing up and so, I was a victim of countless concussions," (P5) or officials, "I've had [a concussion] while refereeing; I've taken a puck to the face" (P8).

### ***Considerations Needed to Make the Protocol Successful***

For there to be a chance of success, all stakeholders must have the same understanding of the protocol and its overall goals. "So, to make sure that I guess everybody's sort of buying in and trying to pull the rope the same way" (P2). Participants stated that support for the protocol, "Should be something taken just as seriously by the teams and the players and the trainers and the leagues as Hockey Canada, and the coaches" (P5). They believed that a way to ensure this success was to have a definitive process that includes "What happens on the ice, and then what happens to the player after ... the player is removed. How's it tracked, and ... the administrative side of things with it" (P2).

Keeping athletes safe is the priority; officials acknowledged that this protocol would impact the game. These impacts might include potential shifts in the outcome based on which player sustains an injury, "This is their star player, but he got absolutely annihilated and you know, he's not right, it would be very difficult to remove that player from the game, knowing the impact that it would have" (P3). Not only could removing an

athlete from play affect the outcome and flow, making this decision could put the officials in a position for abuse, “You can imagine the potential for debate and discussion from the benches if you are removing a player from the ice” (P4). Considering this, officials brought up that instead of complete removal, they can notify the bench of the potential injury or have a specified length of time the athlete needs to sit out for evaluation.

### ***Summary for Theme #1***

Many variables influence a protocol, including whether it is needed and how it can be successful. For ice hockey officials, adding this authority would present them with an opportunity to solidify with other stakeholders that safety is the basis of their role within the sport (King & Coughlan, 2021). It also gives them the opportunity to improve their knowledge of concussions and other skills such as communication, which can be beneficial outside of ice hockey. Due to the impact that removing athletes from play would have on the game, officials may be faced with increased criticism from other stakeholders. As the governing body, Hockey Canada would be able to show they are continually looking for more innovative ways to improve athlete safety. By involving officials, Hockey Canada would improve surveillance for concussions to minimize the number of athletes who do not report symptoms. A by-product of doing this is also solidifying the hockey officials’ role centered on safety. Including hockey officials in concussion management in turn reinforces the officials’ sense of belonging to the hockey community, while also providing the officials with a challenge, both of which are factors in official retention (Cuskelly & Hoye, 2013; Fowler et al., 2019). Hockey Canada ought to consider several factors if implementing such a procedure, including (1) officials’ age/certification level, (2) level and category the procedure will be implemented, (3)

consistent enforcement of procedure, and (4) strategies to reduce the impact on the game. Researchers could assist in helping to determine those factors. As much of the research on concussions in ice hockey has been done on the more competitive levels with body checking, future research can be done on younger categories to determine the incidence of concussions in non-contact divisions, assist in program evaluation including stakeholder responses (this includes officials), and to work with Hockey Canada on developing initiatives to increase stakeholder buy in.

## **Theme #2 Officials' Knowledge of Concussions**

Officials' Knowledge of Concussions related to how their knowledge of concussions would affect the viability of this protocol and why improving their knowledge is a key factor. Sub-themes were Knowledge of Signs and Symptoms, Officials' Comfort in Recognizing Concussions, and Officials Dealing with Specific Injury Situations.

### ***Knowledge of Signs and Symptoms***

Officials were able to identify signs of concussions more than symptoms. One of the main indicators they described was, "Just seeing someone get up, usually slowly, look around or they go to get up and fall back down type thing and just not have their bearings." (P8). It was also stated that, "Concussions affect everyone differently" (P6), which affects participants' ability to recognize concussions fully. Participants said the mechanism of injury was how they would determine if they believed they should look for an athlete to display signs or symptoms, "Witnessing what happened, I guess you would evaluate yourself, what the impact ... was ... if they get checked, or if they fall down or something like that." (P10). It was recognized that officials discuss there are other

mechanisms outside the big hit, “Any impact or fall, not even on their head,” (P8), including “hit with a puck.” (P8).

There were participants whose knowledge of concussions was based on outdated practices, “Do the finger test on them and see if they, know how many fingers you’re holding up...if they can’t really tell how many fingers...then that’d be a sign that they may have a concussion.” (P10). Multiple officials stated that loss of consciousness could determine if a concussion had occurred; while this is an indicator of brain trauma, loss of consciousness occurs in less than 20% of all sport-related concussions (Petraglia et al., 2015). It was also expressed that the knowledge an official would have regarding concussions was gained through other areas, “As a head coach for minor hockey, we take that Concussion Awareness Training as part of our training.” (P3).

Officials’ knowledge of concussions varied. Currently there is no formal training or education for them regarding this injury, “I still wouldn’t think that I would recognize the signs and symptoms, ... It’s not where our training lies.” (P7). Participants acknowledged that this lack and disparity of knowledge is a major barrier to this protocol being successfully implemented. “The lack of knowledge most officials [have] for it, I think that’s the biggest challenge.” (P7).

### ***Officials’ Comfort in Recognizing Concussions***

The comfort participants had regarding their ability to recognize concussions varied. Some participants thought their ability to recognize concussions was high (e.g., “[I] have a fairly high level of comfort in recognizing concussions” P1), whereas others were less confident (e.g., “[It’s] very low; it’s something I’m trying to work on to get better” P6). Officials determined there was a difference between the comfort of

recognition and comfort and confidence in removing an athlete, “I do think that there’s officials that wouldn’t feel comfortable with that and they wouldn’t want any additional responsibility.” (P1).

Although the officials who participated believed they had some level of comfort in recognizing athletes with concussions, they felt more comfortable determining what situations would cause a concussion. One example came from P5, “Seeing a scenario that could cause a concussion... it’d be definitely more comfortable evaluating a scenario like that.” The role of firsthand experiences influenced the officials’ comfort, “[I am] pretty confident having...suffered my own concussions, [in recognizing a concussion]” (P9), as this brought in an increased level of understanding and recognition.

### ***Officials Dealing with Specific Injury Situations***

Very few officials had situations from games that they felt were concussion specific. The situations they wished to address showed they were concerned for the athlete. They also indicated their response typically was to allow the team staff to manage the injury “I was yelling at the back referee...blow the whistle because I could clearly tell this player was struggling...[the] play was killed, and the training staff came running out.” (P3).

The officials who have had individual experiences, either suffering from a concussion themselves or having someone they know suffer from one, also seemed to demonstrate an empathy towards athletes who have suffered concussions. P6 and P7 discussed how serious concussions and injuries can leave a lasting impact on the athlete and official who witnessed them. “I’ve seen it happen in the past. And it’s, it’s not funny, it’s not something to joke about; it’s very serious, and it can be life detrimental” (P6).

“You don’t want to think about them. You don’t want to remember them necessarily, but they’re also hard to forget” (P7).

### ***Summary for Theme #2***

The current knowledge officials have regarding concussions was varied and was seen as a barrier to the protocol being achievable. For officials, they acknowledged that they needed to understand concussions to be able to recognize them correctly. They attributed this lack of knowledge to not having formal education from their governing bodies and that their knowledge came from their personal experiences with concussions or knowledge they obtained through other avenues (coaching, professional education, and personal education avenues), which aligns with findings from King and Coughlan (2021), regarding youth sport officials’ concussion education. While there is a lack of formal education there are tools and resources available such as the ones available through Parachute and SIRC, specifically regarding recognition the Concussion Recognition Tool. This tool provides non-healthcare professionals with a quick reference and guide in identifying the signs and symptoms of concussions in children and adolescents. If they wish to implement a protocol like the one described herein, Hockey Canada needs to address the current accessibility and requirement for officials to have concussion-based knowledge. When referring to the Hockey Canada concussion protocol (Hockey Canada, 2019), officials are expected to recognize concussions comparably as other stakeholders, yet they are not receiving the same level of education in this area when compared to other stakeholders. Researchers can again assist in this area by helping determine the level of knowledge of officials on a broader scope than this study, through a organization wide



questionnaire. Working with Hockey Canada, they can discover the gaps in the knowledge and create educational material and seminars geared toward officials.

### **Theme #3 Required Training**

Required Training was defined as the educational programs and initiatives that would need to be developed for officials to have the appropriate and current knowledge about concussion recognition. Officials discussed that there needs to be training to increase knowledge and comfort in implementing the protocol. They also discussed the types of training they feel would be beneficial.

#### ***Increasing Officials' Knowledge and Comfort***

Participants expressed that their current training does not focus on concussion recognition, “There isn’t any...training on like say concussions” (P2). For officials to become effective recognizing concussion symptoms, they believed there needed to be direct education on what signs and symptoms to look for in youth athletes. “I think knowledge is the biggest one...simply we don’t have the training and the knowledge base to make an informed decision” (P7). Participants 8 and 9 reiterated that more training is needed, specifically on signs and symptoms: “It would take, I think, more education and than just you know the 30 minutes slideshow you watch every year” (P8), to give officials an “Understanding what to look for, with a potential concussion, what you may see” (P9).

It was felt that by increasing officials’ knowledge regarding concussion signs and symptoms there would be an increase in comfort of recognizing a concussion and removing an athlete from competition, “I think there needs to be some sort of additional training for the officials to make them more comfortable with it” (P1). Participant 2

supported this by stating, “As an official, if I had like the proper training and education about it, I’d feel like fairly comfortable doing it.”

### ***Protocol Implementation Training for Officials***

Officials referred to the need for specific training being required as to the process of removing the athlete due to injury, “Also, just education on, like the process, sort of how to go about doing things” (P2). In part, this included training on how to communicate to the teams when a player is being removed from the game. Adding training on communication was seen as not only beneficial to this protocol but officiating in general, “An educational component on communication. So it may be, I guess, beneficial for other components of like, officiating. So being able to, I guess, talk to the players and the coaches” (P2). P4 reiterated the importance of proper communication with the athlete and coaches, “You also want training in managing the communication of what you’re telling the coaching staff about the player and what the next steps are.”

Participants recognized the significance of this protocol and the need for training related to its implementation, “Something as important and...as valued as player safety and concussions...I definitely think training would be required” (P5). Officials believed that training needed to go beyond being able to recognize a concussion and include, “The technical side to be able to know to how to deal with that situation on the ice” (P2).

### ***Type of Training for Officials***

Respondents indicated that discrepancies among officials’ knowledge of concussions and the protocol would cause inconsistent removal of concussed athletes. To mitigate this discrepancy, participants deemed it important to use training methods that officials find effective for their learning. In-person training was viewed as the most

beneficial, “In person is always better” (P5), as in-person sessions allowed for more discussion among participants and facilitators. “I’m a proponent of in-person because you know, you get that one-on-one experience. You can ask the person a question in a controlled environment” (P3).

In addition to the in-person training, incorporating a mix of case studies and the use of video were seen as the best way to develop officials’ knowledge and retention of information. These were seen as more practical and more pertinent to in-game situations, “I would say case studies, obviously life examples” (P6). P5 reiterated this, “When they first introduced head contact rule, that’s what it was, the vast majority of it was video breakdowns and real plays that happen, real scenarios.” The use of this type of training would also help with consistency, which officials expressed was needed, “The educational side of things like making sure that I guess everybody is educated and receiving...the same level of education on it” (P2). Keeping the message, the same across all training sessions was not only important to improve consistency on ice but have consistency in knowledge and improve comfort.

### ***Summary for Theme #3***

All officials were very aware that more training was needed if they were to gain this authority. Officials need to know the extent of knowledge they need to obtain, as proper recognition is essential in ensuring athlete safety (Kroshus et al., 2017). This training might involve a certification process or yearly updates to ensure officials remain current in their knowledge. If implementing such a protocol, Hockey Canada would need to meet the officials where they are in regarding their knowledge. Course creation should meet the needs of the officials, not just what is easiest to implement. Working with

researchers, Hockey Canada can create videos and use game film pertinent to injury situations to demonstrate how concussions can occur in youth ice hockey and the disparity in the signs and symptoms displayed by athletes. It would take a concerted group effort among officials, Hockey Canada, and researchers to find the most appropriate ways to implement effective training. As these types of training are being implemented, research can be done on what avenues are most successful in improving official knowledge. It is important to note that this protocol does not expect officials to diagnose concussions but rather to recognize athletes who are displaying signs and symptoms. Assessment of players must still occur by qualified team or health professionals. Clearly identifying their role might influence officials' comfort in recognizing concussions (King & Coughlan, 2021).

#### **Theme #4 Barriers**

Barriers were defined as the areas that would impede the protocol's creation, implementation, and success. The barriers described in this theme are in addition to the barrier of official knowledge as discussed in Theme #2. Sub-themes are Officials' Response to the Power and Responsibility, Stakeholder Behavior and Knowledge Regarding Concussions and Rules, and Geographic Location.

##### ***Officials' Response to the Power and Responsibility***

When new power and responsibility are given to a group, there are concerns about how it will be used. Participants felt that a barrier to widespread and effective use of the protocol would be officials not wanting the responsibility associated with making what they see as health-related decisions. "The first is going to be—there's going to be resistance on the part of officials to become medical experts and try to try to figure out

how to enforce that rule” (P4). There is also hesitation about removing an athlete, “Officials, they won’t want to implement this. They’ll be worried that they’ll get it wrong. [They will] be scared about missing [removing a player who has a concussion]” (P4). One official described how wanting to make such decisions might be influenced by the outcome it could have on the games:

It would definitely be a little bit hesitant with...some officials might say, I’m not making a call right now or not the right time. They might just decide that this is not up to them to make that decision at this moment in time. (P9)

It was also stated that tasks in their current role are also crucial in maintaining safety, and the addition of monitoring for potential concussions might affect their ability to attend to other safety aspects:

We already have a big enough job as it is, you know. For most, it’s three people on the ice against the rest of the rink. So, like I said, there’s lots of other stuff that we focus on that we need to make sure that we’re doing to make sure the games played safe. (P6)

Adding removing an injured athlete to the officials’ existing role might be seen as a burden for some, as there are officials, “Who just don’t want that power or that that ability” (P1). This goes back to the lack of consistency among enforcement, which affects athlete safety and the overall impact on competition.

Going beyond how certain officials will not want the increased responsibility, participants brought up how having the ability to remove an athlete from a game will be used as a game management tool. “There’s definitely some officials that would use that to their advantage to, you know, remove that player” (P6), in reference to an athlete that is

causing a disturbance or otherwise making the game challenge to officiate. Participant 5 reiterated this point, “I do think that yes, I think that could be exploited. It could be something that would be used...it could be potentially used in a way that it wasn’t originally intended to. Unfortunately.”

### ***Stakeholder Behavior and Knowledge Regarding Concussions and Rules***

There are multiple stakeholders within ice hockey, including coaches, athletes, and parents. Their response to officials removing an athlete from play can be a major barrier to this protocol’s effectiveness. Overwhelmingly, officials felt that stakeholder behavior would be just as large of a barrier as the knowledge and actions of officials themselves. “Where you’re going to remove a player knowing you’re going to face intense scrutiny from the player, the coach, the parents, the fans of that team” (P3). The extent of the stakeholder behavior could potentially cause disruption in the competition.

All I can envision is I can envision a lot of really angry coaches. [laughing] So because I, so I don’t know, like, I’m really, I really don’t feel like I don’t think it’s gonna go well, if officials are allowed to overrule coaches on who’s allowed to play. (P1)

P5 described how current athlete behavior is an instigator for the need for improved removal strategies; “The players are pretty stubborn in their own sense, as was I when I was playing I, I wouldn’t want to get taken out of the game.” The expected behaviors of stakeholders will have an impact on how officials would be able to enforce this protocol effectively.

### ***Geographic Location***

Where officials are located could be a considerable barrier to how this protocol can be implemented. The geographic location would affect all aspects of the protocol, “Harder in rural areas than it is in urban areas” (P4). There are differences in the experiences that officials have which are related to their geographic location, as mentioned by Participant 1, “Experience different [based on] difference in location.” These differences range from current knowledge of concussions; it was believed more remote areas had not received the same amount of knowledge from educational campaigns to organizational support and on-ice experiences related to the level of hockey and stakeholder behavior. The disparity between associations, leagues and branches was also brought up by the participants in regards to training and enforcement of Hockey Canada rules, “Consistency is not what we—we aspire to it, but we don’t have it at the moment” (P4). Participant 7 further discussed this: “Whether to call it consistency or unity but doing something [to ensure consistency] knowing Hockey Canada’s got such a large and wide scope to do it coast to coast.”

### ***Summary for Theme #4***

As much as improving safety for youth ice hockey athletes is imperative, the barriers that officials described can be a major deterrent to this protocol being attempted. Officials should understand that while adding this authority to their role will increase their responsibility other sports have found success in multiple aspects when adding this to their officials’ scope (Freitag et al., 2015; Gianotti et al., 2007; van Vuuren et al., 2020). Even without adding this protocol to the officials’ scope, improved education on concussions and proper removal from play needs to occur for not only officials but all

stakeholders (coaches, athletes, parents, and league officials). Following the Rugby Canada Blue Card initiative, where all stakeholders are required to identify and remove athletes suspected of concussions (Rugby Canada, 2021), would improve safety, and provide Hockey Canada with an outline to follow. Stakeholders should be better briefed on the current rule book, and Hockey Canada should find ways to make it more accessible to those members to increase knowledge and understanding. Additionally, Hockey Canada needs to improve consistency among its branches and leagues, including current training practices and rule enforcement. Researchers can assist again by helping improve knowledge and measuring outcomes from initiatives taken.

### **Conclusion**

There is a consensus among stakeholders in youth ice hockey that efforts need to be taken to improve athlete safety, especially when it comes to concussions. In following the WRU and its member organizations, there is potential to add the removal of athletes with suspected concussions from youth ice hockey games in Canada to the officials' scope. Officials expressed that while their role involves maintaining athletes' safety, they are currently not fully prepared to take on that role. Through the four themes generated from this study (Consideration and Importance of Protocol, Officials' Knowledge of Concussions, Required Training, and Barriers), knowledge and training were topics that arose from much of the discussions. Improved access to educational opportunities will be beneficial in improving officials' knowledge and comfort when it comes to concussion recognition. Respondents in the King and Coughlan article expressed that 87% felt there needs to be more education of sport officials in the area of concussion recognition and



management (King & Coughlan, 2021). Introducing more focused educational opportunities geared towards officials specifically will help to not only improve officials' knowledge, but also improve their feelings of relatedness with other stakeholders within ice hockey. Improving relatedness among officials is a key aspect in the ability of sport organizations improving official retention (Livingstone & Forbes, 2017). The outcome of this protocol is not to prevent concussions from occurring in ice hockey, but to prevent further injury after a concussion has occurred and to ensure all athletes who are displaying signs and symptoms receive appropriate medical attention sooner. The findings of this study align with those from previous studies especially the lack of formal education for sport officials around concussions and the need for this to increase if officials are to take on this task (King & Coughlan, 2021, Kraak et al., 2021; Kroshus et al., 2017; Nagy et al., 2019). The hockey officials who participated in this study reinforced that safety is central to their role with competition expanding this area of thought that was discussed by King and Coughlan (2021) and Nagy et al. (2019). Even with the acknowledgment that safety is central to the role of officials, there is still hesitancy in adding recognition and removal of athletes with concussions from competition (Kroshus et al., 2017; Nagy et al. 2019). Participants expressed that this hesitancy is related to a lack of confidence and comfort in making this decision as well as being aware of the potential for an increase in conflict with other stakeholders. While the perceptions of the hockey officials who participated in this study and those from previous research reflect that more needs to be done to prepare officials for the task of removing athletes from competition. The addition of concussion recognition and removal of athletes

displaying signs and symptoms can potentially improve the well-being of the athletes and reduce the number who leave due to the long-term effects of concussions.

### **Limitations**

This study was limited by its sample size as a generalization of hockey officials' perceptions cannot be based on 10 officials out of approximately 29,000. The participants who were interviewed were likely to have inclinations toward safety in the game of ice hockey. The COVID-19 pandemic may also have limited the potential participant pool as it may have affected officials' eligibility to participate. Ice hockey seasons were cut short in 2020 and, for many, were limited in the number of games played in 2021. This would affect the requirements of average games per season officiated and the years' experience as an official.

### **Future Considerations**

Participants within this study showed an understanding that improved safety is needed in youth hockey in Canada. While they felt they could take on the role of removing athletes with suspected concussions from the game, there was hesitancy in the ability of Hockey Canada to implement the protocol and its effectiveness. Much of this hesitancy lied in their lack of knowledge, the uncertainty of stakeholder behavior, and the effect it would have on their current role.

Further investigation is required to gain a more comprehensive understanding of hockey officials' thoughts on the protocol. A broader study on Canadian hockey officials' perceptions of expanding their role to include concussion recognition, and removal would be needed to obtain this understanding. Hockey Canada can take the results of this current study to guide any future investigation into the protocol, looking into areas of official

knowledge, stakeholder knowledge and behavior, official prerequisites and certifications, and what level of hockey the protocol is most needed. Areas that Hockey Canada should investigate, regardless of their intention to implement this program, would be working towards consistency among branches in training and rule enforcement, improving stakeholder knowledge of the rules, and clearly defining the role that officials have within the game.

Researchers can further this area of study by expanding concussion investigation in youth hockey to include the knowledge and societal perceptions surrounding concussions. This will give insight into the gap between concussions that occur versus what is reported. In an expansion of this study, researchers can explore more broadly the perceptions of officials' and their role in concussions. To obtain a more in-depth understanding of this protocol, an investigation into the perceptions of all stakeholders should be conducted; this will provide greater insight into the implementation of the protocol and its success. Researchers can also assist Hockey Canada in obtaining a broader consensus as to the perceptions of hockey officials regarding this protocol and their role in safety.

# 1 Table 1

## 2 Coding Framework

Theme	Sub-Theme	Coding Labels
<b>Considerations and Importance of Protocol</b>	<i>The Role of Officials</i>	<ol style="list-style-type: none"> <li>1. Actual role of official</li> <li>2. Protocol fitting within officials' role</li> <li>3. Officials' ability to recognize and manage injuries</li> </ol>
	<i>Player Safety</i>	<ol style="list-style-type: none"> <li>1. Benefit of program – player safety</li> <li>2. Protocol falls under safety</li> <li>3. Officials provide more information</li> <li>4. Officials are impartial</li> <li>5. Player health and safety most important</li> </ol>
	<i>Variables that influence the need for the protocol</i>	<ol style="list-style-type: none"> <li>1. Age and level protocol is needed for</li> <li>2. Age, level, and experience of official</li> <li>3. Conflict between level needed for and officials' ability at that level</li> <li>4. Knowledge of bench staff</li> <li>5. Personal experience and knowledge of official</li> </ol>
	<i>Considerations Needed to Make Protocol Successful</i>	<ol style="list-style-type: none"> <li>1. Stakeholder buy in</li> <li>2. Keys to protocol success</li> <li>3. Use rugby as template</li> <li>4. Definitive process and procedure</li> <li>5. Consistency among branches</li> <li>6. Impact on game</li> </ol>
<b>Officials' Knowledge of Concussions</b>	<i>Knowledge of Signs and Symptoms</i>	<ol style="list-style-type: none"> <li>1. Recognizing concussion signs and symptoms</li> <li>2. Knowledge of concussions not from officiating</li> <li>3. Officials' ability to recognize signs and symptom</li> <li>4. Mechanism of injury indicator of injury</li> <li>5. Officials' knowledge as a barrier</li> </ol>
	<i>Official Comfort in Recognizing Concussions</i>	<ol style="list-style-type: none"> <li>1. Official comfort in recognizing concussions</li> <li>2. Comfort in recognizing MOI over signs and symptoms</li> <li>3. Personal knowledge increases comfort</li> </ol>
	<i>Officials Dealing with Specific Injury Situation</i>	<ol style="list-style-type: none"> <li>1. Personal experience with on ice situation</li> <li>2. Situations they wished they handled differently</li> <li>3. Personal experience with concussion</li> </ol>

3

<b>Required Training</b>	<i>Increasing Officials' Knowledge and Comfort</i>	<ol style="list-style-type: none"> <li>1. Increasing knowledge will increase comfort</li> <li>2. Training needed to increase knowledge and of signs and symptoms</li> <li>3. Current training does not prepare them for recognition</li> <li>4. Training as to importance of protocol and officials' role</li> </ol>
	<i>Protocol Implementation Training for Officials</i>	<ol style="list-style-type: none"> <li>1. Training on the task of removal</li> <li>2. Training needed – communication</li> <li>3. Training needed – as to importance</li> <li>4. Training needed – get officials on board</li> </ol>
	<i>Type of Training for Officials</i>	<ol style="list-style-type: none"> <li>1. Type of training needed for officials</li> <li>2. How training should be conducted</li> <li>3. Training needs to be consistent</li> <li>4. Incorporate training into existing methods</li> <li>5. Amount of training would be a barrier</li> </ol>
<b>Barriers</b>	<i>Officials' Response to the Power and Responsibility</i>	<ol style="list-style-type: none"> <li>1. Barrier – officials' use of power</li> <li>2. Barrier – officials not wanting responsibility or power</li> <li>3. Barrier – officials fear and reluctance</li> <li>4. Officials not understanding role</li> </ol>
	<i>Stakeholder Behavior and Knowledge Regarding Concussions and Rules</i>	<ol style="list-style-type: none"> <li>1. Barrier – stakeholder behavior</li> <li>2. How to manage stakeholder behavior</li> <li>3. Stakeholders' lack of rule knowledge</li> </ol>
	<i>Geographic Location</i>	<ol style="list-style-type: none"> <li>1. Location</li> <li>2. Urban vs rural (size of community)</li> <li>3. Location and lack of knowledge</li> <li>4. Differences among branches, leagues, and associations</li> </ol>

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## **Chapter 4 Additional Results and Discussion**

The effects of SRC on youth have brought the focus of those involved in youth sport. To improve management of concussions within competition, sport organizations and academics have started to find ways beyond athlete disclosure and coach education to improve athlete safety. As a Certified Athletic Therapist, I have witnessed situations where youth athletes have not disclosed their symptoms, and coaches who encouraged athletes to play through symptoms. As a result, I have had to tell them they cannot participate for extended periods due to their prolonged symptoms and have helped them manage their daily activities while suffering from prolonged symptoms. For my master's thesis, I wanted to do something to add to the realm of concussion research, but it needed to be something that could make a change. This thesis focused on exploring hockey officials' perceptions regarding their role in removing athletes who display signs and symptoms of concussion from games. By exploring their perceptions, the foundation for exploring this avenue has begun. As the interviews progressed, it became apparent that while all participants officiated within Hockey Canada, their individual experiences gave them unique thoughts on this protocol. Even with these differences, there were commonalities: (1) that officials' current concussion knowledge generally was insufficient, which influences officials' comfort and poses a major barrier, and (2) more education is needed for officials and stakeholders regarding concussions in youth hockey, rule enforcement, and the role of officials.

Chapter 3 discusses in depth the results from this study, including recommendations for officials, Hockey Canada, and researchers. This chapter will expand on the findings included in Chapter 3 by showing how the creation and implementation of

this protocol will not simply come to existence by just adding a new rule to the rule book. Beyond the previously mentioned need for discussion on the who and where aspect of the protocol, there needs to be decisions on the how, and further education as to the why.

### **Principal Researcher Reflection**

When starting my thesis journey, I thought I was prepared for the two years ahead; how wrong I was. The role of the COVID-19 pandemic not only influenced how I was able to conduct my research but increased my desire to find ways to allow youth athletes to remain participating in the sports and activities they love. I witnessed young athletes having to adjust to not being able to participate normally in their activities. Without the typical interactions and teaching moments related to sport and physical activity, there was a decline in youth athletes' physical, psychological, emotional, and social development. This added to the existing desire to protect athletes who had suffered concussions and were either pressured by coaches to continue playing or had to refrain from the activity for prolonged periods.

### **Additional Research Findings**

Through the analysis process, some codes and themes did not pertain to the purpose of the study. However, the participants' comments were still valid concerning youth concussions in ice hockey. In keeping with the pragmatic paradigm and utilization-focused sampling, the participants' thoughts should still be shared as they can provide insight into the issue of concussions within ice hockey in Canada.

### ***Procedure and Documentation***

Officials discussed the type of documentation needed on their part if they were to remove an athlete from competition. The consensus was to create a form, "Similar to the

write up sheet, but it would obviously be more related to the injuries” (P6), in which they could document what happened and what caused them to remove the athlete from the game. Electronic reporting was favoured by those officials who officiated in branches and leagues that currently use this method, as it is, “Much easier to report and amalgamate the information into something broader” (P4). This would allow for Hockey Canada and researchers to analyze how the protocol is being used. It would also lead to better injury tracking, another sub-theme officials discussed.

Overseeing tracking and monitoring of the athlete’s return to play post removal was deemed necessary to ensure teams were following the rules. It was also seen as an opportunity to provide feedback to officials regarding athletes they had removed, “Feedback, right? You removed this player, they did not have a concussion, you remove[d] this player they did. So that you understand. Not that you should or shouldn’t have done what you did, right?” (P4). There was a variety of options offered as to who specifically would be tasked with this job. Some officials believed, “It should be a league responsibility” (P5). Where others stated that “A specific individual within the association who’s trained in concussion protocol” (P4) should manage this part of the protocol. Another thought it should be managed at the branch level, “Have a division of safety, where you have a Director of Safety, and then you have people for different zones” (P6). Officials acknowledged that from an “Administrative side of things ... [it adds] burdens to associations” (P2). The perspectives the officials provided shows that the procedures that need to be in place for this protocol go beyond setting guidelines for the officials on when and how to remove athletes.



An option that one official presented was instituting an injury time out for athletes whom officials suspect to have a concussion. The official stated that in their branch if a member of the bench staff needs to attend to an athlete on the ice, the athlete must sit out for a designated period. When this was discussed with the other participants, they felt this was a better option than complete removal, “A temporary [removal] from play to re-evaluate and 5-10 minutes, whatever so be, I think that would be probably better than just an absolute” (P5). This would align with youth North American football where if an athlete is attended to on the field, they must sit out for three downs. The goal would be to allow for appropriate assessment of the athlete but not automatically make them ineligible for the remainder of the game.

Another topic that officials discussed was the need for a consistent guideline for return to play once the athlete has been removed. Participants proposed different options related to this guideline, “Is it a requirement that once you’ve been removed from play that you have to be seen by a medical professional and assessed for concussion and, receive a return to play authorization from a doctor?” (P4), or “An athletic therapist or a physio for clearance?” (P2). This guideline needs to be in place to ensure that the athletes can return safely to play whether a concussion is diagnosed or not. There was a sense that while removing an athlete they suspected to have a concussion from competition was within their potential scope, officials believed that their decision to remove the athlete should not be equivalent to that of a concussion diagnosis, “I’m not like a medical professional...I’m not really able to, like diagnose a concussion” (P2). Having procedures in place for follow up regarding tracking and return to play would ensure athletes are returning safely.

### ***Training Needed***

Expanding beyond the need for officials to receive training, participants discussed the need for other stakeholders to receive training as well. It was believed that coaches, parents, and athletes require training regarding concussions, “[It] should be the same training that the officials get on it” (P8). It was recommended that the training come from “Hockey Canada, making sure that coaches, referees, parents are all aware that we have a responsibility in the care of all our athletes” (P9). That was a point of emphasis throughout the interviews that even though the protocol was focusing on official’s involvement, all stakeholders need to play an active role in athlete safety.

A second aspect of the stakeholder training is to ensure they are aware of the new protocol and the procedural aspect of it. Participants expressed that, “Making sure everybody involved in the game really understands the change, and that the officials have the authority to remove a player due to suspected head injury” (P7). The stakeholder training ties into all stakeholders being on board for success as stakeholders can not buy in if they are not aware of how the protocol will work.

Beyond formal training seminars, officials expressed that other forms of knowledge transfer can occur, “With media...everyone’s on social media” (P6), and Hockey Canada can, “Put out bulletins...the association...[can do] a rollout in their preseason, whether it’s a parent meeting or association general meeting” (P3). This is an important note for sport organizations and researchers, they need to find the optimal ways for knowledge translation to all their stakeholders, this in turn could provide a better experience for all those involved in the sport.

## **Conclusion**

While not everything that the participants discussed was pertinent to the purpose of the study, their insights gave a view of youth hockey that is not typically looked through. The questions asked were centered on whether hockey officials should be granted the authority to remove athletes with suspected concussions from the competition. The perspectives the officials who participated gave were relevant to this topic. It was evident that much of their suggestions for future action were needed regardless of this protocol becomes a rule within minor hockey in Canada. In summary, participants felt that there needs to be a better understanding of the role officials play in competition, consistency needs to improve among branches, and there needs to be increased education among all stakeholders including officials.

## Appendices

### Appendix A: Ethics Documents

#### *Document 1: Ethics Approval Letter*



**Interdisciplinary Committee on  
Ethics in Human Research (ICEHR)**

St. John's, NL Canada A1C 5S7  
Tel: 709 864-2561 [icehr@mun.ca](mailto:icehr@mun.ca)  
[www.mun.ca/research/ethics/humans/icehr](http://www.mun.ca/research/ethics/humans/icehr)

ICEHR Number:

**20220787-HK**

Approval Period:

November 4, 2021 – November 30, 2022

Funding Source:

Dr. David Hancock

Responsible Faculty:

School of Human Kinetics and Recreation

Title of Project:

*Hockey Referees: Are They Part of the Solution for Concussions in Youth Hockey?*

November 4, 2021

Mrs. Robin Tharle-Oluk  
School of Human Kinetics and Recreation  
Memorial University

Dear Mrs. Tharle-Oluk:

Thank you for your correspondence addressing the issues raised by the Interdisciplinary Committee on Ethics in Human Research (ICEHR) for the above-named research project. ICEHR has re-examined the proposal with the clarifications and revisions submitted, and is satisfied that the concerns raised by the Committee have been adequately addressed. In accordance with the *Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (TCPS2)*, the project has been granted *full ethics clearance* for **one year**. ICEHR approval applies to the ethical acceptability of the research, as per Article 6.3 of the *TCPS2*. Researchers are responsible for adherence to any other relevant University policies and/or funded or non-funded agreements that may be associated with the project. If funding is obtained subsequent to ethics approval, you must submit a Funding and/or Partner Change Request to ICEHR so that this ethics clearance can be linked to your award.

The *TCPS2* **requires** that you **strictly adhere to the protocol and documents as last reviewed** by ICEHR. If you need to make additions and/or modifications, you must submit an Amendment Request with a description of these changes, for the Committee's review of potential ethical concerns before they may be implemented. Submit a Personnel Change Form to add or remove project team members and/or research staff. Also, to inform ICEHR of any unanticipated occurrences, an Adverse Event Report must be submitted with an indication of how the unexpected event may affect the continuation of the project.

The *TCPS2* **requires** that you submit an Annual Update to ICEHR before **November 30, 2022**. If you plan to continue the project, you need to request renewal of your ethics clearance and include a brief summary on the progress of your research. When the project no longer involves contact with human participants, is completed and/or terminated, you are required to provide an annual update with a brief final summary and your file will be closed. All post-approval ICEHR event forms noted above must be submitted by selecting the ***Applications: Post-Review*** link on your Researcher Portal homepage. We wish you success with your research.

Yours sincerely,  
James Drover, Ph.D.  
Vice-Chair, ICEHR

JD/bc

cc: Supervisor – Dr. David Hancock, School of Human Kinetics and Recreation

## *Document 2: Informed Consent Letter*



### **Informed Consent Form**

Title: Hockey Referees: Are They Part of the Solution for Concussions in Youth Hockey?

Researcher: Robin Tharle-Oluk, School of Human Kinetics and Recreation  
Memorial University of Newfoundland, rtharleoluk@mun.ca

Supervisor: Dr. David Hancock, School of Human Kinetics and Recreation  
Memorial University of Newfoundland, dhancock@mun.ca

You are invited to take part in a research project entitled “Hockey Referees: Are They Part of the Solution for Concussions in Youth Hockey?”

This form is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. It also describes your right to withdraw from the study. To decide whether you wish to participate in this research study, you should understand enough about its risks and benefits to be able to make an informed decision. This is the informed consent process. Take time to read this carefully and to understand the information given to you. Please contact Robin Tharle-Oluk, if you have any questions about the study or for more information not included here before you consent.

It is entirely up to you to decide whether to take part in this research. If you choose not to take part in this research or if you decide to withdraw from the research once it has started, there will be no negative consequences for you, now or in the future.

#### **Introduction:**

My name is Robin Tharle-Oluk; this is part of my Masters thesis supervised by Dr. David Hancock at Memorial University of Newfoundland.

#### **Purpose of study:**

The proposed study seeks to understand hockey referees’ perceptions about their ability to recognize when athletes sustain concussions, as well as whether they should have the authority to remove athletes with suspected concussions from a game.

#### **What you will do in this study:**

Complete a short demographic questionnaire via Qualtrics and video interview via Zoom.

You can skip any question in both the demographic questionnaire and during the Zoom interview.

**Length of time:**

Interviews will be approximately 60 to 80 minutes.

**Withdrawal from the study:**

You can choose to withdraw from the study by emailing me [rtharleoluk@mun.ca](mailto:rtharleoluk@mun.ca). If you choose to withdraw after your interview has been completed your interview recording, demographic data and any associated transcriptions will be deleted. The final date for withdrawal in which your interview and demographic data will be removed is March 1, 2022. There are no negative consequences to withdrawing from the study.

**Possible benefits:**

There could be small benefits for participating in this research, as the results have the potential to shape future policy about hockey officials' role related to athletes' concussions. The main benefit, however, is that this research could lead to improved health and safety of youth athletes through policy changes that reduce the likely of long-term consequences of concussions.

**Possible risks:**

There is a low risk that participating in this study will lead to psychological or emotional distress from discussing concussions in youth athletes or past experiences. Should you experience such responses, feel free to contact the Canadian Mental Health Association <https://cmha.ca/find-help/find-cmha-in-your-area/>, to find local mental health support. You can also contact the Canadian Crisis Hotline at 1 (888) 353-2273, which is a 24-hour toll free support line. There are no other known or anticipated risks associated with participating in this study.

**Confidentiality**

To ensure confidentiality, only the researcher will be present during the interview time. The information you provide will be kept confidential using assigned code numbers, rather than your name; however, anonymous quotes may be used when sharing results. Demographic information will not be linked to your interview and is being used for determining participant characteristics only. I will send you a copy of your interview transcript to read to confirm the accuracy of our conversation and add or clarify any points that you wish. You will be given two weeks to review the interview transcript, but it should not take you more than **30 minutes** to read through. If you do not provide any changes or edits to me within two weeks, I will assume the transcript is appropriate and will continue in the process.

While the risk of a data breach is low, it is still possible. If such a breach were to occur there is the potential for privacy to be compromised. With the nature of the questions, the potential for identifying information to be obtained is limited. If a breach were to occur, participants will be notified directly by email.

**Anonymity:**

Since the researcher will know you are participating, this study is not anonymous; every reasonable effort will be made to ensure your anonymity will be protected and that you will not be explicitly identified in any reports or publications. Mainly, this is done through removing any identifying information (e.g., locations, names, etc....) during the transcription process.

You can find the Qualtrics privacy policy [here](#)

You can find the Zoom privacy policy [here](#)

**Recording of Data:**

Interviews will be recorded to allow for analysis. If you wish to not be video recorded, please turn off your video during the interview.

**Storage of Data:**

Interview recordings and the associated transcriptions will be stored on a digital password protected hard drive that are only accessible by Robin Tharle-Oluk and her academic supervisor Dr. David Hancock. Data will be kept for a minimum of five years, as required by the Memorial University of Newfoundland policy on Integrity in Scholarly Research.

**Reporting of Results:**

The information obtained during this study will be used towards a thesis paper. Once completed this paper will be available on Memorial University of Newfoundland's online portal, which is publicly available. The results will be published in a peer-reviewed publication as well as being presented at an academic conference. A one-page summary of results will be created to share with participants (if they wish) and sport governing bodies.

**Sharing of Results with Participants:**

Participants can request to receive the one-page summary during the interview process.

**Questions:**

You are welcome to ask questions at any time during your participation in this research. If you would like more information about this study, please contact: Robin Tharle-Oluk, [rtharleoluk@mun.ca](mailto:rtharleoluk@mun.ca) or my supervisor Dr. David Hancock, [dhancock@mun.ca](mailto:dhancock@mun.ca).

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at [icehr@mun.ca](mailto:icehr@mun.ca) or by telephone at 709-864-2861.



**Consent:**

Indications of yes on this form means that:

- You have read the information about the research.
- You have been able to ask questions about this study.
- You are satisfied with the answers to all your questions.
- You understand what the study is about and what you will be doing.
- You understand that you are free to withdraw from the study without having to give a reason and that doing so will not affect you now or in the future, all data will be removed and deleted.
- You understand that if you withdraw after March 1, 2022 your data can not be removed from the study.

If you sign this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

**Your signature:**

I have read what this study is about and understand the risks and benefits. I have had adequate time to think about this and had the opportunity to ask questions and my questions have been answered.

I agree to participate in the research project understanding the risks and contributions of my participation, that my participation is voluntary, and that I may end my participation. There is no penalty to withdrawing from the study.

I agree to be video recorded during the interview Yes No  
(If you do not wish to be video recorded, please turn off your video prior to the interview starting)

I agree to the use of quotations. Yes No

Participant Name: \_\_\_\_\_ Participant Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Researcher Name: \_\_\_\_\_ Researcher Signature: \_\_\_\_\_ Date: \_\_\_\_\_

A copy of this Informed Consent Form will be provided to you for your records.

### ***Document 3: Interview Guide***

#### **Interview Guide**

**Introduction** – Thank you for joining me today to offer your insights on sport officials' roles as it relates to concussions among youth (U18 and under) athletes. This interview will be recorded. You may skip any question if you are uncomfortable answering it. You are also allowed to end the interview at any time; please just let me know and we can stop. Do you have any questions for me before we begin?

**Demographic Questions** – to be completed via Qualtrics once informed consent is completed.

- 1) Name
- 2) Age
- 3) Gender
- 4) Where do you live?
- 5) How many years have you officiated hockey?
- 6) What is your current certification level?
- 7) How many games do you typically officiate in a year?
- 8) What level of hockey do you most frequently officiate in a typical year?
- 9) What is the highest level of hockey you have officiated?
- 10) Would you like to receive a summary of the results once the study is completed?

#### **Background Questions**

- 1) If an athlete suffered a concussion, what signs/symptoms would you expect to see?
- 2) Do you think concussions for youth athletes present any short- or long-term issues?
- 3) In your experience what has been your response when you suspected a youth hockey player had sustained a concussion?
  - a. Can you elaborate on a specific situation in which this happened?

#### **Experience/Feeling Questions**

In some parts of the world, rugby referees have been given the authority to remove concussed athletes from play. The governing bodies hope that such actions will reduce the number of youth athletes who suffer concussions, or at the very least, ensure concussed athletes receive proper medical treatment. The next few questions are designed to help me understand if such an approach would work in hockey, and to learn from officials what their thoughts are on it.

- 4) What is your level of comfort in recognizing concussions in hockey players?
- 5) In general, how would you feel about hockey officials being given the authority to remove athletes with suspected concussions from games?
  - a. Would you be confident in making such a decision?
  - b. Do you think it is within the current role of officials?

- c. Should this task be added to the current role?
- 6) What steps would need to be put in place for you to feel confident in recognizing concussion symptoms in hockey players?
  - a. Is there any specific training that you feel you would need to become more confident in recognizing symptoms?
  - b. What type of training would you like? (In person, online, self guided course)
  - c. Would the difference of optional vs mandatory training have any influence on your thoughts on training?
- 7) Imagine Hockey Canada has granted you the authority to remove a player from a game when you believe they have suffered a concussion.
  - a. How would you go about notifying the player and coach that the player needs to be removed from play?
  - b. What type of documentation do you feel would be appropriate?
  - c. Who do you feel needs to oversee record keeping and ensuring safe return to sport?
  - d. Are there any other steps you think would make this process easier?
- 8) What barriers would you foresee in Hockey Canada if trying to implement a protocol where officials can remove athletes suspected of concussion from the game?
  - a. Coach and athlete response and behavior?
  - b. Parent behaviors?
  - c. Knowledge
  - d. Willingness of official to make the decision.
- 9) If Hockey Canada implemented such a protocol, what could/should they do to make it run smoothly?
  - a. Education of other stakeholders?
  - b. What age groups/levels?
  - c. Level of official?

### **Summary Questions**

- 10) Do you have any advice or comments if you were granted this task?
- 11) Is there something else I should have asked for more understanding of officials' views on concussions, recognition, and removal from play?
- 12) Do you have anything else in general to add?

## Appendix B: Quotation List: Theme: Considerations and Importance of the Protocol

Theme	Sub-Theme	Coding Labels
<b>Considerations and Importance of the Protocol</b>	<b><i>The Role of Officials</i></b>	<ol style="list-style-type: none"> <li>1. Actual role of official</li> <li>2. Protocol fitting within officials' role</li> <li>3. Officials' ability to recognize and manage injuries</li> </ol>
	<b><i>Variables that influence the need for the protocol</i></b>	<ol style="list-style-type: none"> <li>1. Age and level protocol is needed for</li> <li>2. Age, level, and experience of official</li> <li>3. Level of hockey protocol will work</li> <li>4. Conflict between level needed for and officials' ability at that level</li> <li>5. Maturity of athlete – barrier</li> <li>6. Knowledge of bench staff</li> <li>7. Consistency of officials calls</li> <li>8. Familiarity between teams and officials</li> <li>9. Personal experience and knowledge of official</li> <li>10. Type of official</li> </ol>
	<b><i>Player Safety</i></b>	<ol style="list-style-type: none"> <li>1. Benefit of program – player safety</li> <li>2. Protocol falls under safety</li> <li>3. Any improvement in safety is good</li> <li>4. Officials provide more information</li> <li>5. Officials are impartial</li> <li>6. Player health and safety most important</li> </ol>
	<b><i>Considerations Needed to Make Protocol Successful</i></b>	<ol style="list-style-type: none"> <li>1. Stakeholder buy in</li> <li>2. Keys to protocol success</li> <li>3. Use rugby as template</li> <li>4. Definitive process and procedure</li> <li>5. Consistency among branches</li> <li>6. Awareness that protocol will affect the game</li> </ol>

### Sub-theme: The Role of Officials

I mean, player safety is obviously our main concern, (P5: safety is in role of official)

We are instructed to penalize infractions that could be deemed violent or aggressive to the point to cause injury. (P5: officials' role is to penalize behavior that is unsafe)

And mainly a big one that Hockey Canada has been looking into over the recent years is checking to the head. So as officials we penalize checking to the head very diligently, I'd say. (P5: officials' role is to penalize behavior that is unsafe)

And it's something that we don't really take for granted. (P5: officials understand importance of maintaining safety)

It's if it's a part of the game, you know, hard conversations need to be had, whether you like it or not really in the event of those circumstances. (P5: part of an official's job is to make difficult decisions)

No, no, I don't. I don't think all officials understand the role of officials. And I definitely don't think all stakeholders understand the role of officials. But no, I don't. (P5: misunderstanding of role of officials)

You know, if you were to ask me this question five years ago, you would have got a different answer. I think at this stage I've I'm experienced enough to understand that. You're sort of like a like a mediator, I guess. But the main role of an official is to keep sanity in any hockey game and, you know, Judge upon a

hockey game in a way to prioritize player safety, while maintaining a respectable product on the ice is what I would say, in a nutshell, I guess, (P5: role of official is safety)

So, from an official standpoint, personally, I'd appreciate it. If Hockey Canada were to do something of the nature, (P5: need for HC to educate about role of official)

like, as an official, our job is to maintain the safety of what's on the ice, (P6: officials' role is safety)

and that the coaches, fans, players, kind of everyone where were the leaders out on the ice during games. (P6: officials are leaders on the ice)

we're out there making the calls to make sure that players are kept safe, and coaches and fans are kept safe. (P6: officials' role is safety)

Honestly, safety of the game if there's one glaring factor it is safety of the game. (P6: officials' actual role on ice)

It's not about money. It's obviously for everyone. It's different. (P6: officials' actual role – differences between officials)

But for me, it's the safety, it's making sure that each player, each coach, each fan is held at a high standard in terms of safety and making sure that I do my part. Last thing I want to see is anyone go down with a serious injury (P6: officials' actual role)

just make sure make sure safety is number one priority as an official during games. That's probably that's probably the big one for me. (P6: officials' actual role)

Like I said, there's lots of officials, I think, going back on your comment if people would disagree with how I look at, I think there's lots of officials who don't understand the safety side either. And they, they need to realize that we're not out there to, we're out there to progress our game, but we're also out there to ensure that everyone's looked after we're the I'll say we're the dad, we're the moms and dads out on the ice pretty much, making sure everyone's safe and, and all that. So, I just think as officials, we just need to understand that. You know, there's a lot there's more to it than just the game. (P6: officials' actual role – officials not understanding it)

our job as officials is obviously to promote the safety of all participants. (P7: officials' role on ice)

whereas a referee I'm out there to make sure the game is played safe. (P8: role of official is safety)

is to make sure the game is played safely to make sure the game is conducted safely and within the guidelines the rulebook (P8: role of official is safety)

yes, do they agree with it or want that to happen all the time? No. (P8: knowledge of official's actual role)

you'll, you will always hear there's lots of times where it's just let the boys play, let them play and let them play. And it's, you know, and honestly, there's some games, there's like, you know what, I can let them play because they're, they might be going a little outside the rules, but they're not in danger of hurting anyone. And then, but that's, as an experienced official, you get to know you can feel the gauge, like where it's going, okay, is this going up? Is this going? Okay? I gotta, I gotta do something here to get it back down or is this just going level keel the whole way where you can let it go. But that's just kind of like I said before penalty is a penalty is a penalty Only when it's not? (P8: role of officials is safety)

enforcing the rules, the rules to create fairness in the game and protecting everyone to participate safely (P9: officials actual role – safety)

Yeah, yeah (P9: other officials understand their role is safety)

I think as you know, as I guess caretakers of the game, I guess we have a responsibility to go on and make sure that all the kids are playing, you know, safely, and they're healthy and stuff like that. (P10: officials' role is safety of players)

the actual role of official is to ensure I guess that the rules are followed properly. And that the and that kids or, you know, kids are respectful and following sportsmanship and when they don't, we penalize them for it accordingly. And we call goals (P10: actual role of official)

No. (P1: removal within current role of officials)

[sigh] I think it'd be a little bit of a challenge to be added to the role. (P2: removal being added to current role)

Yeah, (P4: protocol being added to role)

but like overall I think possibly like if the referee suspects or the officials on the ice suspect that a player possibly had a concussion. If there was, I guess some sort of I guess mechanics in place to deal with it. I like I think we could probably be part of the process but not the full solution. (P2: removal being added to current role)

I think it would be very difficult to fit in with the current roles. (P3: is it within the current role of officials)

So, the you know, the overarching, Hockey Canada guideline for officiating is safe and fair hockey. (P4: role of official)

Right? If you, if you talk to, you know, [manager of officiating], at Hockey Canada, that's the first thing that will come out of his mouth, safe and fair. (P4: role of official)

And, and it would seem that this would fall under the Safe aspect of, of what the referee is responsible for delivering (P4: protocol part of current role)

and even generally, we term that as one set of players not taking undue physical advantage of others to the point where they could be injured. And, and concussions obviously aren't necessarily the result of illegal or, or foul play. But nonetheless, you know, we don't let players skate who don't have neck guards, because that's not safe. And we, you know, if there are if there are holes in the glove of a player, we don't let them out on the ice because they can be unsafe in that way. And so, I could see where this falls under the Safe Umbrella, of safe and fair. (P4: protocol part of current role)

If we're given the authority? we do have the authority, but it's not something I've ever seen? (P5: officials currently have authority to remove concussed players from game)

I think the reminder would definitely help. (P5: officials currently have authority to remove players)

but I think for now I think we just have to stay the course and continue to do what we're paid to do what we're told to do kind of thing moving forward. (P6: recognizing concussions not in current role as official)

um, kind of, yeah, (P6: is recognizing and removal in current role)

So, I think I think we do play a role in in that part in the identification of a concussion, just because, you know, we're out there watching the play, (P6: recognizing in current role of official)

So, in a way, we play a small role in that, but not as big as some people might think we need to be or need to play. Sorry. (P6: should officials' role be expanded more to include removal of concussions)

Yeah, I mean, partially, (P6: should removal be added to official's role)

But we as a rule are nonmedical personnel. (P7: official role is to be nonmedical)

Yeah, (P7: protocol is within officials' role of safety)

I think I personally like it. (P8: officials' opinion on being granted authority)

And then like right now I think it's more. The hesitancy is like, you don't want to overstep your bounds. (P8: is removal in current role of officials)

No like to have a kid sit out on this? No, I don't think so. (P8: removing player not in current role of official)

Kind of it would only be basic but like we do every year or recert like the big module this year we have to the Rowans the Rowans law one so there is some of this put into it technically I guess in Ontario it is if you like your anything you see you're supposed to report anyway with the with the law (P8: Rowan's law)

I would think it would be great they'd be great. (P9: feelings on officials being granted authority)

No, I don't. I've heard from many officials, supervisors as well that we're not considered doctors, so we can't make that medical decision. (P9: removal is not in current role of official)

We're not the trainers, we are officials of the rules. And that's, we just have to assess the rules as we see fit, but we can't make the decisions on whether or not a student, a child should be continue to participate in a game based on it. (P9: officials not medical professional)

I think so. Yes. (P9: removal should be added to official's role)

I do. Yes. I think that. (P10: should officials be granted authority to remove)

Yeah, well, I guess in a way, but not, I guess in my experience, not really is clear, like not a clear cut. It's not as clear cut, I guess. Yeah. I think if you make it more clear cut and say that we need to recognize when kids are injured and stuff like that and tell him to leave then I think we should yes (P10: is removal in current role)

Not really, no, I mean, it's just viewed as another rule in the rulebook I guess that we follow these guidelines and when we see it call it basically so I wouldn't have the problem with it (P10: this authority would just be another rule to call – no issues)

Um, probably one of the worst situations that I was in were I, I felt bad of not attending is I was an official in a midget, a so U18, a game that was only being officiated with two officials. And the a player on the offensive team ran into the goalie and like in crash the net crash the goalie, and then one of the defenseman began fighting with the offensive player. And it was until we broke the fight up that we discovered that the goalie had been and unconscious on the ice, because they've been driven into the net, like, and so as the official, you have to go break up the fight and then when we kind of did that and then went to look, the goalie was just regaining consciousness. (P1: doing official job vs noticing injury)

So, we that was actually not a hard situation to manage in the sense that we called the ambulance and, you know, waited with the, you know, with the goalie and the training staff came out and they took good care of the, but there was a delay in providing care to the goalie because of the fight. (P1: game management effecting ability to recognize injury)

Um, well, I guess at the end of the day like the with rules like there are. A little bit, it isn't black and white, like there's so there's always going to be sort of judgement involved in it. (P2: officiating is not black and white; judgement calls must be made)

But as an official, I am not supposed to participate in any kind of assessment of the child. And now we're at that's where I said, we're getting into difficulty because when I'm officiating, I still have more care that for the health of a child than I really am worried about the game, um especially when there's other officials that can be watching to make sure for example, no one else gets in a fight or something, you know, while I'm tending to a child that might actually be quite um injured. (P1: balancing the role of healthcare professional vs official)

I look oh, there's no I guess, obvious sort of life-threatening injuries and then it's like you're letting the play to try to either allow that to the other team have their there's goalscoring opportunity or to wait till their team I guess gains possession the blow it dead. (P2: officials using their judgement skills on when to stop play for an injured athlete)

Absolutely. But again, it's, it would be so difficult, I think to just, I mean, how do they judge once a concussion once on a concussion? Or what's the suspected if they're not able to actually, you know, physically check that player out, ask that player those questions and take a few minutes to make sure that they're okay or not that that is my concern is how much? How much hands on? Do the referees have the ability to have in that situation? (P3: current role of official makes it hard to evaluate athlete)

I think that might be a better way to audit than have the on-ice crew. Because, you know, those games get intense, and you're focused on the hockey itself. (P3: trying to recognize while still managing game would be difficult)

And to have another aspect where you're, you know, trying to think in the back of your head like, you know, 13 just got hit, how does he look, this shift kind of thing would be difficult to focus on that and remain focused on the game where you're trying to prevent further injuries by keeping the players within the rules. (P3: injury assessment/recognition would take officials focus away from game management)

Yeah, like for sure in a high-performance game, you're more on edge where you're, you know, the things happen faster, the puck is moved quicker, you've got to be thinking on your feet anticipating where the players gonna go so you can be there. (P3: level of play effects ability of official to give focus to recognizing concussion)

Whereas if you're refereeing and lining in the you know, house divisions, it's you know, more of a casual skate and you have more ability to talk to the players and your, for myself anyways, (P3: level of play effects ability of official to give focus to recognizing concussion)

I act more like a coach on the ice on a reffing house level game than I do as a referee, I'm trying to, you know, tell them you've got time have a look, keep your head up, things like this. (P3: official as a game educator)

So definitely the more intense game gives you less time to focus on the player aspect of it. (P3: level of play effects ability of official to give focus to recognizing concussion)

Generally, when I see that, particularly if a team's in possession of the puck, blow the play dead, so that it's not just that the kid gets to the bench, but it gives the bench an opportunity to really see what's happening with that kid as he comes to the bench rather than worrying about where the plays going. (P4: official's game management allowing for bench to notice injury)

But those are the times where it's been kind of obvious and frankly, in both of those situations that the player left the game and didn't return so the coaches did the right thing. You know, in terms of pulling that kid from the game. (P4: official perception of bench doing right thing for injured athlete)

Both? Oh, yeah. Certainly, as a referee, that's only when I think the players taken a knock that the bench hasn't seen where I'll want to stop what I'm doing to go over and make the comment. So, call it a more severe issue. (P4: as a referee injury needs to be severe for them to stop what they are doing to notify bench)

Yes, but really hard to police, right. I don't pay attention to who's on the ice when I'm officiating. You know, other than trying to make sure I get the goal and any assists that are that are do players when they score, obviously, penalties. (P4: in game management effecting ability to monitor players)

and usually in the event of a concussion. As an official anyhow, there's so much going on in the game that, for us, it's sort of an afterthought to think about, (P5: game management takes priority over recognizing injuries)



but that it's sort of like an instantaneous thing. And it's becomes an afterthought. 30 seconds a minute down the road, (P5: pace of game effects officials' ability to manage injuries)

because there's more player safety scenarios that we need to take into consideration. (P5: game management and pace of game effect ability to manage injuries)

Then if I were to be having a one-on-one conversation with someone in the heat of a intense hockey game, where things are flying and stuff is going on, where looking for concussions I'd say as an afterthought and quite frankly, isn't even something that's on my radar personally, which is bad to say, but it's, that's unfortunately the way it is. (P5: focusing on game management doesn't allow for injury assessment)

Um, so, my, the way I officiate is, you know, unless there's blood or bone sticking out, then, you know, I let the play continue until a team gets possession or whatever. And when they do get possession, then I blow it and let the play stop. I go over, see what's going on. And then once I see I, you know, warn a coach to come out to support the player to get off the ice. (P6: officials game management regarding injuries)

Uh, I think I think there's, there's good and there's bad, I think we have a lot more in the game to be more focused on, than dealing with injuries, (P6: officials have other areas to focus on than injury recognition)

obviously, we will, we will dictate kind of how long the play goes because of the situation. Like if we feel the players not moving, and there could be more serious harm done. That's when we'll stop the play. (P6: officials' current role in injury recognition)

at least for the time being it, you know, 15 years down the road, if the game keeps continuing to evolve and change. I think it would be beneficial. But I think for the time being, there's just so much else going on, that we need to focus on that and, and do our job first. (P6: other areas that officials should focus on at the moment)

So, I think by having that linesman step in instead of the referee because the referee is already having to deal with stopping the play making sure nobody's around the player and then you have your other linesman there just to you know, make sure nobody's around. (P6: referees have other tasks to do when injury occurs)

To explain why, for example, we actually had a rule change in the junior hockey ranks this year, that penalizes players hitting from the blind side, without head contact, and we were explained that it is to try and prevent some of the body checks that occur that can cause head injuries. And we had some really good discussions around that. (P7: other rule changes to reduce head injuries)

I do think it's also you get into the thing, the situation where a penalty is a penalty, the penalty unless it's not a penalty at that time. Right? (P8: not everything as an official is black and white)

like I've gone into games, referee hockey, and you know, it's every two minutes I'm calling a penalty. I've done other games where the two teams are literally, they might be beating the crap out of each other. But you're there's no penalties to call. There's nothing silly or stupid after like, they're still playing hockey. And then it's like, oh, it's a one game in the championship. Are you really gonna call that chintzy hook or trip penalty? So, then it's okay. It's a one game in the championship. The best player just had a headshot. He got up right away and looked a little dazed but stayed in the play. Are you really going to tell his coach Oh, he has to sit out for 10 minutes? (P8: barrier – game situation effecting officials' willingness to make call)

But it's still I think you're gonna there is the impartialness, which is great for it. But it's also it'd be tricky at times I don't think you'd be fully able to, to call it by the book all the time. (P8: officials have different interpretations of rule book)

Um, I don't think so. Like I know, the biggest thing I find you call a penalty that it would normally have a suspension attached to it. You always get asked, well, how long does he suspend it for? And we're always told you never answer that question because you don't do that. Like it's not you just call the penalty. So,

I've called them and like I know my head Yeah, that kid's gonna get a four-game suspension. It doesn't matter it's what happened. (P8: RTP guideline not effect officials' willingness to make call)

and I'd be like, I'd be lying if I ever said this. I've looked at one things. And now I'm not calling out a penalty tonight. But I looked at another I'm calling that a penalty tonight. Like it's, it's just the way the way it is. And I'll take more, like, if I'm doing a, you know, U14 game and a kid tells me to F off. He's gonna be he's gonna be going and sit for 10, if I'm doing a U18 AAA game, and the kid says that I'm probably gonna tell him to smarten up and that's it. Unless he progresses, it's just kind of something you can tell. Like myself, I have thick skin, I can deal with the emotions, and I can see when stuffs going like that. But the lower the younger kids is like; I'm not going to take that from you. (P8: officiating is not black and white)

If expect that if I suspect the concussion based on the impact of the hit, I would probably assess a major penalty due to an injury. However, since I have no say in the injured, individuals, participation, that's all I can really do. Like I can't force the child or whoever's out of the game, although I feel like that should be something that is revisited (P9: officials' response to suspecting concussion)

I'd probably let the coach know. Based on what I saw, when it came to the hit, and the symptoms that I may be seeing that the coach and the trainer know I would recommend highly suggest that they remove this participant from the game. I know that that may not be perceived certain the correct way from the coaches, but that would be my recommendation. I don't think I would be I wouldn't be allowed to force the student out of the game. That wouldn't be my call, but I would recommend it to the coach based on what I've seen what I've observed happening in the game. (P9: officials' current response to recognizing S&S)

A specific example? Not exactly. I mean, I've every so many games a year, it's hard to kind of keep track of them. But I know I have had that situation happen where, you know, the individual takes a high hit to the head is has a major penalty. I, as the official believe that students should be removed from the game because they have a suspected concussion, especially when I've assessed a major penalty. Now, if he comes back on, the other team is saying, well, he's not even injured. Why did my guy get a major penalty? You know what I mean? So, it just helps justify our decisions on what is being called on the ice (P9: penalties called vs injury status)

### **Sub-theme: Variables that influence the need for the protocol**

Three like everyone, everyone, obviously you're a team, so everyone has the power. (P6: all officials should have authority to recognize and remove)

But I do believe that once you get into the 16,17,18 and above age range, where there's checking, so, you know, serious or semiserious players, I think they would probably have a better understanding and comprehension for, for the education that they're getting, and they'd be able to apply it a little better. (P5: age level where training will work, and protocol is needed)

I would say whatever level body checking starts. So, as far as I know, nationwide, that's the u 15. Rep program right now, (P7: age protocol is needed for)

So, I think from U5, all the way up to senior hockey, I think, even though there's no body checking involved in anything lower than U15, I think, you know, a player could just hit a rock in the ice and go headfirst into the boards at a U13 level. (P6: age group protocol is needed for)

not that concussions can occur in non-hitting hockey. But the one that would be the most pertinent would be where it starts. Because, I mean, that's why they changed the age group because of head injuries as a concern. So are one of the reasons anyhow. (P7: age level is needed for)

I'd say I'd say {pause} anywhere between Yeah, under 14 under 18. Obviously, the most contact that could happen and I think the games get a little more intense, more that you know, as they age, things are more on the line, whether that be individual goals or team goals. But that's not to say that it wouldn't be beneficial for all age groups. I think, you know, they I think all age groups can see a benefit from this. (P9: age group protocol is needed for)

Um, I think maybe broadly, but I mean, more geared towards, like novice or Atom. Like it's under 19[?], under nine under 11. And peewee to a degree, but not so much because their kind of older. (P10: age level protocol is needed for)

Um, well, I guess younger kids, I guess may you know, when they're younger, I guess may not make that decision, I guess because I guess they like playing or something like that. So, they may try to play through and try to continue playing, I guess. But, you know, I guess they can't I guess they can't recognize it. They, I guess they're not really playing well, I guess if that makes sense. And last versus like, say older kids who probably realize that they're not well, and they need to leave the ice. You know, they make that decision more maturely, I guess, than younger ones. (P10: age level protocol is needed for)

But I think like if you're going to enact this rule, like it probably would be in at any level, like I'm trying to think of, like, a level where it probably worked best, but it probably be like any hitting hockey. (P2: level of hockey that protocol is needed for)

But I guess the other way to look at it is regardless of hitting or not like there's always I guess that potential for a situation where an individual, I guess, may get a concussion, like I'll use like, I guess U-sports like women's hockey, like, there's always seems to be players. I use getting concussions at that level. So, it's, regardless of I guess, hitting like your there's always that potential. So, I think it's going to be like a rule, I think it would be like a Hockey Canada type rule that's enforced at all levels? (P2: level of hockey that protocol is needed for)

So, I think it's, it's equally as important at that level as it is the high-performance level, to recognize it. (P3: age level protocol is needed for)

One, the variation between the best player and the weakest player on the team is much tighter, right? You get the Conor Bedard 's of the world who are just next level compared to everybody else and every player has every team has kind of one of those kids. But the difference between the third forward and the ninth forward just isn't that significant. And if you remove one of those players, it's not going to destroy the team's ability to compete. (P4: level of hockey where protocol will work)

And they have generally trainers, medical professionals, or at least better trained people than the referees available to look at the kids and help further assess before they're either returned to the ice or pulled from the game. (P4: level of hockey where protocol will work – have trained staff)

got it. Well, I've already talked about kind of what BC hockey would describe as triple A or, or sport school, I think it would work at that level. (P4: level of play protocol is needed for)

Hits hardest, I don't know if that leads to more concussions or not, but the players are moving the fastest. There's the greatest opportunity for at least the big hit. And I think there's the greatest opportunity for the buildup of little hits. Because there's a there's much more appropriate, but nonetheless, there's a lot more hitting in general at those two levels, because kids know how to hit to remove the player from the puck, rather than just blow somebody up. (P4: level of play protocol is needed for)

Okay, and then the second piece is, in general, there's a trainer available. So, there's a medical professional in the building that could help with the implementation of this. (P4: level of play protocol will work for – availability of training staff)

If I was going to take a step down from there, I would say, well, you know, and then you go up from there, right? So, at all the levels of junior hockey should have could have this, (P4: level of play protocol will work for)

because they always have trainers, they probably have medical, they probably have doctors in the building, not just not just trainers. (P4: level of play protocol will work for – trained medical staff)

Yeah, I think any level was checking, it should be a main concern. So, I know in Ontario here at the rep level, they're checking out the U 15 level, I believe anyhow. And the checking that you're seeing at the U 15 level isn't as refined as the checking you're going to be seeing at the U 18, high, you know, high performance level. So, I think there's probably though the game isn't as fast at the U15 rep level, it's a little more dangerous in the sense that it's not as contained and not as refined. So, I think it would be just as important at that level than it would at a higher level. When you talk recreation, I don't have much experience as a player or an official dealing with recreational levels. So, I I'm gonna, I'm not going to comment on it just because I don't know enough. But I assume if it's something where there are scenarios, it should be something across the board, then if there are scenarios where they feel it should be relevant. (P5: level of play protocol is needed)

I think it would be more effective in recreational and minor hockey, then high performance to be honest. (P7: level of hockey protocol is needed for)

But I also think that would be where it could potentially be more beneficial because you might not have the same training on the coaching or team personnel staff, then you would in the high-performance side of it. (P7: level of hockey protocol is needed – lack of trained medical staff)

Not overly No, I think that's, you know, if you're injured, you're injured no matter what league you're in. Right. So, I think that that rule should be with us regardless. (P10: level of play protocol is needed for)

[long pause] I think I really personally like that, I think it's tricky with the idea that we also have youth officials. So, we have to include, um I don't feel like any of the young officials would have that um understanding or ability to do that. So, then it I feel like it would be a little bit trickier to institute. [pause] um I don't know how you could get it like a 17-year-old versus a 40-year-old, their view on who's concussed and understanding a concussion would just be different. (P1: officials age might influence ability to recognize concussions))

could see it being a bit of a challenge for youth that are I guess, like younger or working lower levels of hockey that it may be a challenge for them. (P2: officials age might affect ability to recognize concussions)

Like, I'm trying to think like, I guess, at the end of the day, like, if it's going to be something like it's, I know, for, say, like a young, younger official, or that's probably potentially like just starting out. So, I'm trying to think usually, I think it's like around second year, U13 that a ref if somebody could start so somebody like that young would probably, you know, struggle with it a little bit. (P2: age of official may affect ability to recognize)

And it's sort of, I guess, any probably any youth that's probably 16 and above, like should be able to I guess know the signs, (P2: age of official may affect ability to recognize)

but the I guess the other way to look at it is individuals, I think in most provinces, I think if you if you're over the age of like 14, you can like babysit. So, I think really literally, if you're able to do that, like you should be able to, I guess recognize what a concussion is with. So, it'd be, I guess anybody over the age of like, 14 should be able to, like, enforce it. (P2: age of official may affect ability to recognize)

As an older official, I think maybe our youth officials and our, you know, 20- to 25-year-old officials that are really just getting their feet wet in the high performance. I don't think they have the life experience as well to be able to diagnose that so much. (P3: age and experience of officials plays role in ability to recognize)

because they don't really realize there's they're not mature enough to realize the long-term effects of concussion. (P3: barrier – knowledge of officials of concussion effects)

Right. But this is the kind of thing I think, is the purview of adult officials to implement. (P4: official age – needs to be an adult)

And, you know, the reality is that we get kids officiating at the triple A level as early as probably age 16, maybe some 15-year-olds, but normally kind of 16/17 is when they start in BC anyway, officiate at the U 15 U16/17 Triple A level. And that seems like the kind of level of hockey where you can implement this a little easier. (P4: age of official able to remove in relation to level of hockey)

It has more to do with experience, I think, experience as an official. Yeah. So, I and there is a level system of officials. But I don't know that that's necessarily um going you can move through the levels quite quickly if they want to um have you. If they feel like you could be a really strong official, you may not have to spend very long at each level. (P1: officiating experience more important than their age)

And but I think for the more experienced officials like it wouldn't be an issue. (P2: experience of officials would play role in ability to recognize)

I think it's like a little bit of both. Like you it's like any I guess anything in life like your, the more experience you have like the, the better you may be able to do things (P2: officiating experience more important than age)

Because I guess the other way to look at it, it doesn't really, I guess determine on sort of level of experience, I guess, long as the base the individuals have. (P2: official experience more important than age)

Yeah, absolutely. That's, that's a good point. If it's, if it's not a change, it's just the way things are for sure. It's, it would be more normal, right? (P3: earlier start point of protocol in career increases comfort of official)

I mean, I think the longer you're in it, the easier it's going to be to handle that. (P3: years of experience of official more important than age)

My son, for example, is 13. He's a first-year official this year, do I think he would be able to go out there and diagnose a concussion and tell the coach I don't think that kid should continue to play. I think that's a big ask. I'm just happy that he puts his arm up once in a while and calls a penalty. You know what I mean? So yeah, I think it'd be very difficult for those youngsters for sure. (P3: experience of official and age influence ability to recognize and remove)

Right, especially this year? I mean, we're so short on officials, I think probably he has been pushed a little higher up than maybe he would be in normal circumstances. You know, COVID is obviously taking its toll on officials and, and hockey in general. So, he has the benefit I'm the Official Development Coordinator for [name of town] minor hockey, so I knew all of our officials training, and he kind of has no choice but to listen and hear and, you know, eat what I'm what I'm serving. (P3: lack of officials in areas pushing younger officials into higher levels)

for officials at a certain level, right. Like I wouldn't do it with level one officials. And I probably wouldn't do it if I had the option of with level 2 -16, 17, 18-year-old officials. (P4: age and level of official allowed to do protocol)

I think that feels like an adult official or if we're advancing younger officials to level three, it's got to be part of their level three training in order to manage that. (P4: level of official able to conduct remove)

So, whether that's at the you know, to use the BC Terminology the BCEHL or the Canadian sport school CSSHL hockey levels that's maybe easier to implement. And you know, the training could be a little bit more focused on the folks who are working at those levels and doesn't have to be at least at first rollout provided to 2000 level two officials in BC and I don't even know how many across Canada, but you can focus on level three and above officials for the for the training and the implementation. (P4: level of official to start program with)

I think anyone should be able to apply it any reasonable adult should be able to understand the importance of it. (P5: official needs to be an adult)

No, I don't think I would have no not at that level anyhow. Unfortunately, (P5: barrier – young official not having confidence to talk to coach)

I think it would help, though I still don't think it would be something considered as heavily at that level out officials at that level in that age group, unfortunately. (P5: young officials not ready to make a removal from play decision)

if you want to say than the linesman so just by having that higher authority now, sometimes it happens where you get an inexperienced ref with an experienced linesman. So just that would be a communication at the start of games and stuff to say, if something was like this was to happen, maybe do you want me to take the lead and you support kind of thing? Sometimes that is an option too. Just to get, you know, the inexperienced referee to back off and let the linesperson who maybe has a bit more experience take over and then that referee can now gain good experience? How to handle that situation in the in the future? (P6: experience as an official plays role in ability to handle situation)

Ah, that's a good question. I would say something that's part of your referee clinic. We don't do ref numbers anymore. But I think I think what you do is now referees have a ref number, or officials have a ref number again. And part of that ref number is a side certification where you have to have your number handy and let the teams know at the start of the game like hey, myself my two linesmen we have we were certified in a concussion protocol module. And this is our number so don't like not our phone number, our actual Hockey Canada number Hockey Alberta number. And this is just so they're aware at the start of the game. And then you can document it at the start of the game so that they have access and then maybe there they look up the number and there's a system that they have in place that will signify that yes, this player or this official sorry, is certified for this program type of thing. (P6: notifying benches that officials have concussion course)

And it's unfortunate because at those younger levels, you are going to have officials who aren't experienced in and aren't comfortable with that situation. (P6: age and level of official effect comfort in implementing protocol)

But I definitely think this is something they can grandfather in, to each individual, each level. And maybe the degree of what you're dealing with isn't the same. But it is good. I think that you involve this at all levels, in case at all levels that you have officials, of course. But yeah, I think it's something you grandfather in to all those levels. (P6: grandfathering protocol into levels)

Definitely not. Because they're, you know, level ones are more, get on the ice understand what offside, icing is. So that's enough, and I've been there where that stuff is intensive enough. (P6: level of official able to do protocol)

Oh, probably 18, 18 Plus. (P6: age of official able to implement protocol)

I think I think with minors, it would be they're minors. So, they, they might not fully understand the degree whereas, you know, maybe somebody who's of age, I'd even say maybe like that 20 (P6: age of officials effect ability to understand importance of concussions)

I'm 22, so that this would put me out of it, but 25 and older, just you get that, that senior side of things where you have a little bit more life experience, and you can better handle the situation and not panic in this in, in the given situation. So having a little bit of backbone, if you want to say that backbone (P6: life experience helps understand importance of concussions)

Years it, I would say both, honestly, years and years of experience is huge, too. I've been reffing for 10 years, and there's still stuff that I'm learning. But there's definitely a lot of stuff that I to be able to handle compared to somebody who's maybe five years experienced. So, I would say both the age factor and the

experience are both critical aspects of this of the scenario. (P6: age and experience of official both play role in being able to implement protocol)

I was I would say like five years? Okay, like, that's just the first thing that comes to mind just like having, you know, about five years of experience. (P1: experience of official needed to qualify to remove)

I don't think that's sort of, I guess, acceptable or realistic. But if it's sort of, I guess the end of the day is if you're going to put a rule in the rulebook like it, it has to be enforced by all officials. (P2: all ages and levels of officials should be able to make the decision)

I think everyone's different, I guess, I would imagine, it would depend on how long you've been around the game. (P3: total years of experience over just years as official)

I don't know that there's a, an answer I can give you where it's, you know, if you've refereed for five years, you know how to find a concussion? I don't think there's a definite number there, I would imagine it's more of a life experience than it is referee specific experience. (P3: life experience more important than years of experience as an official)

Again, just because of life experience, this is a I keep going back to that kind of sound like a broken record here. But, you know, I think you have to have some of that to be able to see the long-term effects. And it goes back to some of the earlier comments that this is more of a long-term effect thing than it is shorter. (P3: life experience influences ability to make call)

I think people maybe around my demographic, you know, the father of teenagers and some real-life experience would be more apt to want that in the game. (P3: life experience of official effects willingness to make call)

So, I would probably say actually level two, level two to six, I think would be not necessarily a requirement, but it kinda is, it's kind of a semi requirement, just to have. (P6: level of official able to do protocol)

I think the number probably not years as important as number of games officiated at certain levels where there just are more injuries. So yeah, number of games because some, because we live in a like I live in a rural area, like some officials just have less games in a year than sometimes the people who work in a city, (P1: number of games officiated more important than years)

Yeah, I actually don't really know what that would need to be like, if it was at least 30 or 40. Like it doesn't have to be like some people do 50 or 100. But like, just at least they would do like a quite a few games. So, 30 -40 games. (P1: experience of official game-based vs years based)

I've certainly, you know, I probably officiated somewhere between 800 and 1000 games in the last 10 years. And I've watched my kids play another 300 games probably between my son and my daughter. So, I feel okay about it. (P4: number of games seen overall provides knowledge)

Like, if you're going to do it, you'd have to implement it for everybody, I think you you're running a slippery slope, if you don't open it to the whole program, I would hope that the younger officials, when they're starting, would have a competent partner, but I think it would be no different than they can call every rule in the book, as soon as they start, and doesn't mean that you're going to call your first match penalty or gross misconduct until you've been around for eight or 10 years, but you still have the authority to call it. And that way you can, Coach, you know, if that's gonna be the program, that's really good implement that you could coach from a young age and help them out. But if you handcuff them, because you can't call it because you're a level one, I think that's a complete disservice. And I would go against the whole point of trying to enhance the safety by giving that to officials as a tool. (P7: level of official able to implement protocol)

If it's if that's going to be part of the program, I think you have to have it for everybody. If, yes, if it occurs in a U9 game, I think you'd do yourself a disservice if you say because you thought you're 13 you can call

it maybe he end up having that young official really make a benefit to, I think it could go both ways you could have a 70 year old or 60 year old official completely miss call it as well, I don't think it's going to be a program that gets implemented, I think it needs to be across the entire team, not just a section of officials, because that way we can all work together and help each other out with it and not be handcuffed because you're the wrong age or the wrong level. (P7: age of official does not matter - needs to be program wide)

Um I think you got to start it right at the right at the beginning and get the rules ingrained in them from day one. You might not see it on obviously you're starting to level one official you're not going to be seeing contact hockey, they're the biggest collisions you see your two mites players running into each other. It's probably it's not gonna you're not gonna have to worry about it. But as long as they're being taught every year this is what it is. This is what can happen by the time they get up to that level they should be fully aware of it. And yeah, so like level one onwards I don't think there should be anything left out in in the rulebook from whenever cuz you never know when something's gonna happen you could be doing you might be you know, your second third year reffing doing a peewee house game, and you're out there is your younger, lower-level guy. And you have a guy cut across the middle and just hit someone in the head hard and you get to deal with it. You get to know what it is then. (P8: level of official who has authority)

I am I don't think so. I guess you can have it. It can happen in any level. It could be a novice kid that is going, and he just falls on his own and hits his head off the back of the back in the ice. And it might be something where I think in that level that coach, the coach. The onus is more on the coaches for it than the referees but at least they could see something and it's a good learning experience for all involved with it. (P8: age of official who has authority)

I mean, if you're officiating, I feel like, anyway, I mean, the majority of officials are level two anyways. So, I think you'd have to, you'd have to if you're going to implement this, it had to start at level two. (P9: level of official granted authority)

Level one, See, that's not to say it can't, because I mean, level ones usually are a lot younger. I'm not to say that level ones are not older. I mean, there are some level ones that started a little bit later. So just trying to think I just think level twos we'll see. Well, there'll be more situations where this kind of would come into play, then the level ones not to say that, again, can't. And I think just being just learning a little bit more just kind of making sure that understanding all the rules like this, you know, and how they're being implemented as a level one takes time, and what to look for. And I think their focus will be more on making sure that they're getting the correct rulings and the correct calls and managing the game the correct way to add this kind of extra pressure on a younger official or less experienced, might, you know, cause them a little bit more anxiety, you may not want to make that call, things like that. Right. (P9: level of official granted authority)

I think 16 I think by the age of 16, we'd have they'd have a little bit more understanding knowledge of concussions, what to look for, you know, not that they're not young, learning about it at a younger age, but I just think they'd have a little bit, they'd have a little bit more maturity with along with it, than maybe at 14. (P9: age of official granted authority)

I think all levels, I think because, you know, like I said, it's about the health and safety of the players. And if they're, it's our duty to make sure that the game is, I guess, a fun, healthy environment, as you say. So, it's, you know, if they're not, they're not well, then we got to have those powers. (P10: level of official granted authority)

Like Newfoundland {changed from name of town} our age for officials is 13. So, I think that maybe, I guess, whenever you start officiating, that's when you should be granted those powers as with everything else you have with you on the ice (P10: age of official granted authority)

Uh, no, I don't I don't think it has anything to do with officiating levels more, is it more than it does have just, like I said earlier, the individual themselves I think it's something that were that every individual would take differently. (P5: official individual characteristics more important than level of official)



U9, u11. Yeah, so in BC anyways, in [name of town], where we're at our U9 is all strictly cross ice, we split the ice in half with a set of boards, and they play across the ice, smaller area game. So, there's more puck touches. We have one official per game there. Really, there's no offside or anything like that. We're just getting our officials used to skating in traffic around the puck, controlling the game a little bit. And then if they're any good, my son being one of them is actually in the U 11 and U 13 levels already refereeing games and lining games. So, it all kind of depends on the officials background, his abilities, and his confidence level. (P3: official characteristics more important than age)

Yes, because you're unbiased (P8: benefit – officials are unbiased)

But I think with this sort of rule, like it would be everybody on the all the officials on the ice could call it like, it doesn't need to be like a referee, like a linesman should be should have the power to be able to call this (P2: all officials able to have authority to make decision)

And I guess the thing about it, too, is it's like once an official, I guess you may need a rule in place that once an official makes this call, it can't be reversed. Like if, because you'll what'll end up happening. There'll be situations now where say a linesperson makes the call, and you'll have the ref be overrule them. (P2: all officials able to have authority to make decision)

So it may be that the have, I guess, like mechanism in place that once it's called? It's sort of can't be, I guess, overruled or, like in some other some way to manage that. (P2: all officials able to have authority to make decision)

So, and then I guess at the end of the day, like it's so the look at it. It's like a, it's a team sport. Like there's like three teams on the ice. Like, it's not just the two teams playing like we're like, when I'm working with my, I guess fellow officials, like we're a team. And like, you have to have that level of trust of, I guess the people that you're working with that they're going to get the calls, right. And again, there are times where there may be mistakes, but like those are the situations that you sort of you need to talk it over and at the end of the day, it's all about getting like the call right on the ice A so it's and then the other thing is the provide, I guess support to your lines persons not to not to overrule them and things like that. (P2: all officials able to have authority to make decision)

I'm more of a linesman in the high-performance stuff. I'm I do some referee. But I would say it's 80% linesman for me. (P3: predominate role work is as a linesperson)

Absolutely. (P3: in reference to a linesperson being able to blow play dead for injury)

right. But certainly, especially when you're working a three man system, you don't have the ability as a referee to always see what's happening behind the play more so and you know, a lot of those concussions and injured players might be behind the play, where the referee is more puck focused, the linesman has the ability to kind of look at the whole ice when the plays not right on the line. So, I think it's benefit if the, if the linespersons were able to blow the whistle down in case of an injury. And you know, if it's severe enough injury, you know, we do blow the play down sometimes. But you know, for the most part, you want the referee to do that. (P3: benefit of linesperson being able to blow a play dead due to injury)

But when you're a linesperson and you can you can kind of hang out near the bench and have a conversation while the play is in progress. (P4: linesperson has better opportunity to communicate with bench)

Yeah, absolutely. Yeah. Yeah. (P5: all officials able to make removal call)

three like everyone, everyone, obviously you're a team, so everyone has the power. (P6: all officials should have authority to recognize and remove)

I just think the referee being the referee needs to kind of step up a bit because he has a little bit more higher authority (P6: official hierarchy of who should make official removal call)

And hopefully, in a game, there's at least one of you with it, if you have it, and if everyone's educated with it, well, all three of you will be so all three of you will be able to understand and know your role when you get out on the ice if a situation like that happened. (P6: not all officials on ice need to have training, but 1 should)

Absolutely. We would have to be (P7: all officials should be granted authority)

But you know, particularly in the high-performance program, when there's a call that's that important, we've made it as a whole group. So, it would have again, it's a team approach. It's not individualistic, everybody, it's all or nothing. If that's going to be implemented. It needs to be referees; it needs to be lines persons to. (P7: officials work as a team)

Yeah, (P8: all officials should be granted authority)

I think, well, linesman now has the authority to stop play on any injury. There, they can look out, they're looking out for that stuff. I think a linesman would actually have a better understanding. I find when you're when you're on the lines you have, you're more chatty with the benches, because you're right there most of the game. The backup goalie is usually your best friend, you're always there, you just chat with them, they're on the blue line, they're just having fun. And you really get to know the players there, especially if you do see the same team over and over. there. It's, you can tell in your there, you can look into the bench and see, oh, that kid doesn't look right at all. (P8: linespersons have an advantage in knowing players)

I think like a linesman, definitely be able to, should be able to give their opinion. In the end, it should always come down to the referee as they have final judgement on that. But linesman or linesperson should be able to have some input on that for sure. (P8: all officials should be granted authority)

Yes. (P9: all officials should be granted authority)

Um, no. And this is because there's a lot that happens in a game that a referee may not be able to see, which I think, again, if it happens, like let's say, a fall over here, and then the plays over there, you know, the linesman, would be able to see what happened, whereas the referee may not have observed exactly what has happened. So, I think using them as a tool would be helpful. (P9: all officials should be granted authority)

Yeah, I think so. Yeah. Because I mean, it has to do with the, you know, the player's health and safety. So, I think that it's a duty of all officials on the ice to determine that. Yes. (P10: all officials should be granted authority)

No, I think a lot of it depends on the individual. I know, many lines, people that are just as confident or even more confident or more imposing than referees are. So, I think it's more on an individual basis. (P5: individual characteristics of official more important than position held)

As you can tell, I have a pretty, I've always had a really big interest in concussions. And I happen to have my own children have also had concussions. My interest was already present before that. So, I have lots of more recent experience, so I'd experienced professionally and then more recent experience with my with my own kids. So, I'm very, you know, aware of the risks and kind of the dangers of, of concussions. (P1: personal interest/experience)

[pause] And I feel like officiating needs to have lots of shades of grey. [laughing] So it's a very different approach depending on what kind of person you are. And I'll say that like those black and white officials often are people that are in like law enforcement in there. They're people that work in corrections and people that work in jobs, where for whatever reason, they can be very black and white. And then I feel like it's hard to be black and white in health too. (P1: officials day jobs effecting making the call)

Where we were we are in northern Manitoba, we don't even have that. So, we're just having, you know, the safety people that are trained. And the tricky part is because I'm an occupational therapist, I have more medical training than the training staff of the teams. (P1: officials has more medical training than team staff)

Like the educational tools or the information at hand, they should be able to make, I guess that decision. Like yeah, I can't sort of say, well, like you should ref for a set amount of years where you could have a situation that you have, like a, I guess, a medical professional, like a nurse or a doctor, physio therapists, or somebody that has like, say, training in a concussion recognition that's like, Well, I'm just gonna start reffing. But there's a rule in place that you've only reffed for, like, say, two years, or you have to have two years before you can enforce this rule. (P2: day job may influence ability to make decision)

And how dare some official out there. For me, I work at a pulp mill, how do I have the know, with all in my head to that kid from the game is what their thought process would be, (P3: officials day job effects ability to recognize concussions)

Though, some individuals might do that in their day jobs, officials are not medical personnel. (P7: officials day job may be in the medical field)

I do a lot of men's league hockey in town. And we had an official who just fell on his own, hit his head. He said he had no idea where he was, we were sitting in the dressing room, had his jersey and the skates and his pants on. And he said Well, what am I doing here? You're reffing hockey, he didn't even know he reffed hockey. So, it's a scary, scary thing. When you see someone suffering those effects, and if we can mitigate that anyway, I am all for it. (P3: personal experience with concussions)

I played hockey growing up. And so, I was a victim of countless concussions, probably three that I know of anyhow. (P5: personal experiences with concussions)

Personally, it's a prior, it's something a bit of a prior knowledge that I had just from my days playing, as I said, and I think an important thing, too, is at the higher levels, the vast majority of officials played the game for 10-15 years themselves as well. (P5: officials having playing experience beneficial to knowledge)

But again, being a Coach as well and, and playing hockey in the past and sports in the past, I, I do make sure to try to help out where I can, again, not assessing, but definitely being there to support so that, you know, I can lead to maybe helping out the coaches, or the teams to make sure that that player gets the best help that they can get, if I suspect have a concussion. (P6: officials personal use of knowledge to help guide bench staff make removal decision)

No, I, I've been trying to take courses I've been trying to learn, but there's quite a lot of information. (P6: officials learning about concussions on own initiative)

I'd say I say yes, there's a lot of, there's a lot of coaching courses required for all for all coaches, but for head coaches, mostly, you know, you have to do a safety training, someone has to have a safety training program. (P6: coach education allows for more knowledge of concussions)

You know, I've done similar things to what you're doing now in doing my own research and conducting interviews and writing articles related to concussions. So, you know, compared to some of my peers, I've had an interest that's had me learn more, (P7: officials' personal interest in concussions)

I think my understanding comes from other things. So outside of that in my personal life, (P7: personal interest in concussions provides knowledge)

Now mine's actually coming from I worked in journalism for a while and had covered various concussion topics and then just having that interest and talking to some experts and then following it through some documentaries, just following sports as a fan, you see those things all the time. So, it's more personal interests and a little bit of professional interest. (P7: personal interest in concussions)

And, and I guess some of them are even back dating back to when I was a student so (P7: knowledge comes from formal education)

like, personally, I've had it while refereeing I've taken a puck to the face. And got one out of that. (P8: personal experience of concussion)

I've seen like, I've suffered three I've had three in five months when I went through my big spell and two were from rugby. One was from refereeing hockey. I've probably had a few undiagnosed ones. (P8: personnel experience with concussion)

And then just through university doing human kinetics and that like you, you see it (P8: personal knowledge – increases comfort)

like I know, that was mine. I didn't want to get off the field. Like I was literally being chased around the field by the trainer's telling, telling me to take a knee and me not knowing I was star fished on the field, you know, 30 seconds before that not moving. But and that was my main thing. I was just frustrated. Like, I'm fine. I'm fine. I'm fine. (P8: personal experience with concussions – S&S displayed)

My, my bias on that though, is this. Like I've suffered them, I've seen the consequences of it. Like I had to write off a year and a half University because of it. (P8: personal experience with concussions - long term effects)

No, I guess I really, I like it I know I noticed it on the rugby side seeing it I think they do a lot for the sport because there it is. I said they're not common but they're not uncommon like I've definitely seen a lot in my day on that side. Probably seen more there. Then in hockey just because I played University rugby, I stopped playing hockey when I was in high school and just kept on the officiating side. But it's definitely something that especially suffering them myself. I know the long-term consequences that can happen and what it can do to someone. It's not just it doesn't just hurt you that one game like oh yeah, you might get pulled from that game, but it can go on for years and hurt you. (P8: personal experience of concussions – long term effects)

See, I can only I can put a direct number on that. I think that that would depend on the individual who's to say that a 14-year-old and level two is not knowledgeable as much in that area, right. Like, it's hard to put a stipulation on that. (P9: official individual knowledge more important than age)

Yeah. [pause] yeah, I don't know. It's hard to say yet. Because notice, it could be a 14-year-old did a whole presentation on concussion and has done all this research has all this knowledge, and now they're officiating, and it's like, they may have more knowledge than the next person. Right. So why are we limiting their understanding and their tools? Just because of their age? (P9: individual knowledge more important than age)

not particularly. You know, I just I don't know if you remember my introduction that I do have a connection to concussions. So that's why I was interested in participate in the study. My fiancé is involved in concussion studies all throughout Canada. She works for [national safety and prevention organization] I don't know if you know [national safety and prevention organization]. So, I get all the information, all that I've been saying all the discussions, when it comes to caching or watching games, we have discussions about it, we talk about all this stuff, especially with concussions. So I think, using her knowledge, and also my roles and my knowledge, and what I do, we kind of have an understanding of like, you know, making sure the game is safe and making sure we can play the game safe, and eliminating certain aspects of the game, such as head injuries, as much as we can, and making sure that we're not having long term damaging damages to individuals. Based on that. (P9: personal knowledge of concussions)

[pause] And I feel like officiating needs to have lots of shades of grey. [laughing] So it's a very different approach depending on what kind of person you are. And I'll say that like those black and white officials often are people that are in like law enforcement in there. They're people that work in corrections and people that work in jobs, where for whatever reason, they can be very black and white. And then I feel like it's hard to be black and white in health too. (P1: officials day jobs effecting making the call)

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Though, some individuals might do that in their day jobs, officials are not medical personnel. (P7: officials day job may be in the medical field)

[pause] And just the consistency sorry, the consistency on it. That will be the big thing. If you, do it for one and then in the same situation, you don't do it. That's what I know I find watching is the NHL has it where they'll pull them from the spotter or pull them out from a game and you're like, well, why they pull that guy open? Not that guy. So, consistency would be big. (P8: barrier – consistency of calls by officials)

um we're fair. This year is kind of a it's getting a couple years ago wasn't bad at our assigners are really good at keeping you away. So, you're not getting overexposure the same team. (P8: exposure to the same teams – minor hockey)

So minor hockey like I ref, out of Oshawa, and all probably what helps with me too, is where I work away two weeks on two weeks off, so there's always at least a two-week buffer in between. But I'll only see like once a month maybe. (P8: exposure to same teams – minor hockey)

I do find when I do my junior hockey I see teams a little more but and junior I'm on the lines mainly and there's a little less like there's a little less hostility with that I find and when you're reffing there I've had one year one of the local junior teams here I think I did them nine or 10 games in one season like out of their 20 home games I was on the ice for ten of them but it was there's no problem with that (P8: exposure to same teams – junior)

but the minor hockey it's nice that you don't see them all like a tournament weekend it's sometimes sucks when you look at your schedule like I'm going to see this team three times in three days and it happens sometimes it's perfect nothing goes on but other times you know especially in that first game you have something it just starts right from there puts everyone on edge but it definitely helps not seeing the same team over and over again. (P8: exposure to same teams – minor hockey)

ah I think a bit what [pause] what's nice what I find here in Ontario and like Nova Scotia was different were here it's the kids all play together in the same exact same age group growing up at Nova Scotia you were you played Bantam you could have first year Bantam second year bantams in the same team same with peewee atom midget we're Ontario it was always minor and major. So like you like we had one team in Oshawa when I moved here they were peewee AAA two years ago, they were minor midget AAA so I use 16 AAA like I saw that whole team grow up over like a five year span so like by the time they're you U16 You know most of the kids anyway and how they are but I don't I don't think doing the same thing over and over. They would have some benefits but I think it's it puts a little more animosity in it but especially like if you were you know you were known as the guy like oh every game you made this guy's that you made this guy sit you made this guy sit for this there'd be I like the spread out a long answer short, I hate not seeing the same team over and over but I do appreciate getting to know the teams at the same time if it That makes sense. Not really an answer, but (P8: exposure to same teams – not a benefit)

So, I think over time, I guess like officiating provides, like an individual with, I guess, experience and critical thinking and I guess making quick judgments on I guess situations. (P2: skills you get from officiating experience)

I think it would, like at the end of the day. I think it's at the end of the day, like it's sort of you sort of tie it back to I guess, decision making. And it's just another situation that I guess you would have to make a decision and sort of just stick to that decision. (P2: officiating is about decision making)

So, I think that would pos [didn't finish word] would help because at the end of the day, like you're making I guess a little bit of a judgement call. (P2: officiating is about decision making)

But, like if it's sort of the I think once you like it's sort of that I guess those situations are sort of easy, because they're but I guess there's other times where I guess you would be I'll use I guess as a officials coach or a supervisor when you're watching other younger official that you're like, Well, you probably should a blew the play if you suspect like a player's hurt like blow it down sort of like right away type thing. (P2: official experience provides knowledge on recognizing injuries)

However, recognizing scenarios like I said, like I we had previously discuss like getting punched in the head or big body checks and stuff like that. plays that would be penalized under the head contact rule. (P5: recognizing MOI for concussions = recognizing unsafe play)

Because every kid's different, too. And you got some players that they, they're they are officials, and they understand the complexity of it. (P6: players who are officials will have a different perspective)

It's the designated safety person um on the on the team. And the vast majority of them are not medically trained. And there's not usually anyone in the arena that's medically trained. (P1: training staff not medically trained)

um, I guess it's sort of depends like the higher-level stuff, typically they, they have, like a trainer, whether it's like a university like kinesiology student, or if they're fortunate enough to have like a certified athletic trainer, or a, like a physiotherapist on the bench, and sometimes have access to like a medical professional, (P2: training staff medically trained)

but like one working like the, I guess, high school hockey, or a U18 a lot of the times like they like some of the teams may have it but a lot of times they don't so in those instances you would be dealing I guess like specifically with like, the coach or I guess from like a Hockey Canada's standpoint, they would have like a safety officer, somebody that's taken like the safety course so sort of, but it literally would be probably dealing, it would be dealing with the coach in the lower levels. (P2: training staff not medically trained)

but I think it's almost like any, I guess level that there isn't like a say like a certified like medical professionals like on the bench. (P2: training staff available effects need for protocol)

Like so if you're like the lower, not lower levels, but like levels that they don't have, I guess, like a trainer or athletic therapist or things like that, that would be able to, I guess provide that, I guess, like information. (P2: level of hockey that protocol is needed for)

looking at the whole situation the training staff is working with that player, (P3: medical staff attend to injured athlete on ice)

No most of the all of the high performance stuff in this area they have training staff on the bench. (P3: trained medical staff on bench)

some of the minor hockey obviously it's just the coaches and then we have our Hockey Canada to see if the person that's part of a BC hockey I'm not sure how I think it's Canada wide, but every team has to have a Hockey Canada safety person on the roster and present at all ice times. (P3: most minor hockey relies on coach for health and safety)

Rare that that I'm seeing a trainer when I'm working the ice, (P4: lack of medical/training staff on bench)

I supervise games where there's where there's definitely trainers, But I don't I don't officiate games at that level, no one wants to see an old man out on the ice with the AAA kids, if we can avoid it. (P4: trainer with medical knowledge at higher level)

So yeah, so the games that I work are in general, what we would describe as minor hockey and so those almost never have a trained medical trainer or sports trainer on the bench (P4: training staff not medically trained)

So, it's, you know, I would say it's a bit of a 50/50 thing, right? Sometimes it's amazing, right? I've seen a kid get run headfirst into the boards, not intentionally, but you know, gets cross checked first point of contact is the head with the boards because of the angle that I'm on in the spot that I'm standing that the ref can't see. (P4: advantage of having an official in the stands)

So, I think there's, you know, there's always somebody who's in a great position. It's not always the supervisor. It's not always the ref. It's not always the linesperson, but there's normally somebody on the ice who's got a good view of whether someone's got a knock or not. (P4: advantage of having official in the stands)

mainly because both teams that should have trainers on the ice, right, are on the on the staff anyhow, (P5: teams have training staff to manage injuries)

And the trainers are usually pretty good. Even as an official, I've been able to observe trainers and coaches noticing. (P5: official feels confident in the bench staff's ability to recognize)

I'd say any situations where I did feel that way, they were dealt with at the time being by the teams by the staff. (P5: training staff have managed any injuries where official was concerned)

Yeah, I wouldn't say there's any scenarios that stick out where I felt something should have happened that didn't happen in regards to concussions or brain injuries to players. (P5: official has felt players have always been taken care of appropriately)

every game, both teams need to have trainers on the bench. (P5: training staff is required for teams)

So not parents not a dad wearing a sweatshirt. The hockey that I do at this level anyways is as all high, high-level hockey, which is more business related than sports. So, all the teams have paid trainers who are certified and who travel with the team and do stuff like that. (P5: training staff on teams have medical training)

Absolutely. Yeah. Yeah. We rely heavily on trainers (P5: comfort in knowing that training staff can handle concussions)

and from experience, they're very good at themselves spotting potential concussion causing played or injured plays that could cause injury. (P5: training staff good at recognizing concussions)

I would say I'm very confident in them because that's pretty well, their main job, right. (P5: comfort in training staff recognizing concussions)

I think in general; I don't think things would change very much. I still think people will rely on the training staff pretty well as much as they do. (P5: reliance on training staff to recognize and remove athletes)

So, I think officials we try to stay as uninvolved as we can. Not, not from a safety perspective, but just in general if the best hockey games from our perspective are the ones where we don't have to do anything because they go by smoothly so If I think if it ever got to a point that it was readily apparent that we were noticing it and decided we should be taking action, I think that action would already be taken by the trainers and the coaches and the players themselves. (P5: team staff will act in regards to injury before an official would need to step in)

Not right at the start? It kind of took some time. Sometimes I'll notice they get up and, and the coach says, well, their visions a little faded, like they do their, their tests, their little exams, just to test it out. And then they take them to the bench, or they take them off the ice. (P6: officials rely on bench staff to assess players)

within our power, it's mostly that we can stop play and refer to the people who have more training in that field than we do. (P7: officials rely on training staff)

I can't think of that. I mean, I, again, our roles, stop the play and get the experts out there to help them (P7: officials' current response to injury)

but that's on the medical staff of the teams. (P7: training/medical staff's job to recognize concussions)

I think at the high-performance level that should be there's medical staff on the team for a reason they have that advanced training and that should fall on them, (P7: training/medical staff's job to recognize/remove players)

I think it falls more on the medical staff that's required to be on the bench, especially in the high-performance program. (P7: training/medical staff job to recognize and remove)

I think that there there's a reason that the teams are required to have that person as part of their team personnel (P7: teams required to have training/medical staff)

In my opinion, it falls under, under the training staff, the athletic therapist, or whoever is filling that role for the team that falls under them and not the officials? (P7: training/medical staff job to recognize and remove)

You know, particularly the, the less structured a team is, the less likely that they may or may not have qualified medical person on staff, whereas in the BC Hockey League, I can guarantee everybody has somebody who's properly qualified because the stakes are that much higher. (P7: training of training/medical staff changes depending on level)

Like every team has to have a certified trainer on the bench or we can't start a game and it's kind of up to them. (P8: medical/training staff required on each team's bench)

Like they're considered the medical experts in the game. And saying there's times now it's like, okay, well, it's up to them. If they say he's good to go, he's good to go even there's times you might look. I don't know. (P8: medical/training staff should be making injury decisions)

But like, I'm pretty, I'm pretty positive. They all like that Rowan's law seminar, we do it, everyone involved in the sport and Ontario has to take the same thing, the respect in sports, anyone there has to do that. And the parents actually have to do that one too. (P8: current training stakeholders have)

### **Sub-theme: Player Safety**

but I do feel like kids would be safer. (P1: benefit of protocol – player safety)

And I don't think that the average person understands that the reason we're changing things is not because we're babying kids, it's because we actually know how brains work. Like I think that's an important thing. A lot of people think we're trying to bubble wrap the kids and they don't know that we actually just have a lot more evidence about what's happening inside the brain when these injuries occur. (P1: benefit of program - safer game)

So, this is a big one, obviously. And it would go under safety. (P3: protocol falls under safety)

the more safe we can be on the ice, the better chance we have for this kid having success in the future. (P3: benefit of protocol – athlete safety)

Are we better off with 25% of officials trained and therefore we get the opportunity in 25% of our games to have a greater awareness of what the health risks are for kids. That is that better than zero maybe right (P4: any improvement in player safety is good)

Or to I guess, I can just provide a little bit of feedback to the coach. (P2: officials can provide more information to team staff)



I mean, for me, I think it's a good thing. (P3: protocol would be good overall)

I think it could be a valuable addition to the oversight that youth hockey players get, because I don't care whether Team A or Team B wins. But I certainly care if a kid gets hurt and I could have helped avoid that injury. (P4: impartiality of official is benefit)

I guess you have to take measures to make sure I guess that players as safe and not getting put back out on the ice in a situation where I guess they may get hurt more severe with not being dealt with. (P1: player safety is important)

But it's something that if you're passionate enough about it, it doesn't matter what the situation is, you have to do what's right for that player. (P3: player safety is important)

So, it's small term, small time, or short-term pain for long term game, in my opinion. (P3: long term benefit is more important than short term barriers)

I get that, but at the same time, the health of the players first and so you got to figure out how you manage that? (P4: players health and safety most important)

And is that fair to the teams and the players? I think you can make the easy argument that yes, it's fair, because safety is safety. And we want safety when we can get it, you know, we want to be as safe as possible when we can get the benefit of having the safety. (P4: players health and safety most important)

So, I think there's sort of an understanding, I assume there's an understanding Anyhow, it's not really a discussion but of the importance of the importance of player safety (P5: importance of player health and safety)

So, I mean, I think I think they listened to us, I think player safety is. But you know, behind all the all the other animosity and the action, I think it's pretty well, something that's prioritized by the vast majority of people surrounding the game. (P5: athlete health and safety is important)

In the in the suspect, if they're suspected to be injured, I think caution is never a bad thing. (P5: player health and safety most important)

So, you have to understand the referees are obviously have no say on the game and, and they want what's best for the player themselves. (P6: player health and safety most important)

So, for me, it's number one concern is safety. (P6: players health and safety most important)

At least again, my opinion. It's safety. I make calls. I don't intend to upset anyone. It's just that's how I feel. You know, the best way is to go to prevent an injury from happening or to prevent something lingering from that. (P6: players health and safety most important)

every nothing's more important than the player safety in a game. (P7: players health and safety most important)

Gives it gives them It gives them a reasonable, reason as to why they may be assessing a certain penalty, as well as protecting the athletes from any further damage. So, in the students care in mind, like sorry, the children's care in mind (P9: players health and safety most important)

They want to keep everyone safe. I think it's important that making sure everyone realize it's about keeping the game of hockey safe. (P9: player health and safety most important)

So, I think that if we noticed that one of them are not feeling well, we'll you know, us and the coaches, we can make the determination to tell them to leave for their own safety and health. (P10: players health and safety most important)

I think he should probably consider; you know, we should consider probably asking them to leave for their own health and safety. (P10: players health and safety most important)

The reason I think that officials could do a good job in deciding if someone has a concussion is because we have a better view of the mechanism of injury a lot of the times when you're the official and you're very close to the play. So, the incident that occurred that caused the concussion, you often have a better view than the training staff or the safety people from the from the bench of the player. You're right [there] Sometimes you're like, three, four feet away from the player as the injury occurs. And so, your understanding of the potential, um [pause] I guess, like how dangerous or are the potential of injury from what occurred, you just have a better view of that. And that's my me, one of the main reasons that I think officials would have a better should be involved in deciding if someone has a concussion or not. (P1: officials are in better position to recognize injury)

And, and also on making sure that we use that concept of mechanism of injury as being part of how we're judging. So not like, one of the things that when we talk about concussions, we do a lot of talking about the symptoms of the concussion. But as the official the main reason why you have extra knowledge, I feel like is because you were there watching how the injury occurred. (P1: benefit of officials recognizing - location on ice surface)

I guess like it's sort of, from like an official standpoint, I guess it's like a little harder to see some of the, I guess, symptoms, (P2: recognizing concussion symptoms)

Yeah, and I guess to use sort of like a like scrums or things like that that they like in the middle of it. So, they may see something that say the referee wouldn't see. And then also, like they, I guess probably have a little bit more opportunities in certain situations to communicate with the players (P2: officials are in better position to recognize – linespeople specifically)

from the officials perspective, it's really difficult so you know, when an athlete gets hit in a game and they're down on the ice you know, as the official group will come together and have a discussion on what happened and what took place, but it's really hard to diagnose you know, when you're not with the player on the ice finding out what's happening when you're step back, (P3: officials ability to recognize a concussion)

for an official it's really hard to you know, get right in there and see so I don't know that you know, on ice officials have the ability to check that person for concussion symptoms (P3: barrier- officials ability to evaluate concussion S&S)

you can ask the coaches or the training staff, but it's really hard to you know, one on one see if they're suffering the effects of a concussion on the ice. (P3: barrier – officials' ability to evaluate concussion S&S)

So other than seeing a player physically unable to stand on his feet on his own when he gets up from a hit something like that. It's really hard to diagnose, I would say, as, as an on-ice official, (P3: barrier ability of official to recognize S&S)

So, you know, when you're coaching U11, or U13, at the lower level, you're so busy, not only coaching, but babysitting, and you know, trying to control the bench that you might miss the fact that, you know, the little kid in the corner just smacked his head in and isn't feeling so good on the bench. (P3: benefit of adding officials into concussion recognition)

It's hard when you're officiating to be taking into account everything that's going on at the ice and worrying about whether something is happening or not on the bench in terms of an assessment. (P4: official focus on ice not bench)

Or if a player's received a knock, and it might not have been obvious to the bench because of where it happened, you know, particularly kind of down the boards either side, from where the bench is. So, it's a really obtuse angle to see, I'll let them know that, hey, you know, whether or not this player has a concussion, you know, either that the player who hit them made contact, or they made contact with the glass or the, or the dasher or the boards in the head. And so, the bench should be aware of that. (P4: official position advantage over bench)

That being said, that's great, if you're in the same end of the ice as where the play is. But when you're 150 feet away, you've got the advantage of angle but not of distance. (P4: official location on ice advantage)

Yes, I would. I would suggest that you need to have everybody involved in that in the same way have the same training because it's just you know, particularly for plays where the referee is, is either in half piston or at the net and the and the plays move to the other side of the ice. The linesperson up that boards is in a much better position to see if somebody is taking a blow to the head in most cases than the referee is. And so, if we're going to put that responsibility on officials to be watching, it needs to be three sets of eyes or four sets of eyes, depending on the level of rather than just one. (P4: official position on ice is an advantage)

The easiest ones to observe from our standpoint. (P5: officials being in a position to recognize S&S)

So ideally, you'd already be in good standing with the coaches, excuse me. And from my experience, anyhow, at the level that I'm working in, these days, the coaches all know who we are, they know us by name, they trust us, and they have confidence in us to always be putting our best foot forward. (P5: familiarity of official and coaching staff will make removing player easier)

in my experience with any injury, our duty is to stop the game and referred whether the player can leave the ice under their own power to get the medical staff to come on assist the player. (P7: officials' current response to injury)

and I can't think of a play in my experience where myself or my crew hasn't stopped to play immediately when it looks like severe injuries occurred. (P7: official current response to injury)

No, because I think the assessments done regardless of how it occurred on the ice. (P7: officials position on ice in recognizing concussion)

You know, I can provide my input into what the circumstance was and what I saw transpire on the ice. (P7: officials can provide insight on MOI)

But the assessments for concussions aren't done by watching the collision or whatever. That instance that happened, you know, there's, you know, the line of questioning the dark room, all the things that have been implemented that go far beyond the officials positioning on the ice. (P7: concussion assessments not on bench)

But it's sometimes it just I think there are some, but it would be harder being that third party to see it. (P8: barrier – ability of official to recognize certain S&S)

Yeah, cuz the benches you know, 100 feet away. If they're like the play as a referee, you're right there, especially the plays and tight you're right on the goalie. You have like when I'm refereeing, I try to I'm always talking every whistle. I'll talk to them. And you're just kind of you almost get buddy with them. And let them know what you're doing. Hey, this is how I'm going to call it if I can see that puck. I'm yelling, I can see it. Like all I'm not blowing my whistle till it's covered. But I'll always yell. It's free. It's free. It's free. And just making sure you're on the same page with them. And definitely be you'd be able to tell I think a lot easier. By looking at a goalie if something they were they were off then the bench from afar. (P8: officials location benefit – goalie)

Advantage? officials? No, I would I mean [long pause] No, I think I think the trainers and the coaches on the bench would have one advantage in the officials because they can monitor it over time whereas the officials are gonna have a shorter period of time to look into it and then then I'm going to keep checking on them throughout every whistle. So, it's, I would say no (P9: officials do not have advantage in recognizing S&S over bench)

### **Sub-theme: Considerations Needed to Make Protocol Successful**

And I guess the other thing too would be I guess buy in from all stakeholders involved (P2: stakeholder buy in needed for success)

So, to make sure that I guess everybody's sort of buying in and trying to guess pull the rope the same way. (P2: keys to program success)

That's sort of I guess, like, it's a good question. I think, well, at the end of the day, I think the onus ends up almost being on all I guess, all, I guess, partners involvement, like I don't know whether it's sort of, I guess like the member like association or like, say the club, but I think it has to be a collaborative method between like all, I guess all different levels like it needs to, I guess whether it's sort of like your minor Hockey Association is sort of hockey. (P2: protocol success – all members buy in)

I'm like, I guess I'm sort of trying. Like, as he sort of alluded to, like I've been around for it seems like every any kind of sort of major rule change whether like you said the checking or for was like had contact or I guess like recently like, I guess this year with like maltreatment, I think the biggest thing is I guess sort of having like, the educational component, but it is like having, I guess, like buy in from like, the media and trying to get that information out is many avenues as possible. (P2: protocol success – all stakeholder buy in)

I get the end of the day, I think like you're always going to get the dinosaurs that are going to be happy with I guess how, like a rule change or things sort of, I guess change within hockey, but it's trying, I guess the biggest thing is like education having I guess conversations with everybody involved and making sure that you're working out ways to get buy in from everybody, like it makes when I guess if you're trying to enact change, if you're able to get buy in from individuals, like you're gonna have, I guess more success than if you if you don't. (P2: protocol success – all stakeholder buy in)

I guess to is always, I guess having, I guess, like the buy in by everybody. (P2: protocol success-stakeholder buy in)

So, it'd be sort of interesting to see from a rugby side of things, I guess, because this, but I think culturally, it's a little bit different to the relationship with officials in rugby, compared to say hockey, but sort of see. Like, how, I guess this would go or how went I guess, in rugby. (P2: use rugby as a template)

And then, I guess, trying to think, I guess the other concerns, sort of, I guess how, like, the implementation process would be with it. Like how, like, sort of just like the different like the like how, like, sort of the different steps like what happens on the ice, and then what happens to the player after on the after the Removed, how's it tracked, and sort of, I guess, sort of put that all in sort of the administrative side of things with it. (P2: need for definitive process at all steps)

From a Hockey Canada perspective, they have to make sure that it's rolled out in the correct way it needs to be, you know, it needs to have a trickle effect down from the top that is taken seriously by everyone at the branch level at the official level. (P5: complete buy in from all stakeholders needed for success)

And it should be something taken just as seriously by the teams and the players and the trainers and the leagues as Hockey Canada and the coaches around the officials because I do know some of the things that Hockey Canada rolls out. They aren't taken as seriously as intended to be bought as originally intended. And that becomes a problem. Right. And so, I think it's should be closely monitored, if it were to be something that they were to move forward on, for sure. (P5: complete buy in from all stakeholders needed for success)

You know, thinking back to every rule change and rule emphasis, it usually does come with an explanation. And obviously, they disseminate that information from the top down the people associated with Hockey Canada, tell their counterparts and it goes down the chain from there to those of us who are working the games. (P7: success of protocol – buy in from all stakeholders)

And the third thing would be I don't know whether to call it consistency or unity but doing something like that for knowing hockey Canada's got such a large and wide scope to do it coast to coast would be a challenge. (P7: consistency among branches needed)

So, you'd have to do in some kind of language within it would have to be, you know, all-encompassing so that it's, it's vague enough to catch all the potential circumstances, but specific enough to limit it to the circumstances you want it to be. (P7: wording of protocol/rule to ensure goal of protocol met)

And it would have to be implemented with, with enough consistency that it's going to work in BC as well as it's going to work in Newfoundland and Nova Scotia and everywhere in between. (P7: consistency among branches needed)

Yeah, I think so. I mean [long pause] you're definitely going to have different views about it from different branches. But I think I'm just getting everyone to understand big picture that it's about safety and it's about you know, keeping the game safe and keeping the kids safe. Is the goal. Think you can get people on board? That they everyone could. That's the main picture. For Hockey Canada, I think it could be across board Yeah. (P9: all branches will buy in to new rule)

I think there would need to be some type of criteria for the number of symptoms that that you were recognising in the player. And there would need to be almost like a prioritisation or a hierarchy of symptoms. You know, for example, like we just automatically refute remove you because you lost consciousness, you know, or some type of way of deciding and then making it a bit of a checklist that we would go through and just establish if that's if the child if the player meets the criteria, then they would be removed from the game? (P1: removal guidelines based on S&S)

Well, I think that we definitely would need to have some sort of there would need to be some sort of concrete checklist like that. sort of like assessment checklists that you're doing of the of the player. And there needs to be some prioritisation of symptoms, like things that would be more likely to be like, you can't come back to play because you exhibited X Y, Z symptoms or, or whatever. (P1: removal criteria guidelines based on S&S)

Yeah, yeah, something like that. Yeah. I've seen kids go away in the ambulance and come back. Right, like so that, you know, and definitely loss of consciousness. (P1: removal criteria guideline – based on S&S)

And then, like I said, instituting that training, which I think should be done in kind of a video and Case Study kind of way. I strongly believe that too where you show videos of plays, and then discuss the injuries that could occur or did occur. (P1: removal criteria guideline – based on MOI)

Like probably like now, like, I probably, like talk to the coach or the trainer to say something, (P2: notify team by communicating)

there was like a blatant, I guess, check to the head situation or if like an individual possibly, I guess feel awkward awkwardly even into the boards or I guess onto the ice I may be able to, I guess, say something. And I guess also, like another situation would be if, like a goalie or a player took like a heavy slap shot to the head or something. And maybe they've sort of easy, possibly to just say that, you know, the situation that the player may be concussed. (P2: MOI influences concussion recognition by officials)

But I guess if it was sort of one of those things that, you know, if you, like suspected, I guess that a player, like sort of going back to some of the situations that I discussed earlier that, you know, possibly like, so is took a, like a significant impact to the head. I guess if there was like mechanics in place that you could really say that, like this individual has to go through some sort of testing before they're, I guess, able to come back out on the ice. (P2: removal criteria – based on MOI)

But also, I guess like there would be criteria behind it. So, you're sort of using that criteria that to help you I guess, make that judgement or decision. (P2: removal criteria)

I think like, regardless the nature of the beast, I guess, with hockey, like you're, you're gonna, at the end of the day, gonna end up having to have a conversation with the coach. And so, I think it would probably, I guess, in that situation would be one say, you blew the play dead. It would be to go over to one of the coaches to let them know. I guess that, like they're their athletes, sort of, I guess in the concussion protocol or like needs to be evaluated for like a concussion. And I think it's sort of a situation where you're probably

would have to blow the play dead say once. I guess like they're either if the player stolen the ice her or once there, I guess team gains possession of the puck in like a non goalscoring opportunity when the players off the ice, so they're not, I guess, putting that player back on the ice when they shouldn't be. (P2: procedure of notifying team and athlete)

in like a non goalscoring opportunity when the players off the ice, so they're not, I guess, putting that player back on the ice when they shouldn't be. (P2: procedure of notifying team and athlete)

Yeah, I think you would, I guess, kind of sort of, I don't know, I'll go ethically, I guess after ethically, I think you would have to blow it down. At a, I guess like the first opportunity that sort of either like their team game. Like I said earlier, their team gains possession or in a like a non, I guess goalscoring opportunity? Because you try not to, I guess overly impact the game (P2: role of officials not to impact game)

No, and I think like, I guess at the end of the day, and maybe like as an official you would just treat it the same as if it was like an injury, (P2: play stoppage procedure)

Well, that's you can it's sort of an easy explanation while like blown a dead cause of this situation like and because we I guess you sort of suspected a player to having like a head injury. (P2: play stoppage procedure- already in place)

if I like, I don't think hockey will ever have everybody sort of walkie talkied up or anything like that. But you could be like, number like six red, like has to sit out because he has like a suspected concussion and that individual could go communicate it to the coach. (P2: procedure of notifying team)

That's it could be in a rink that it's an old tin can that everything's on one side? Or? There's? Yeah, there's like a ton of like, it's there's no, I guess, smooth way of, having it? (P2: ease of notification effected by rink design)

You know what I'm trying to say? It, it would be difficult to come up with the parameters of when you're gonna make that decision. That would be my concern. (P3: removal criteria needs to be clear)

For sure (in response to officials being able to recognize and evaluate P3: officials maybe able to recognize S&S but not evaluate injury)

I mean, in hockey, I would imagine you would talk about the captain, or the coach of the team and just say, Listen, you know, as a group, we feel that this player has is not right, needs to be checked out. And we feel it's in his best interest that we remove him from the game. That's a bench visit. It's a it's a small conversation, hopefully, you know, 30 seconds and back to the game. (P3: notification procedure for removing athlete)

I would think so. Yep. (In reference to conversation over new signal for notifying team P3: notification procedure for removing athlete)

But if you see a player, take a good solid knock, and then they come back on the ice, and they're maybe not at the same level that you've seen them out at the rest of the game, that's, that's when I'll generally have a word with the bench. (P4: communication with bench if they notice a player is not well)

It's much easier to say, hey, you know, that kid really took a good shot. And I'm not saying he's concussed or not concussed by it. And you'll know better than I am. And you've got the baseline tools, particularly for the rep hockey that I often work. You know, that's what I saw. (P4: currently can make a comment to the bench, no formality to it)

So that the onus isn't necessarily on the official to remove the player for the rest of the game, but rather to get them ensure they're getting the medical attention that they think they need (P4: medical professional onsite – official role is to get players medical attention)

or hit A equals consequence B. Which is the NFL approach, right? There was a helmet contact. And so therefore, you're out of the game, as opposed to the performance of this player has dropped off by 20%. (P4: removal criteria – MOI)

And maybe there's a reason why that happened. Yeah, I think it as I say, it is tough as an official, at least it would, I would perceive it as difficult to say, player A who I'm seeing for the first time this year, and probably the last time this year, took a bump, and now can't seem to find the puck, would I even notice that that's happening? I just don't know. Right? I couldn't tell you a time in the in the games that I've done this year. And I think I'm at about 75. So far, where I've thought to myself, I wonder if that players got a concussion, because boy, their performance is really dropped off. Because, you know, it's just not the kind of thing that my mind tracks while I'm in the game. (P4: barrier – official using decreased play as removal criteria)

If you were, if you were the top player on the team, and in the first period, you'd scored a couple of amazing goals. And then all of a sudden, you couldn't receive a pass that I might notice. But it's that outstanding before and really weak after that's probably the only way that you're going to see that that gap, right? (P4: barrier – official using decreased play as removal criteria)

I think there isn't other than you know, maybe as part of the Fair Play initiative at the start of the game right with referees go over to the bench and, and you know, at the moment wave at the coaches drive by acknowledgment of existence. That official has the concussion training, where they're where they're authorized to remove players from the game, they inform the coaches coach, I'm an authorized concussion specialist. So, I see something, I'm going to fulfil my obligation. (P4: how to handle if the official is working a game who doesn't have the removal training)

You know, and a 15-year-old won't say that, and the coach wouldn't expect it. And maybe there's a 25-year-old who hasn't had the training and isn't a specialist and therefore can't execute and you know it (P4: how to handle if the official is working a game who doesn't have the removal training)

Right. Or there's a there's a shoulder patch for someone who's got the concussion module and so they're easy to identify without having to be introduced, you know, yes, no, yes, I can see the patch on the shoulder. (P4: way to notify bench that protocol is in play for that game)

or it's a helmet, or it's a helmet sticker or, you know, it's something that makes the official easily identifiable. (P4: way to notify bench that protocol is in play for that game)

So then, so that's what I'm gonna refer to. There's a new rule in Section 11. It's 11.4 under the discrimination, gross misconduct, foul that's always been there. Right. That's it's the old nine point 9.4. Discrimination grounds for gross misconduct. There's now the opportunity for an allegation, right. Hey, ref. Player X on the other team called me Y. Okay, thanks. Hey, other two officials on the ice. Did you hear that? No, we did not. Okay, great. So, we're writing down the information. We're going to each bench and we're saying look, there's been an allegation by your player that a player on the other team used a discriminatory word. We are going to report that to the league. Other bench coach here's what the player on the other team reported to us. There's no penalty at this time but we are going to report it to BC hockey and BC hockey is basically and Hockey Canada are tracking it. And I think if they see the same player repeatedly having allegations against them, then they're going to not suspend the player necessarily, but that's going to you know, they're going to end up with scrutiny for BC hockey or the appropriate branch, and if they do ever end up in a gross misconduct situation Where there's also been allegations, I don't think that's going to help the cause of players whose have the allegations. (P4: having to notify both benches of what happened)

And I would see this as the same thing, hey, Coach, just letting you know, we think that player X received a hit or is playing in a way that makes us think they have a concussion. (P4: notification to bench of suspected concussion)

And it's not, you know, it's not like rugby, like you said, with a blue card? It's, it's just more of a if we suspect anything (P5: no formal protocol to remove concussed player currently)

Yeah, I mean, I've had scenarios personally, where, where I have discussed with, you know, in the event of suspected injury, never a brain injury, unfortunately, but in the event of a player suspected of being hurt, we do have conversations between us and coaches and trainers and the players themselves. (P5: notification comes through communication with bench)

Personally, I think the communication between officials and coaches are is the most important thing of officiating really is communication. (P5: importance of communication between official and bench)

So, I think just a simple, quick conversation with the coach, explain. You know, unfortunately, I suspect him of being the player, I mean, sorry, of being injured, of having a concussion, I'm sorry, has to be taken out of the game. That's really all it needs to be it just needs to be that easy. (P5: notification to bench staff via communication)

Yeah, absolutely. The coaches that I deal with and the players that I deal with. They know me, I'm a familiar face, and likewise for them as well. So, we've had, you know, hard, hard to have conversations before. Whereas if, you know, say it was just a team that I've seen for the first time, then, you know, you haven't really broken that barrier yet not to say that the conversation wouldn't be had. But I think the sense that what you're trying to get to is, would people be a little more hesitant with teams that they don't have that relationship already built with? And I think the answer is probably yes. Unfortunately, though. (P5: familiarity of officials and teams makes removal easier)

And then, you know, if we need to come in for support, we will (P6: officials can offer support in recognizing concussions)

um Ah, that's a tough one. Probably. Because like I said, usually you're out there with three so there's usually a referee and two linesman or however but there's usually three on the ice. So, I think best way is referee would do what he normally would do blow the whistle stop the play. If it's a suspected concussion, letting the linesman no one linesman to go to the bench of the effective player and just telling the coach we believe there's a potential for a concussion. And moving on from there, getting the coach to come up with the with the linesman or linesperson sorry and going out to assess the player. (P6: protocol of notifying bench staff of suspected concussion)

Now if we have the power to do it, and do the assessing, then we would go over still talk to the coach assess and say we are we are required or not required, but we are certified, we can help assess just in case somebody is unsure and then move on from there. (P6: protocol of notifying bench staff of suspected concussion)

And then you have your other linesman going over and talking to the bench and making sure that they understand and they're able to get out and help where needed. (P6: protocol of notifying bench staff of suspected concussion)

that would be your camaraderie at the start of the game, where you go over, you kind of introduce yourself, you let them know who you are, not fully don't need full details, but the situation where just so you guys know, one of us or so and so has a concussion protocol training, and is, it is up to us if something was to happen, that we this person will be the call person and we will deal with it. And then we'll make sure that we do our part. So that that would definitely be at the start of games like that's your part of your communication with the team Is this is this is the scenario (P6: communication with bench important to inform them if protocol is "in play")

That's a difficult conversation. I, I would hope that they would implement something similar to the rugby system, you mentioned, if they created something that was along those lines, (P7: notifying bench staff of removal)



you see it in the National Hockey League, they've implemented with their concussion spotters in the stands, they've got the protocols, and if the players called into that they have to leave the bench, and there's no argument involved at all. So, it would have to follow something along those lines of having something like a would have to be written into the rulebook, I suppose that would be similar to a misconduct penalty where the player gets removed from the game, there's no interpretation otherwise (P7: notification procedure needs to be clear to reduce issues)

And one other thing actually now that just that piqued my memory bank that you, they were at some point developing some sensors that could be attached to an application on your telephone. So as a footnote to the interviewer, that's that would be something that would be a really helpful tool if clearly, it wasn't either economically viable or that accurate of measuring the impacts because it hasn't rolled out beyond their initial studies, but another tool that potentially could help to detect head injuries. (P7: other tools for concussion recognition)

I find I always like to skate by the bench and when I have it or if there is some time, I always tell the coach take your time with them like they're down on the ice. If they're chatting with them like you have all the time in the world. You don't have to rush them up like I mean, make sure you fully assess them here, make sure it's not, you know, like, even a worse injury with a neck injury or something. And then sometimes they get really hit hard and they get up and they go to the bench, I always tend to skate by the bench and talk to the trainer or something, and just ask, how is 17 doing there. He took a rough one. (P8: officials' response to injury)

Um I think usually after something like that, like after a after any hit like then like, or sorry, any big hit in hockey, there's usually a whistle on the play. I think it's something as simple as going to the bench, and then having it recorded, there'd be say, a special. (P8: procedure for notifying bench)

But I don't think there needs to be any special penalty signal or anything. Like your arms gesture, I think it just something that could be a conversation between the coach and the official, and I would all I would always have two officials there at the same time. Usually, anytime we talk to a coach anyway, you will always bring a linesman with you. But just to make sure that nothing none of the information goes through with it. (P8: procedure for notifying bench)

So that's where I like one of the big things I always see, and the international hockey has this rule if a goalie takes a puck to his facemask the player is blown dead immediately. And Hockey Canada, NHL not there's no rule for that. It's one of the things I always try to do whenever I see it, I'll always like yell at the goalie like are you good are you good? Are you good? And like if I'm not getting response or if I can tell that he's not good or something I'll blow the play down the first chance I can get (P8: how to manage protocol if it is a goalie)

Actually, its tougher. And that's where you see in the NHL, where a goalie gets hit in the head. They stay in the game I think it comes down to if a goalie was to take a get hit in the head, like by getting hit not by Puck, but by getting hit by like a check or an elbow or a knee or something, then yes, it's treated the same as a player was the same thing of a player of a puck hitting them in the head, I don't think we'd be immediately taking them taking them out I and that's almost contradictory, saying I got one from getting hit in the face of the puck, where I don't have a cage on where they have like their helmets are, are meant to just stop the force in that puck. I don't think they're meant to stop the force of say a knee that comes across and clips in the head or something. But just I really like the international rule with a goalie he gets it just because it can days them for a second but then just to see let them get their wits because it puts them off, say a little bit and then they slip and fall after it or something. Are they just not able to react and then they do get hit something else later? But I don't I don't think goalies should be treated different than the players. But there's definitely going to be something where they are. You know what I mean? Like it's to take the goalie out it's a lot, yes, more impactful. (P8: how to manage protocol if goalie)

I would simply, depending on the age group, I guess it would be under 18, is what we're looking at if it's still like under seven. Okay. Yeah, I would, I would discuss, first of all the discuss with my officials, what we see what we decide if we decide that it's going to be assessed a major penalty due to an injury, then we

would simply go to the coach, and let them know that, you know, we're assessing a penalty for a major, we're setting up for a major due to an injury, because we're suspecting a possible concussion, therefore, that student or that individual needs to be removed from the game. And obviously, if, if we granted that permission, then they would have to comply, there would be rules put into place, if they don't say that they choose not to, depending on the severe like, I think if Hockey Canada were to provide this, then there would be rules put in place that would say, Well, if the coach is refusing or you know, the coach, say the trainers saying, no, they're fine. They don't have to be as big other steps taken. (P9: notifying bench of removal – penalty being called)

same thing Um, we would, we would probably check on the individual, I think we would have to check on the team, check with the coaches, check with the trainer, see what they are what they notice, and tell them what we saw, and have a discussion with them, reminding them of the potential that they may have suffered a concussion, and we believe they should be removed from the game. So, I think just again, having a conversation with the coaches along with our officiating crew. (P9: notifying bench of removal)

if you're making an impact, call the one side is going to be riled up. And you know, the other side that, you know, I've always I've always said that way. It's like, if I remove somebody due to an injury towards the head, and I'm assessing a major, why is this person that is injured to their head, allow an opportunity to continue to play? That doesn't seem safe or right to me. And I think and I've had coaches, and teams in the past get upset, because that guy's back on the ice. He's their best player, my guy got my guy got kicked out of the game. And then, you know, it's caused a lot of higher emotions. And I think it would maybe bring it down if the other team sees, okay, well, if one side, I'm getting a major, my guys getting removed from the game. They're guys getting removed from the game due to safety, it could maybe bring things down a little bit where they see a kind of give and take, right. (P9: removal of injured athlete eases tension due to related penalty call)

Well, usually they usually, they leave the game, I guess. Like say, if they're feeling unwell, I guess they would leave, and we would have to fill out a game incident report, depending on how they got the concussion. And what have you, [intelligible] Yeah, we've taken from there. (P10: officials' current response to concussions)

Not really, in my experience, no, no, usually the coaches you should take over. (P10: officials' current response to concussions – coaches job)

Um, well, I would probably approach both. And I would say, say like, are you feeling, okay? Or do you know, you know, you don't look like you're really well, and I would ask him if you knew, they should leave, or I'd ask the coach that as well. I'd say that, you know, I don't think one of your players is really well, (P10: notification of bench)

Ah, okay, yeah, so what I would say is I'd say that I noticed that when your players are injured and because you know, he may pose a risk to you know, himself by continuing playing and others we have to remove them. And we have to make that determination. (P10: notification of bench of removal)

Why don't we have consistency? [laughing] (P4: lack of consistency among branches)

the same book. (P4: in reference to lack of consistency among branches)

No, you travel from one end of Vancouver to the other. So, from downtown Vancouver to say Chilliwack or Hope, and you will see a different standard of the, of the enforcement of the rulebook, let alone travelling from Vancouver into the interior of BC, right? These are all under one branch, right? Where the training is coming from one central entity, theoretically. But you know that, you know, the goonery that you see in the interior is nothing I mean, we'd be we'd be throwing kids out left and right in the Lower Mainland, if they did that. Down here. So, yeah, consistency is not what we, we aspire to it, but we don't have it at the moment anywhere close. (P4: barrier – inconsistency among associations in the same branch – how officials are told to call the game)

Yeah, yeah. No, I know. I've seen I've seen multiple branches across the country, and it's incomparable for the most part it is. (P5: inconsistency among branches)

Right off the bat and standardizing it Yeah, standardizing it across the country is always a challenge. We see it anytime a new rule is implemented, causes differences in how it gets implemented in BC compared to people I know in other provinces. (P7: barrier – consistency between branches)

Ontario's is it's a different animal. It's a it's very structured. And but like, like there's, you'd have U18 AAA coaches here that are getting paid handsomely. Like when you go into the GTHL I don't ref in the GTHL, but the coaches in there. Like they're probably making a good, you know, 40-50 or more a year to coach that hockey and they're there to win. A lot of coaches and at that level here, it's a steppingstone to get up into coaching Junior and working their way up there. (P8: differences between branches and leagues)

Yeah, I mean, because, because there are different rules even within different leagues. So that's something that needs to be presented in some form. (P9: barrier – inconsistencies among branches)

Yeah, I mean, I guess it would just be through to the training that happens every year. I do know, like parents also go through like, we tend to be respect in sport programming that is involved with hockey. And I believe that's an every year thing as well. So maybe attaching it to that or having a yearly module would have to remind themselves, what is expected. (P9: training needed – parents add to RIS)

I don't think so. I think majority of the league's run very similar in this area in certain areas and I think when it comes to player safety implemented throughout all the leagues, and it's all well known like you got leagues interacting with different leagues right and you know, how different rules sometimes get passed? You know, give me example like the whole neck guard thing. Some of the answers some of these can come and not play the neck guard and then others are kind of important I think this is like say checking from behind like that's something that is just known that all leagues are aware of and I think this is again presenting the idea of safety especially because the game has become a lot of faster these incidents can happen a lot quicker and seen examples that a lot of the leagues can be on board with all of them (P9: differences in rules in leagues and associations)

you know, you would have to be very confident official to, you know, maybe it's in the final of a tournament game, and this is their star player, but he got absolutely annihilated. And you know, he's not right, it would be very difficult to remove that player from the game, knowing the impact that it would have. (P3: barrier – impact of protocol on game)

you can imagine the potential for debate and discussion from the benches if you are removing a player from the ice and if that removal causes is for the game, right rather than hey, you know use the NFL as an example I'm sending this player to the blue tent to be examined and they can come back if a if a medical professional says it's okay. if you're removing them from the game that can have a competitive impact and runs the risk of being polarizing for coaches and making the work of an official harder than it already is. (P4: impact of protocol on game)

The only other thing that comes to mind sometimes when we're talking about this idea of assessing concussions is that I've been in some tournaments, where there really or games where they're really concerned about time. And so, they're concerned about the length of time the kids are on the ice, and holding up the game. And I feel like sometimes the assessments don't occur because they're in a rush. And I know, I have different times specifically, I'll say to the trainer, I think you need to call the ambulance. And I've actually had other officials get angry at me for that. (P1: barrier - ice time issues)

I've been not the head official, so I'm the linesman and I'm, I'm in a game and it's like, based on my knowledge of mechanism of injury, I'm like that person who's not getting up is likely really hurt because I saw what happened to them. And I think we need to get, you know, additional intervention. And then I have the head ref ticked off at me because I'm making the tournament get behind and or the game get behind. (P1: barrier - ice time issue)

Right. So that's actually another area we didn't discuss about this whole implementing it by the officials. But there is a lot of there in the cities, especially the games are very short, they have very little ice time. (P1: barrier - ice time issue)

it's just that. So, I do feel like that whole idea of time and then applying it and making sure that we don't take hockey away from the other kids who were there by doing too many assessments is also going to be an additional tricky part we didn't mention in any of our other discussions. (P1: barrier - ice time issue)

### Appendix C: Quotation List: Theme: Officials Knowledge of Concussions

Theme	Sub-Theme	Coding Labels
<b>Officials Knowledge of Concussions</b>	<b><i>Knowledge of Signs and Symptoms</i></b>	<ol style="list-style-type: none"> <li>1. Recognizing concussion signs and symptoms</li> <li>2. Knowledge of concussions comes from being a coach</li> <li>3. Officials' ability to recognize signs and symptom</li> <li>4. Mechanism of injury indicator of injury</li> <li>5. Ability of officials to see signs and symptoms</li> </ol>
	<b><i>Official Comfort in Recognizing Concussions</i></b>	<ol style="list-style-type: none"> <li>1. Official comfort in recognizing concussions</li> <li>2. Officials can recognize but not diagnose</li> <li>3. Comfort in recognizing MOI over signs and symptoms</li> <li>4. Personal knowledge increases comfort</li> <li>5. Confidence is based on current knowledge</li> <li>6. Familiarity with players influences comfort</li> </ol>
	<b><i>Officials Dealing with Specific Injury Situation</i></b>	<ol style="list-style-type: none"> <li>1. Personal experience with on ice situation</li> <li>2. Situations they wished they handled differently</li> <li>3. Personal experience with concussion</li> <li>4. Reaction to suspecting a concussion</li> <li>5. Current response to concussions by officials</li> <li>6. Officials concern about players health</li> </ol>

### Sub-Theme: Knowledge of Signs and Symptoms

Okay. Possibly loss of consciousness, um dizziness, ah complaints of feeling nauseous, um being uncoordinated. um Being um like, cognitively impaired mildly, like not able to answer questions or disoriented. (P1: recognizing concussion symptoms)

but it may be, I guess, if you if like a player may have lost like, ah consciousness, but also, I guess, sort of, like one of the possibly like, a big telltale sign would be, like, if they're disoriented, it's like going off the ice or like, kind of, even if he like, looked them in the face, and then their eyes are sort of like is glazed over? Like they're, they're not ah, I guess, all there, and I guess not like they're not functioning, I guess properly. (P2: recognizing concussion symptoms)

Yeah, like you usually, if you wouldn't really the player really wouldn't probably say you could probably ask them but like, truthfully, they may not sort of answer like anything like correctly and usually, like, it may be like, if somebody is like laying on the ice, and if you're close enough to them, you may ask them if they're there all right, if not, (P2: recognizing concussion symptoms)

Kind of like deadpan face? Not really sure where they are wobbly on their feet, maybe pale skin, a headache, signs of nausea perhaps. (P3: recognition of signs and symptoms)

What would my level of comfort be? I mean, we, as a head coach for minor hockey, we take that Concussion Awareness Training as part of our training. (P3: knowledge of concussions comes from being a coach)

So, it's an online video with some different tutorials on what to look for and how to recognise it. Again, there's a process there where you're, you know, you're asking a series of questions to those players, when they're on the bench, if you suspect they might have sustained a concussion. (P3: knowledge of concussions comes from being a coach)

Well, like I say, you're given the tutorial, the online training for that. (P3: knowledge of concussions comes from being a coach)

Well, yeah, concussions always a challenge, right? I think you would, you know, the major ones like loss of consciousness would be one, glassy eyes, instability and in skating, if they're moving on their own or under assistance. (pause) I think those would be the obvious ones. (P4: officials' ability to recognize S&S)

I mean, you can have some secondary ones like vomiting, generally not on the ice, right? That's not necessarily something an official would see. That's more of an after the fact. (P4: S&S knowledge but not in officials not able to see)

But those kind of three other ones would be the ones I might look for if I was if I was so inclined. (P4: official want to recognize concussion)

You know, certainly that there's it's rarely a surprise to me if a kid comes back with a with a diagnosis of a concussion after the fact like, okay, I know exactly what play that was where that happened. So, but I'm never always correct. Oh, man, that that was a bad hit, that kid's gonna have a concussion for sure. And then he's back on the ice the next day and nothing's happened right. So, it's, it's, it's, this is a tough one, right? Because something that's a for sure concussion in one kid is nothing in the next kid. And in you know, you can never know for sure, (P4: differences in individuals makes it hard determine if concussion occurred)

you know, you the loss of consciousness, the wobbly legs, the you know, the kind of inability to focus on what they're doing glassy eyes, (P4: recognition of S&S)

Usually fogginess general, like general fogginess and their behaviors or in their responses and the way they condone themselves. Dizziness is another one. I mean, the obvious ones are just being knocked unconscious (P5: officials recognizing S&S)

those are probably the three main ones that I I'd say are the most frequent (P5: officials recognizing S&S)

You know, the main thing is a big hit. Obviously, any big body checks or collisions that anyone whenever anything suspected. (P5: MOI as indicator of injury)

Oh, yeah, it's something that we discuss in our, in our meetings and in our player safety meetings and stuff. (P5: acknowledgment that MOI is not always big hit)

and of the potential for the different the different causes, I guess, for concussions and stuff I know what's not only on big checks and stuff like that, any you know, just the high-speed sport just swirling your head around in a helmet isn't good and stuff like that. You know, the little scrums guys getting punched in the head, I mean, they say punched in the head and saying it sounds worse than then I guess what I what it's judged as by the majority of people that are around the game, but it definitely has an effect as well. (P5: MOI that can cause concussions in hockey)

Um, I would expect to see grogginess. Obviously not getting up from a check, er, whatever the play happened. You know, obviously dazed a little bit, (P6: officials recognizing S&S)

I, I guess I'll use it, use some examples where I've seen, you know, player gets hit, and, you know, when they go down, they do the old wave or whatever. So, I've seen some of those happens. So that that's kind of

when I know that there's a, an issue more than just a sell or. You know, faking, faking an injury kind of thing. (P6: ways officials differentiate between faking injury and actually hurt)

And concussions affect everyone differently. (P6: officials' knowledge of concussions)

As an official, disorientation, often, you know, guys will be holding their heads and seeking attention from the training staff, (P7: officials knowledge of S&S)

was kind of the big ones in the moment when you see a collision that leads to what appears to be a head injury. (P7: MOI indicator of concussion)

immediate cognitive impairment. You know, the extreme example in the moment is the player doesn't know what rink they're in, what the score is, what their own name is. (P7: officials' knowledge of S&S-cognitive)

You know, you see players that also kind of lose their ability to have motor function can't necessarily skate off the ice or things along those lines. (P7: officials' knowledge of S&S – physical)

Usually the dazed and confused (P8: officials' knowledge of S&S)

like after a big hit or contact, (P8: MOI of concussion)

just seeing someone get up usually slowly look around or the go to get up and fall back down type thing and just not have their bearings on with them. (P8: what S&S officials see)

Um, well, the hit with a puck, (P8: MOI of concussion)

So, it's any I guess, any impact or fall not even on their head, like just you can see a player falls hits the ice hard enough just even on their fall down on their butt. And just that the compression from the spine going up, to get it (P8: MOI of concussion)

But there are signs that I think you can, you can pick out right away that you can see the major ones are obviously really easy to see, but just some of the minor ones the ah what's the word, so we're like word slipping my mind not the aggravation, but the frustration they might be showing, like immediately, (P8: officials' ability to recognize S&S)

Well, any sort of, first of all, if they grabbed their head, that'd be my first indication. I can tell like, you know, that they kind of like go like that. They will also you know, kind of feel a little dazed, they will be have like droopy eyes, maybe, maybe, some tiredness. They may be sick, depending on the severity, stomach aches, vomiting, anything like that they start feeling sick. complaining of headaches. Yeah, I think those are some signs I would see. (P9: officials recognizing S&S)

Well, I would expect him to see him kind of dazed and confused, I guess, like, you know, like you do the finger test on them and see if they, know how many fingers you're holding up, I guess. And if they show that, if they can't really tell how many fingers you got hold, then that'd be a sign that they may have a concussion. (P10: officials' knowledge of S&S)

And I guess this like, witnessing what happened, I guess you would evaluate yourself what the impact of great impact was, as you know, if they get checked, or if they fall down or something like that. So [intelligible] (P10: MOI indicator of concussion)

### **Sub-theme: Official Comfort in Recognizing Concussions**

I would say I have a fairly high level of comfort in recognising concussions. (P1: comfortable in recognising concussion)

Well, I guess like some of its like it'd be, I guess it'd be fairly some of its like challenging it sort of depends on like, I guess like the, the situation like if it looks like you know, (P2: official comfort in recognizing concussions)

You know, I'm gonna say maybe a 7 out of 10 (P4: official comfort in recognizing concussions)

So. So I think you can have a good idea of what is likely to cause a concussion. And you could certainly look for signs that a kid has obviously sustained a head trauma, whether or not a concussion has resulted, right, (P4: officials can recognize S&S but not diagnose)

But, you know, you're still going to be to say guessing, but you're going to be using educated theory rather than medical diagnosis when you're removing a player from the ice. (P4: officials can recognize S&S not diagnose)

I'd say probably median, medium. (P5: official comfort in recognizing concussions)

I wouldn't say I've had experience recognizing concussions but more recognizing scenarios that could cause concussions. (P5: comfort in recognizing MOI over symptoms)

So, I think seeing a scenario that could cause a concussion is would be more of a, you know, it'd be definitely more comfortable evaluating a scenario like that. (P5: comfort in recognizing MOI over symptoms)

Those I'd be way more comfortable in terms of identifying them and analyzing them, I guess. (P5: comfort in recognizing MOI over symptoms)

Very low I It's something I'm trying to work on to get better. (P6: officials' comfort in recognizing concussions)

And then just through university doing human kinetics and that like you, you see it (P8: personal knowledge – increases comfort)

and especially playing rugby like not that they're common that you see them every game in rugby, but I've seen enough of them that from mild to major where there's sometimes you just know especially if you know the people like you can tell when they're different. refereeing hockey, you're not always going to know the people. You see different teams all the time. Throughout the season you get you do get to know a few people. (P8: familiarity with players helps increase ability to recognize)

Ah, I would be like personally I'd be able to, to do it. (P8: officials' confidence in recognizing and removing based on current knowledge)

Pretty confident having my own having suffered my own concussions and also, I'm a educator here at a school. I do a lot of coaching. Also personally certified, so I would be able to recognize signs of a concussion. (P9: official comfort in recognizing concussions)

Yeah. I would be (P9: officials' comfort in recognizing and removing)

I'm not really sure how you want me to expend like, I mean, based on what I based on how, again, it would be based on what I've observed, the degree of impact, the situation, the response, and the signs and symptoms from the injured participant that would allow me to make that decision on removing them based for their own safety. Yeah. (P9: officials' comfort in recognizing and removing)

Oh, yeah. I feel comfortable. I'd mean, I think that if I know that they're injured, and they can, you know, they're not playing too full, I guess faculties than I would tell them to they may need to leave or something like that, for sure. (P10: officials' comfort in recognizing concussions)

But I don't, I don't think a lot of officials are comfortable with making that decision. (P1: barrier -official comfort in making decision)

Well, I do think that there's officials that wouldn't feel comfortable with that and they wouldn't want any additional responsibility. (P1: barrier – official comfort)

I think it would be a combination. [pause] And it has a lot probably to do with the kind of like more like the personality or the makeup of the person who chooses to be an official [pause] as to, you know, their comfort level more than and then I do find that there's different kinds of officials like my opinion is, we do have some, we have some officials that are very black and white, regardless of their age (P1: barrier - comfort of official)

I think some of the to possibly, like a barrier, maybe, I guess how, I guess comfortable officials feel trying to, I guess, sort of act a little bit as like a, I guess, in the situation like a concussion spotter. (P2: barrier – comfort of official)

100%? I would say that. (P3: comfort level of recognizing, comes from being a coach)

So probably the biggest hurdle, if you will, would be the confidence not official to make that decision (P3: barrier – confidence in officials' ability to make decision)

Whereas a person who's been doing it for 15 years has to change. It's no different than the maltreatment policy that came in this year. It's, you know, change the way we make those calls and, and the things we're able to call do to it. So, if this was something that was right, from the get-go, I think for sure, there'd be less hesitancy to call it because it would be normal, not a change. (P3: earlier start points of protocol in career increases comfort of official)

I think the first would be obviously the tremendous amount of training and I say tremendous. Like there's going to be hours and hours but enough training to feel confident to know when it's appropriate to remove a player. (P4: barrier – training needed for officials)

There's going to be a barrier around you know, there gonna want to avoid confrontation at times, right? I'm not sure that exactly, I don't really this coach is a jerk. No, I'm not gonna say anything, right. You know, the stronger willed people or more outwardly confident people are going to have more ability to implement this then then, you know, introverts who avoid conflict. And so, I think there's that. (P4: barrier- officials being reluctant)

And apart from that, like we just discussed, I think a barrier would be getting certain officials, you know, I want to say the I don't want to say the average official, but we'll say the below average official with below average communication to get the confidence to the point where it no longer becomes a question of, Do I want to have this conversation, it becomes a question of Is This player potentially injured? (P5: barrier – officials' confidence in making call)

Not at the current time (P6: official confidence in being able to remove athlete)

Small (P7: officials' comfort in recognizing concussions)

Yeah. (P9: personal knowledge of concussions – gives advantage in comfort and confidence)

Do I think I'd have enough knowledge to remove someone? Me? Personally? Yes. (P9: officials' comfort in removing player – comes from personal knowledge)

Yeah (P9: officials' comfort in removing player – comes from personal knowledge)

I would be yes, yes. (P10: officials' confidence in removing player)

Um, maybe, maybe some, I guess, I think there may be some officials who may find a little uncomfortable to do that, I guess, because I guess they don't know how they're gonna react. But, I mean, the more experienced officials maybe probably won't feel as much no. (P10: barrier – officials' comfort)



So, like, say, if the younger official was probably like, say, like, say younger officials generally don't feel as comfortable making these calls. So, like, say if they had the bands on, and you can put like a more senior official on there in the lines, so then they can kind of talk them through and get talking to the process, and I can feel more comfortable a game, situation, I think could be a good step. (P10: pairing young official with one more experienced to increase comfort)

### **Sub-theme: Officials Dealing with Specific Injury Situation**

like you'd pull the blow the play down but I guess I'm sort of like thinking back to like times in the past when you sort of kind of notice things and have a player and it would have been like say I guess like it was like lining a high school game years ago and it would have been like a player got hit and I literally had to sort of help them off the ice because they, they're pretty, pretty out of it to get back into the bench (P2: personal experience – on ice situation)

probably like that time like it was like concussions weren't, ah I guess as sort of I guess were not pronounced but like the awareness about them wasn't as much but sort of like you, you, you kind of knew something wasn't like right with like the player (P2: personal experience – on ice situation)

Um not, I guess, not really, like they're, like, I'm trying to think of any. Like other, other situations, like, that's really the only one that sort of, I guess, stick so I guess, majorly my head? And I'm trying to think, like, usually how I wouldn't say it's usually like, say an injury, one that I'd be like, if I could go back in time, I deal with it differently. It probably, I guess now it'd be more with sort of the things dealing with sort of the cultural changes that sort of that need to occur within I guess sports. (P2: situations they would have handled differently)

Um, I'm trying to I'm trying to think back like, I can't it's probably been so long, like it's trying to like that would have been [pause] like those would have I guess, those individuals now would probably almost be 27 or 28. So it's been probably 10 plus years, even longer, probably 12. So, I can't remember if the athlete came back, but I think it was like fairly late in the game, so I think they might have been shut down for like the rest of the game. (P2: specific situation they remember)

Yeah, absolutely. This year, in fact, I was doing a junior A game, [name of team] is the local junior hockey club and there was a blow to the head, directly across from me on the ice, the player he just had on the dasher and tried to stand up two or three times and kept going down. Wobbly legs would try to stand up and again fell down. And which (excuse me), which time I was yelling at the back referee double whistle blow the whistle because I could clearly tell this player was struggling. And so indeed the play was killed, and the training staff came running out and this player sit down for a considerable amount of time. (P3: specific situation as an official)

Yeah, absolutely. Like, I mean, I've suffered a concussion when I was playing, and, you know, it's just I wasn't right in the head I as soon as I hit the ice, a different sound came in my ears that I'd never heard before. I got up, I went to the bench and mid play for some reason. I grabbed my backup stick and I skated off the ice right across the ice in the middle of the game and left when the dressing room, sat in the dressing room. And I came home, and my wife was like what are you doing home? What do you mean? I had no idea. I shouldn't have been home yet. So, it's but your brain is not working when you've suffered a concussion. So, it's a scary, scary thing to witness. It's a scary thing to go through. And at any cost, we can prevent someone from getting hurt worse than they already are. I'm all for it. (P3: personal experience of concussion)

Yeah, it while it's happened, I would say less than 10 times in the games that I've worked. When I've suspected that somebody might be suffering, I've, I've made a comment to the bench staff to take a look at the player. (P4: officials' reaction to suspecting a concussion)

Yeah, I mean, I've seen a couple of situations where kids been hit and gone up and had the wobbly legs, that you would that you would kind of associate with someone who's taken a real bell ringing as they as they try to get to the bench. (P4: specific instance as an official seeing a concussion)

Yeah, there has been very little response from my part, or from the part of any of the officials that I've worked with, (P5: current response of officials regarding concussions in athletes)

So, I think we do have a voice in that regard. And so I, personally, just with experience, I know of a couple times where there have been discussions between coaches and trainers and officials in regards to players that we suspected to be injured, and there was action taken afterwards, not to say that the player was taken out of the game, but the player coming back to the bench I've witnessed it has had in the event that I'm thinking of anyways, he had a lengthy discussion with the trainer and the coaches, and they deemed he was fine, I guess. And he returned to play. (P5: situation where official addressed bench staff about injury)

and I've seen it happen in the past. And it's, it's not funny, it's not something to joke about it's very serious, and it can be life detrimental. (P6: personal experience with injuries while officiating)

No, not at that time. No, I'm, obviously with experience I. Now I've kind of understood, but not really. It's, it's, it's tough because I've seen lots of injuries. Most of them are just minor, they come back and play. But I have seen a couple situations where players have been carted off ice, non-concussion related. But a little bit of that was concussion prevention to make sure that nothing came about it. Just as again, as a precaution. (P6: personal experiences of official with injuries)

Oh, I mean, yeah, it's happened. It's happened on a few occasions where that's happened. You know, certainly. You talk about players who get knocked out cold during the game or things along those lines that have happened and yeah, stop the play (P7: officials on-ice experience with concussions)

So, they, you don't want to think about them. You don't want to remember them necessarily, but they're also hard to forget. (P7: long term effects – officials' memories of dealing with injury)

I had one incident two years ago, and this was down in like, an atom hockey game, and no contact. And it was the player just he, in contact hockey, it would have been a beautiful body check. But so, the kid was unsuspecting. And like he got rocked. And he went to the bench, and I saw the kid like he was crying, he was still on the bench. And I went to the coaches to do you think, do you think he should still be there and the coach, that's his parent, right there on the other side of the bench, that kid's not playing anymore, but he just wants to be a part of the team, the rest of the game. So, you're just sitting in the Middle of the bench. (P8: officials' specific incident with concussion)

I had one this year. And there was it was a U 18 AA hockey. And it was four-man systems so two refs two linesman. When I was in the corner, opposite of the play of the play was in the opposite corner. I was literally behind the goal line looking directly at the other corner. There's one of the three or four players all bundled up together there. And another player he didn't. I didn't think he hit the kid from behind. He almost rode the kid in from behind, but with no force that that makes sense. Like almost like a bear hug and went into the boards with him. The kid that went into the boards, he didn't even go into the boards. He went into the players and then into the board like there was no force at all. He immediately dropped to the ice. I was I had no idea what happened. I'm like well, I knew what I saw my but my eyes playing tricks on me. Yeah, the other ref was looking at another section of the ice as he should have been. So, he didn't see anything. One linesman didn't see it. The other ones would say oh, you might have had a board there. Like I have. I have nothing. There's nothing that I could think of a penalty on that play. I heard one comment from their team, the bench saying he got railroaded from behind and then nothing. So, the rest of the game that's in my mind and going I'm thinking about the whole thing like how did I miss something like that what did I miss? And after the game, I skate up to the kid and ask them like, like what happened on that play? I had no penalty. He just said oh, you know, I've had five concussions this year. And once I went In there, I just wanted to be safe. So, I went down on the ice. So right away, I'm thinking gee. Like, I kind of wish I would have asked earlier, like in that situation like, hey, are you okay? Like, what happened there? But then he played another two periods in that game. And I know if it was my own kid, if you're playing U18 hockey and you've had five concussions in a year, you're not gonna be playing hockey anymore. It's just it's time to, to move on. But that was one where, not that I would have pressured them to take the kid off the ice, but I think it would have just been, I would have felt better in my mind, if that makes sense. Because you always have this, that thing in your ear, like, oh, did I miss something? Did I miss something? Does this kid hurt because of me?

Then you find out the kid on that play really wasn't hurt. But that's why he went down. (P8: official worrying about players health)

I coached a Bantam team before too. And in the same thing I saw kid, get hit something like that happened, I'll go you're gonna sit on the bench for a bit or sit the rest of this one out. But it's, it's tough. (P8: personal experiences with concussions – as a coach)

## Appendix D: Quotation List: Theme: Required Training

Theme	Sub-theme	Coding Labels
<b>Required Training</b>	<b><i>Protocol Implementation Training for Officials</i></b>	<ol style="list-style-type: none"> <li>1. Training on the task of removal</li> <li>2. Training will be more important than age of official</li> <li>3. Training needed – communication</li> <li>4. Training needed – as to importance</li> <li>5. Training needed – get officials on board</li> </ol>
	<b><i>Increasing Officials' Knowledge and Comfort</i></b>	<ol style="list-style-type: none"> <li>1. Increasing knowledge will increase comfort</li> <li>2. Starting with young officials will increase comfort</li> <li>3. Training needed to increase knowledge and of signs and symptoms</li> <li>4. Current training does not prepare them for recognition</li> <li>5. Training as to importance of protocol and officials' role</li> </ol>
	<b><i>Type of Training for Officials</i></b>	<ol style="list-style-type: none"> <li>1. Type of training needed for officials</li> <li>2. How training should be conducted</li> <li>3. Training needs to be consistent</li> <li>4. Incorporate training into existing methods</li> <li>5. Type of training needed – videos/case studies</li> <li>6. Amount of training would be a barrier</li> </ol>

### Sub-theme: Protocol Implementation Training for Officials

So, I think it may be if there was some way after a certain amount of experience or some extra training or something they made that decision that yes, it would be good. (P1: training on the task)

but I think it's some of it's a lot of it I think a lot of it will lie would lie in the education and resources that are provided to officials because I don't think age [pause] and some sometimes too it could be I guess the skills and individuals have like sometimes age isn't really a factor. Like you could have like an older individual that may not be able, not I guess as good as say seeing younger officials so I think a lot of it I think some of the would be like age and also, but I think the biggest component of it all would be education and training about it. (P2: training provided will be more important than age)

Also, just education on, like the process, sort of how to go about doing things. (P2: official training – removal procedure)

And I guess some of it to would be also like a little bit of education on like the execution, and even like going over different like scenarios, I guess, with dealing with like coaches. (P2: training on the task)

So, it's sort of, I guess, some of it almost leads back to, though, I guess, like an educational component on communication. So it may be, I guess, beneficial for other components of like, officiating. So being able to, I guess, talk to the players and the coaches. (P2: training needed – communication)

Like you need, I guess, training on a little bit on the sort of, in the medical side, the know what the symptoms are, but also, I guess, on the technical side to be able to how to how to deal with that situation on the ice. (P2: official training needed)

So, there's one piece of you want training, you also want training in managing the communication of what you're telling the coaching staff about the player and what the next steps are, right. Here's your coach, I'm removing this player and here's what you have to do as a result. (P4: training needed – communicating with bench)

with the proper training with the proper training, (P4: training needed - to make officials capable of removing)

And so, I think, I definitely think training would be required, if something as important and as you know, as valued as player safety and concussions, especially if we were given that you know, that power, I guess, sort of a bad word, but I definitely think training would be required. (P5: training needed for officials- do to importance of the task)

I mean, the first one would have to be the training, I think once the training would be under the what or out of the way, and people had a, you know, a better idea of what they were looking for. (P5: barrier – training needed to get officials on board and ready)

I would say without further training and should not fall in the officials at all. If it were to fall in the officials, then we would require training specifically to do so (P7: training needed for officials)

and maybe through training courses, I know we have to do as referees, we do a module certificate recertification every year, we can be part of that we're understanding that we have the authority to make these decisions based on what we observe. (P9: training needed – officials on new rule)

### **Sub-theme: Increasing Officials' Knowledge and Comfort**

I think adding on a review of the symptoms, and also um linking probably that um mechanism of injury idea to some of the videos that we already watching our official training. So, when we're training um yearly, we always watch videos to talk about making a call on whether or not it's a penalty. So if we just added some more um videos, where people were concussed and you know, how they went into the boards, or how the collisions or whatever the incidents occurred, I think that that the officials could easily be trained to understand that there's a high risk of concussions and in certain situations, and then then if you um remind them of the risk, and then you add in a better understanding of the symptoms, (P1: training needed to increase knowledge of officials )

And then, you know, how much risk there is of concussion based on what happened to the kid. Right. And, and, and making sure that that's included in the teaching to understand, okay, when they collide in this way, this is what's happening to your brain. And this is why we're checking for these symptoms and why they're, they're significant, you know, in this case, because there's, you know, there's a really good chance that something happened to their brain and not in that incident. (P1: official training - specific education as to S&S for MOI)

I guess, like it all I, a lot of it, I guess would come down to like, what kind of training I guess would be provided to be able to, I guess, yeah, I guess training and education of like, the, the signs. (P2: training needed to increase knowledge)

no not at all like you wouldn't be prepared like. (P2: training – current training does not prepare officials to recognize)

You're like there isn't any I guess I need training on like say concussions, a lot of the training now is I guess just dealing with like rules and procedures and positioning and I guess the, the technical tactical side of things of like officiating. (P2: training – current training does not prepare officials to recognize)

So, it's, I guess, learning about, like, what would be the different signs and the things to look for. (P2: official training – specific education on S&S)

that may be able to, I guess like outline things a little better and like talk about, I guess the different, I guess symptoms (P2: official training – specific education as to S&S)

and ways to be able to, I guess, diagnose or sort of not make the assumption but to see that there possibly may have been like a concussion with an athlete. (P2: official training – recognizing S&S)

Yeah, I mean, I think with the right training and tools given to them, they would be able to make those determinations. (P3: training needed to improve officials' knowledge)

I don't know if it's a BC hockey thing or a Hockey Canada deal. But you know, that gave you some very basic information on how to recognise concussions, signs and concussions and things like that. So, you know, at a bare minimum, that would be a good place to start. (P3: training needed – officials on S&S)

You know, it's how do you get them past the belief that this makes their job harder? Right, versus delivering on the kind of underlying mission of officiating which is safe and fair. Right. How do you link this back to safe and fair, and this is part of your mission as an official? (P4: training needed- officials on why this protocol is important and in their role)

recontextualization of the role, the mission of the official, where safe and fair is, is kind of rebuilt from the ground up. So that it's not just a slide on a deck that you see once a year, but rather the overarching understanding of what you're stepping on the ice every time you get skates on. (P4: training needed – officials on the role of official)

For sure Yeah. Yeah, I think they're, you know, some of the key identifiers may not be known or may be sort of a little ambiguous to the most, to the large majority of officials. And I do think that a lot of officials wouldn't know, what to look for wouldn't know how to apply what they're looking for. (P5: training needed – officials on S&S)

I think they need one for officials that separate more than the fact of you know, as an official, how would we handle this situation on the ice coaches, the coaches, one that we get is pretty much generic, like, you know, concussions, bruises, different other stuff. Whereas I think officials would, I think, would be a lot more assessment and stuff like that, if we were to get to the point of having that responsibility to, you know, be able to say no, you got to get off the ice suspected concussion kind of (P6: training needed – recognition of S&S)

A little bit of both? I'd say split up the day where you're first talking about prevention. And then the second half is how to handle how to deal with that situation. (P6: training needed – recognizing S&S and removal protocol)

And we would have to learn the signs symptoms. (P7: training needed officials – S&S)

And you can do that with you know, this is what a concussion looks like, this is how we recognize it. But yeah, without proper training, I don't think it should be implemented for officials the way it currently, Wise. (P7: training needed – officials' recognition of S&S)

I think without further it could fall under that guise. But it would require further training and to launch a program to train officials into recognizing that (P7: training needed – officials' recognition of S&S)

Now, could there be training provided to make that better? Probably. (P8: training could change officials' ability to recognize concussions)

but if they had if I have this rule it would just help out that reporting more, but it would take I think more education and then just you know the 30 minutes slideshow you watch every year (P8: training needed- increase officials knowledge)

Um, so obviously, understanding what to look for, with a potential concussion, what you may see. (P9: training needed officials – S&S)

I mean, even video examples, that there is examples of a student or an athlete getting hit in the head, what if this would be considered a concussion? Yes. Give you certain examples so that people can, you know, see what kind of impact could result in a concussion cuz I think some officials, or a lot of individuals don't even realize what could cause concussion, it doesn't necessarily have to be a direct blow to the head. You know, that could be concussion from whiplash, a fall, things like that, right? So, I think understanding where could work where it lies where potential protection could have happened. (P9: training needed – MOI)

I think maybe having like clinics, I guess maybe, I guess to notice signs and symptoms of people who have concussions maybe would help. Because I know there's some people who may, you know, not feel comfortable telling kids to leave or something like that. So maybe having like a clinic, I guess would probably help some people recognize symptoms and stuff. (P10: training needed – increase knowledge of S&S)

Oh, like, say experience with like, more senior officials, I guess and medical people who like have experience with concussions and sports injuries and stuff like that. So that we, you know, we can, I guess have the proper training to recognize when a kid is injured or have a concussion or something like that. So, yeah, likes that kind of that kind of thing. (P10: training needed – increase on S&S)

So, um I think there needs to be some sort of additional training for the officials to make them more comfortable with it. (P1: need for training to increase comfort)

like what, you know, after this kind of incident, crash collision, occurred, you know, this would be what we would be looking for with, with the, the child, I'm gonna say, child, because they are U18, then that would, I think, help the officials become more comfortable? And I think it's possible, I don't think it would be that be that hard to add that information. (P1: increasing knowledge of officials will increase comfort)

but if it was, I guess if as an as an official if I had like the proper training and education about it, I'd feel like fairly comfortable doing it. (P2: increasing knowledge of officials will increase comfort)

So, to have the confidence and have an as an official to make that would be I think the biggest hurdle is, you know, getting that first one where you say, No, I'm not going to let this guy continue. So, for me, the biggest hurdle would be giving our officials enough confidence or, yeah, yeah, giving them enough confidence to be able to step up and say, I'm not gonna let this guy continue. (P3: training needed – increase official confidence and comfort)

So, you know, you know, I almost want to say this is like Richard Thaler kind of thing, right? How do we find the nudges? The behavioral economic approaches to, to changing people's minds around concussions that will help them you know, 60% of referees in Quebec are already calling this, you know, you should get on board to making this happen. (P4: how to increase officials' comfort)

then it sort of tends to fade away a little bit as it becomes an afterthought, not saying it, it would go away. But it would become, you know, sort of a natural response from officials. So, the training would be huge. (P5: training needed – increase comfort of officials)

I'd say a lot more training. Obviously, we have our ref courses that we take to certify us. But I think adding a little bit more Concussion Awareness programs just to help Everyone understands. Even if it's just the basics, you know, what is a concussion? What are some simple signs, stuff like that? So, a lot of a lot of extra training. So, it gives officials a chance to ask questions, be more aware, be more comfortable, if a situation of like that was to arise. (P6: training needed for officials)

Yeah. Yeah. Like I said, the online module a day training course, just to review all the all that stuff. (P6: training needed – to increase officials' comfort)

I think knowledge is the biggest one. To? Yeah, I think it's simply we don't have the training and the knowledge base to make an informed decision in that, (P7: training needed – to increase officials' comfort)

Whereas if you step in, and that's all you know, then you wouldn't know in any other way. (P7: benefit of starting level one and young officials off with protocol)

### **Sub-theme: Type of Training for Officials**

Um, I think so. It depends on the person, I think the initial training. So I've been an official for a very long time. So online training was never an option. When for the longest time, we did it in person. And I feel that

in the beginning, for several years, I think in person training is the best. (P1: type of training needed for officials)

And then once you have more experience, I like the mix the mix of online like review that we have to do. So whether that's watching videos and doing tests, as well as doing some type of in person clinic, they've had to do it through zoom, but usually for in Manitoba, our level three officials will have a short clinic with people where we will discuss together scenarios, and you end up having some conversation. (P1: type of training needed for officials)

And it's almost like case studies is the best description, you know, maybe play a video, and then discuss what you think about it. And that kind of um case study scenario, especially when they've done any rule changes is, I think, a very effective way to learn. And so I can envision us doing the same thing about concussions. (P1: type of training needed for officials)

[long pause] Hmm advice or come, I think my advice already was to try to train it through kind of that case study idea. (P1: training needed of officials)

I think so. (P1: how to do training, in response to adding onto current training)

I think probably a combination of both would probably be sort of best, like a little bit of I guess, like you do the online modules and information beforehand, and then say have possibly like the Zoom call, (P2: how to do training for officials)

Like, I think it probably could just be like a separate section within I guess, like the, the recertification clinics. Like it, or you could do it as like an additional, like session, like, but it all sort of like, it's not, I guess, at the end of the day, I get with, like technology and different things. Now, it's fairly easy to, I guess, do sessions. So, it's not all of it doesn't sort of need to be in person like either. Like he could do like an online module with it, or, I guess in our situation right now, like even like a zoom call with an instructor that that has a group of people trying to lead them through it. Like, I guess, like right this year, you could sort of use the example like what we had to do with the changes to the Hockey Canada rulebook with the maltreatment section like we've, I guess, here, like we did individual, not individual, but like group, Zoom calls, to make sure that that information was relayed to officials before they, I guess, either did the recert or when I went on the ice (P2: how to do training for officials)

Um, I guess like the, like sort of the probably one of the I guess my top three is probably I guess like the educational side of things like making sure that I guess everybody is educated and receiving, I guess the same level of education on it, (P2: official training needed – consistency for all)

Like I said, we take the I think it's a CACC Concussion Awareness Training or maybe it's the CAPC something like that. It's a online program that we're ready to take here. (P3: training already available – coach concussion course)

I'm sure it could be rolled right into the recertification process and initial certification for Hockey Canada referees (P3: training needed – how to incorporate into existing training)

I'm a proponent of in person because you know, you get that one on one. experience, you can ask the person a question in a controlled environment where you're online, you know, some people might not take it serious enough, just hit play, and then you know they're on their phone messing around, because it's a requirement they have to do. Whereas in person, you can, you know, really tell if the person's engaged if they're actually learning and you can focus more on, you know, questions that they might have an answer them. So for me, if there's ever an opportunity, it's always in person. (P3: training needed – type of training course)

I think, I don't know about a weekend, but I feel like it could probably be done as a separate module. Online, right. On the time of the official to execute much like hockey University is done with an inclusion of reminders or kind of additional messaging within the recertification live environment (P4: training needed – type of training)



I do think video is going to play a key role in you know, it's always hard right because the video for minor hockey is always bad from a distance and grainy. So you know, how do you help the official because they're not seeing the same thing as they see on the ice but yes, I think the example after example, after example of hard hit, not a concussion hard hit, not a concussion, hard hit high risk of a concussion, hard hit, moderate risk of a concussion, so that, you know, the official start to develop an experience level with seeing what we would classify as you know, this kids out, you're going to have to use some judgement in this middle pillar about whether or not you're going to send them off, and these kids get to keep skating and you shouldn't worry about it, I think would be a critical factor and in quality. (P4: training needed – videos)

In person is always better. (P5: training needed – type of course)

You know, I think, I think anything where there's the people being given the training are required to interact with the trainer or the, you know, or the people that are instructing them. Because from personal experience, we have some online walkthrough courses, and I can promise you that they don't get the entirety of our attention. And so, anything with player safety in mind, you definitely want the officials to be attentive to the discussion or the instruction that's being given to them. (P5: training needed – type of course)

That'd be the first barrier, I think, is getting everyone up to speed. (P5: barrier – amount of training needed)

I'd say a mixture, like I'd say, you know, have an hour, two hour, pre online module thing you have to take. And then I'd say have like a classroom session, like you said, whether a Zoom meeting or in person, whichever. Just to give you a background, and then it gives then to have a course where you're sitting in and having you know, somebody, a guest speaker, or guest speakers, sorry, and instructors there to help guide you know, maybe review the review the online module you took and then add more like give an in depth so people understand further on it. (P6: training needed – type of course)

Um, I would say case studies, obviously life examples. (P6: training needed – use of case studies/videos)

I mean, you know, I don't, I don't like using it, but early 2000s The Todd Bertuzzi, Steve Moore incident, you know, stuff like that, obviously, we're trying to get out of the game of hockey and we've done a good job, our Hockey Canada and has done a good job, mitigating that stuff. But that's a prime example of a concussion. That's, that's lasted for years after the fact. And obviously, that's a scenario where it doesn't like to be talked about, but it's, I would say it's a good example to express the severity that concussions can have and that both the short term and the long term effects that they have on an individual player (P6: training needed – use of case studies/videos)

It would have to be some kind of basic first aid or and then something that's been discussed at times in the past is having is having some kind of basic first aid available for officials. (P7: training needed – officials first aid)

In person? Yeah, in person, (P7: training needed – type of course)

and something that would be a certification based thing to, you know? Definitely something that would have a testing element involved even. (P7: training needed – certification)

I don't know how you do an application part of it as well. But in the more hands on we could be (P7: training needed – practical situations)

I think doing it self guided leaves too many holes and potential miscues or not paying attention, or what have you done, though. (P7: training needed – type of course)

Well, I mean, it's built into the officiating curriculum already. You start out as a level one official, and you work your way up the rankings. And the higher your level is, the more in depth the certification process is we do it yearly. So you could probably tie something into our existing clinics. (P7: certification process)

If that if that were to be a program that were to be launched, but I would Yeah, it would be the same thing we do now, where you ask a question, with this rule. What are the four circumstances that could be applied? It's a random example. (P7: training needed – case studies)

do an in person clinics will help again, I think that's been a real challenge. If you use maltreatment as an example is, you know, with the pandemic going on, everything's been done virtually this year. I think they've done a good job overall, over the course of the years when there's real emphasis and in rule changes. (P7: in person training is better when implementing major changes)

I think well the biggest thing would be proper training of whoever is implementing this. (P7: training needed – officials)

training for the for all referees (P8: training needed for protocol to work)

Selfishly I prefer the online stuff now because I've been reffing for 20 years and like I don't need a classroom session to go listen to all the older gentleman gripe about. I've had this situation this situation it's just nice to do it on your own and get it over with, but I think especially if they put a new rule in with this, I think a classroom session would be vital for it to be successful. (P8: type of training needed)

Just to show just show it and even have I think visuals of like not just NHL player stories that careers were ruined by concussion, you know, like are your Eric Lindroses your Mark Savards, but go out and find you know, John Smith, who was in grade 11 that had a concussion and now he's 19 and he's still in grade 11 hasn't graduated yet because he can't stay up keep up with his studies. There was as we all see what happens in the NHL, you know, it's all over Sports Center in the morning. But it's seeing Okay, well, we're doing minor hockey. We might never see that minor hockey team again in our career. But what happened to that one kid that got smoked in the head that night? What happened to him after so seeing stories like that, I think would help it (P8: training needed – real life testimonials)

Same training for everyone involved. Maybe on the official side, you go a little more into the rules and like what rules what to do after the fact when you call it but the general this is the rule that we're instituting show it to everyone and make sure everyone's fully trained on it. (P8: training needed – differences between officials and other stakeholders)

I think I think it's every everything's going to self guided online these days. So it's kind of difficult to do an in person would an in person. I mean, getting first aid certified, I know they give you that kind of instruction as well. On what to observe, that could be a recommendation. And I think even doing a little bit of a, like a quiz, like not an exam, like another example, like a module quiz, as you're going through it to make sure you're understanding what's being presented. (P9: training needed officials – show knowledge gained)

I think probably in person, because you can actually do drills and I guess, more hands on skills in those situations, because that is a hands on kind of thing. Like to recognize when kids are injured and have to act quickly. And, you know, ask them to leave and what have you, I don't think you can really do that as well on line (P10: training needed – officials hands on training)

Yep. Yes, I do. I think I think there's multiple benefits to begin from, from that training. You know, if you added a little communications training with it, how on how to approach the coaches in the event, you know, a player that you suspect is injured? I think any anytime there's training involved, there's more than more than one benefit for officials. I don't think it's always a direct benefit for the intended reason. I think there's always something to be taken from any training session that isn't the intended message. So yeah, for sure. (P5: benefit – training would improve officials communication skills)

Yeah, for sure. When I know when they first introduced head contact rule, that's what it was, the vast majority of it was video breakdowns and real plays that happen real scenarios. And even to this day, the vast majority of our meetings that we have our video meetings, just showing stuff that occurred, what happened, what went wrong, what should have been called and those are always the best things to learn from. Just because it's you get the visual, just visualizing it and seeing it the way it plays out in the way you

know, the way people expect you to, to understand plays as they occur, I think it's it would definitely, definitely be a positive thing. (P5: benefit – training would make officials better at recognizing all situations)

## Appendix E: Quotation List: Theme: Barriers

Theme	Sub-Theme	Coding Labels
<b>Barriers</b>	<i><b>Officials' Knowledge of Concussions</b></i>	<ol style="list-style-type: none"> <li>Barrier – official knowledge of concussions</li> <li>Barrier – distinguishing between signs and symptoms and player ability</li> <li>Barrier - amount of learning that needs to occur</li> <li>The variety of officiating levels within hockey levels where protocol is needed</li> <li>Differences in officials existing knowledge of concussions</li> </ol>
	<i><b>Officials' Response to the Power and Responsibility</b></i>	<ol style="list-style-type: none"> <li>Barrier – officials' use of power</li> <li>Protocol becoming game management tool</li> <li>Barrier – officials not wanting responsibility or power</li> <li>Barrier – officials fear and reluctance</li> <li>Officials not understanding role</li> </ol>
	<i><b>Stakeholder Behavior and Knowledge Regarding Concussions and Rules</b></i>	<ol style="list-style-type: none"> <li>Barrier – coaches' behavior</li> <li>Barrier – parents' behavior</li> <li>Barrier – players' behavior</li> <li>Barrier – stakeholder behavior</li> <li>Behaviors will improve</li> <li>Barrier - Focus on winning</li> <li>Barrier – Coaches using removal as game strategy</li> <li>How to manage stakeholder behavior</li> <li>Bench staff response to officials'</li> <li>Level of play and coaches' behavior</li> <li>Stakeholders' lack of rule knowledge</li> </ol>
	<i><b>Geographic Location</b></i>	<ol style="list-style-type: none"> <li>Location</li> <li>Urban vs rural (size of community)</li> <li>Location and lack of knowledge</li> <li>Official officiating in more than one association</li> <li>Differences among branches, leagues, and associations</li> </ol>

### Sub-theme: Official Knowledge of Concussions

Um, yes, definitely. (P1: barrier – official knowledge)

I see, the other thing would possibly, I guess, training depending on like, the level of training that's provided, I guess, to like the officials. So it's sort of, I guess, for that is trying to have tried to make as much of the training sort of standardized to make sure that all the officials are receiving the same training. (P2: barrier – official knowledge)

But it might be more difficult at the lower level, just because, you know, the players are more unstable all the time. (P3: barrier – being able to distinguish concussion S&S vs player ability)

Why I can't see why it would be, it would be a difficult thing to implement, and, and hard for the first couple of times when you're when you're going to make that call. (P3: there will be a learning curve for all involved)

There is in my understanding of concussions, there is a lot of grey area, if you'll pardon the grey matter pun, where there's, you know, the amount of research that's ongoing into concussions and what causes them and how to recognize them and, and, and is, is ongoing, and there's new learning being developed all the time. And how do we keep people up to date on the best methodology for identifying and managing those situations on the ice, (P4: barrier – keeping officials up to date on changes in concussion research)

refs walked into maltreatment already feeling like maltreatment was a problem, and we wanted it solved. Right. So I don't think there well, I shouldn't say there isn't resistance there is, there are certainly guys out there who will say, its always the guys. You know, I don't call maltreatment very much, because I think we have to have thick skins as officials and I'm like, Yeah, but you're 40 years old? And why is it okay for someone to yell at you and then go, then then think it's okay, that they come in you on a 16 year old who doesn't have the same more, you know, emotional capacity to manage the [unintelligible] (P4: in relation to : barrier – officials not thinking concussions are an issue)

Yeah, (P6: barrier – officials knowledge of concussions)

but I still wouldn't think that I would recognize the signs and symptoms and a game. It's not where our training lies. (P7: wouldn't be able to recognize concussion based on current training)

and that there's my fear of be too large of a margin for error. For those of us who aren't trained in first aid to now be attaching first aid is part of our role. (P7: barrier – official knowledge and fear)

The lack of knowledge most officials for it, I think that's the biggest challenge. (P7: barrier – officials lack of knowledge)

Yeah, again, the challenges of implementing it would be higher because you're gonna have a wide scope of who your officials are, and, I think it opens new challenges. (P7: barrier – level protocol is needed has wide variety of officials who work it)

I think it's no different than any time rule change happens. You see the first year officials take onto it because they've never known anything different. And you know, those of us who are more experienced I can think of some I've done myself where you miss call it for the first month or two. So, you know, sometimes such a more drastic change would definitely have some of us that would be hesitant to adapt to it for sure. (P7: difference in experience of officials in adjusting to new protocol)

Yeah, without having that in depth of background knowledge to it. (P7: officials not have the knowledge needed to design protocol)

I'm not sure, that's a tough I, you know, as an official, I don't think I have a lot of understanding. (P7: barrier – knowledge of officials regarding concussions)

No, I would say very minimal. (P7: barrier – knowledge of officials regarding concussions)

Yeah. (P8: Rowans law – putting Ontario officials ahead in knowledge)

### **Sub-theme: Officials Response to the Power and Responsibility**

Yes. Right. Because there's art and science to it. And then in officiating. I feel like it's the same thing that there's an art to officiating as well as like your actual science or concrete understanding of the rules. So that's where I just feel like it could go there's some officials, I'll just be honest, they power trip, there's some officials that they want to be in charge in the boss and they run the games like it's about them. And then if you give them additional power over decisions about health, that that could be not helpful. (P1: barrier – officials use of power)

I would hope that they wouldn't abuse it. And they would. My fear would be that every time someone got bumped, they would say, Okay, we got to put this guy in concussion protocol or whatever, you know, you have the extremes at both ends of the spectrum. I've seen so many times on the ice where you have one official that is extreme one way and other officials that be extreme the other way so to get the, the right message out and to you know, have a even playing field there (P3: barrier – officials use of power)

You know, I hope not but unfortunately, I do think that Yes, I think that could be exploited. (P5: barrier – officials use of power)

I'm not I mean, not to say situation, situationally, it would be a bad thing, though. Not say I would personally but the, the just as an example, I'd think of as a player, you know, as consistently being a pain in the rear end to the official in question and then all of a sudden he gets, he's the recipient of a check to the head, then rather than, you know, the official could then easily say, Okay, you have to leave the game in an attempt to just sort of dilute the situation and to rid himself of the player who was being, you know, a pest or whatever it is. (P5: barrier – official use of protocol as game management tool)

But I do think that it could be something that would be used, potentially you it could be potentially used in a way that it wasn't originally intended to. Unfortunately. (P5: barrier – official use of power)

Probably, like normal. You know, obviously, there's a head contact three head contacts, and you're removed from the game gaming ejection. So yeah, definitely, if there's a player going out and causing some of this stuff, I, I would probably find a way just to get rid of them off the ice just to, you know, protect everyone else. Also safety. (P6: barrier – officials using protocol as game management tool)

I think that there's definitely some officials that would use that to their advantage to, you know, remove that player, because there are some officials with that kind of power. So and they feel they do have that kind of power. (P6: barrier – officials using protocol as game management tool)

I've heard I haven't personally done it. I've heard of referees constructively do it where they will We'll assess a 10 minute misconduct to a kid that had happened to like near the end of the game like, and when they asked what happened all he said something to me, they're like, Oh, he didn't Oh, I heard something. So at least you've had the players gone for 10 minutes, usually near the end of the game, kind of to get them out of there. But personally, like I said, I haven't done it. I've heard of people that have done it, where it's like, they looked and said, like, kids a mess. Like he can't play here anymore. Like he needs to be. He needs to leave because of it. And there are times you'll see it. Someone gets the head Knock, and then it's almost like your wires crossed. Right, then you get that extra aggressiveness to and you're going out there trying to run he become not just a danger to yourself, but a danger to the other people on the ice. (P8: officials use of penalties to manage injuries/concussions)

Yeah. 100% It's with there's times you need to use all the tools, we have to get rid of problems that may arise. (P8: officials use of protocol as game management tool)

One year in Nova Scotia, they mandated that all ten minute misconducts in the last 10 minutes had to be written up, because they wanted records of them all. And by Christmas time, there was another memo, please do not send us any more write ups for 10 minute misconduct in the last 10 minutes. Because it's one of the tools you use, okay, this guy, he's just being an idiot out here. Let's get rid of them. Like just 10 minutes, he's not suspended nothing else, you just enter the game and nine times out of 10 coaches appreciate that, too. So I know it's not the same as the conc, the concussion side on it. But there is definitely tools in the rulebook that officials will use and will creatively use them to their advantage as well. (P8: officials use of penalties as game management tool)

Ah, potentially, yeah. I think I think it could be. I think, depending on the situation. It could, could easily be used as a game management as I mentioned before, (P9: barrier – officials use of protocol as game management tool)

And then there's other people who just don't want that power or that that ability. (P1: barrier- officials not wanting the power)

I think like anything like it's, I think there's, I guess, many different species of dinosaurs I think like you would, you're gonna sorta run into, I guess, like officials that all may I guess struggle with it or not overly be interested in, I guess, like enforcing it. (P2: barrier – officials not wanting the power)

Whereas the, you know, early 20s officials that like I said, are in that high performance program, trying to get to the next level. It's just another pain in their ass if you're saying. You know, you're gonna cause more grief for them than they would want it to be worth, (P3: barrier – official willingness to make call)

I think they'd be reluctant for sure. Just knowing the controversy would cause (P3: barrier – official willingness to make call)

Officials, they won't want to implement this, they'll be they'll be worried that they'll get it wrong. It'll be there'll be scared about missing. (P4: barrier – official reluctance)

that so then I think it'd be officials that will be the ones who are the hardest to bring along. Coaches won't like it parents won't like it, you know, if but if it's a rule, it's a rule and they'll live with it. Officials have to implement it. They'll be harder. (P4: barrier – officials greatest opposition)

But I don't think we should be given that much power, (P6: officials gaining too much power if able to remove)

So, you know, that kind of responsibility I don't personally want to be held with. So yeah, like I said, I don't know if I'd be entirely comfortable dealing with that factor. (P6: barrier – officials reluctance/scared to recognize and remove)

you know, been reffing for 15 years, I've talked about what constitutes hooking for 15 years or tripping or pick your penalty. And by the time you move up to the high performance level, you've been having that conversation for 10, or whatever your timeframe is on that and to throw something new like that in there without the background of it, same, you know, most of us step into officiating knowing the general rules of the game too. And now we're just learning the nuances of it. And, and so to implement something that's so far out of our scope, I think that to me, is the thing that would make me hesitant to don't feel comfortable doing it on the ice. (P7: barrier – officials reluctance)

Well, that certainly be an additional barrier to implementing it. I think, you know, the longer you do something the as a general statement, you could find less open mindedness to taking on such a drastic change. (P7: barrier – older officials not wanting to make the call)

Oh, me? Yeah, no question . (P7: barrier – older officials adjusting to having to make the removal call)

I'd be hesitant to do it. There's no question. Especially, you know, the stakes are a lot higher to in the leagues, I'm working. The guy's got a scholarship on the line and I'm doing something I've never done before after having done it for all last two decades, I'd be pretty hesitant. (P7: barrier – officials not wanting to effect players "life")

So it's one of those things where I like the idea. I think it is tough as that third party as well. (P8: officials being unbiased being negative)

you're still gonna have your problems with as you there are some officials that they call the rules, as they seem fit and I've seen where a guy goes? Well, I'm not gonna call it that's a stupid rule. It's like, well, that rules there for a reason. Like you're not. You're supposed to call it that way. But I think it should be the same. (P8: barrier – officials reluctance to call, don't like the rule)

Yeah, I think there would be and it's one Where? I think as time goes on, it fixes that problem if that makes sense. (P8: barrier – officials reluctance to make call)

Um, no, I don't think so. I think there's definitely gonna be some officials that would be dead set against it, I think. I don't think it's something that everyone would feel. I don't think everyone would feel comfortable with that responsibility as well. If that makes sense, like knowing it's up to you to make a call whether this kid plays or not, because he got hit. But then again, it's your responsibility to make the decision on that kid just hit that kid from behind. I have to throw him out of the game. But there are refs that will see that and say, Oh no, it's a board. So they don't have to do the paperwork and throw someone out of a game (P8: barrier – officials reluctance to make call)

Yeah, because there are times yeah, like you'll see it and you put your hand up and the first thing you just think is now I gotta do a write up I'm trying to get out of here early I'm trying to get to the bar with my

buddies right after the game or something but sometimes I've spent an extra 45 minutes after again just doing a write up because it happens it happens (P8: barrier – officials reluctance to make call)

hesitation, in actually making the call. I think they would be. Again, worried about removing an important player or changing the situation in a game where parents and coaches and teams might be upset? And just cause more spotlight on the officials, which sometimes they try to avoid. But it's I think, I think, yeah, it would, it would definitely be a little bit hesitant with some officials might say, I'm not making a call right now or not the right time, they might just decide that this is not up to them to make that decision at this moment in time. (P9: barrier – officials reluctance)

[pause] Like, you know, that that there's already a lot of responsibility. And um [pause] I feel where we are, there's often a lot of difficulty managing players behavior, the coaches are not necessarily doing a good job being responsible for their, their players overall behavior, and now we're gonna put on the end so the officials are managing behavior and then the officials are going to manage health. So it's like that's an additional that's a that's a lot of responsibility to put on officials. (P1: barrier – official responsibility)

I think like anything we've seen any time they've instated any new policies or new rules or anything like that they've been it's sort of been a priority from an officiating standpoint for the first you know, for the first like grace period, I want to call it. So say the first three months, I know it'd be something that'd be scrutinized heavily. (P5: barrier – focus on officials implementation of protocol)

because, like I said, we already have a big enough job as it is, you know, for most it's three people on the ice against the rest of the rink. So like I said, there's lots of lots of other stuff that we focus on that we need to make sure that we're doing to make sure the games played safe and, and there's no issue so yeah, (P6: officials already have a lot to monitor in a game)

I think I think I think it could be added. But again, to there's lots of other factors that maybe need to be considered from Hockey Canada and the governing bodies to decide if it is something that we should add to our repertoire. (P6: other areas officials should focus on at the moment)

Because simply, like, as an official, like I wouldn't be removing, say like a player because of I guess hypothetically, if this rule is in place, because of, say, like a knee injury (P2: removal only for concussion on MSK injury)

And then there's probably the most of the officials are probably in the middle of the road where it might be a little scary for them to be expected to make you know conclusions about someone's health but they would do the best they could. (P1: officials – health determination scary)

but probably like, I guess like in the past Probably wouldn't, it just wouldn't have said anything because, like, it's, I guess from, like an official standpoint or, like, I'm not like a medical professional. (P2: barrier – officials not thinking they are qualified to remove)

So, I don't really know, I know the signs of a concussion, but I'm not really able to, like diagnose [stumbled over saying concussion] a concussion. (P2: barrier – officials not thinking they are qualified to remove)

Well, I'm trying to, I guess, at the end of the day, like, I'm not, I guess officials aren't sort of, I guess, like medical professionals, (P2: officials acknowledging not medical professionals)

Because, you know, referees are not never going to be certified physicians never going to be people that know 100%. (P3: officials not qualified to make health decisions)

unless you're a medical professional doing, running tests, right. (P4: medical professionals able to do evaluation)

The first is going to be there's going to be resistance on the on the part of officials to become medical experts and try to try to figure out how to enforce that rule. (P4: barrier – officials being scared/reluctant)

Yeah. I think you can position it that way. (P4: dispelling officials of being a medical expert)



I do know for a fact. I think if it were there, the rule would be used, though I don't think it'd be used as much as it is intended to be because a lot of people would be scared to take players out of games. (P5: barrier – officials scared/reluctant)

But I've also said, I don't want to be the person to miss diagnose. And one thing we're always taught as officials, at least from what I've been taught is we're not doctors, so we can't assess that kind of stuff on the ice. (P6: officials misunderstanding recognition does not mean diagnose)

And for me, I just I have a tougher time diagnosing somebody because I could go through the signs with everyone. (P6: officials misunderstanding role in recognizing)

And I would say commitment, like how many how many officials don't want that responsibility to deal with a possible concussion. I think having people buying in and be willing to accept this responsibility. I think that would definitely be another barrier. (P6: barrier – officials reluctance)

And then It comes down to, we always hear when calling penalties on injuries, we're not doctors, if there's an injury on the play. It's an automatic five and a game if that kid comes out next shift, or he doesn't come out ever again, that game, we don't know. He looked injured the trainer and attend to him. Were not a doctor. So we don't we don't know. (P8: officials taught they are not medical professionals – make calls based on rule book)

Like am, I guess from I don't know, if there's any, like sort of legal barriers or anything like that, or like a use like, or any risk management issues (P2: barrier – legal and risk management issues)

or things because it's sort of based on trying to like, sort of think about it a little bit that way. It's, I guess, from a recreational I guess, either administrator, administrative or professional side of things. But I think that's sort of the biggest barrier. (P2: barrier – legal and risk management issues)

And I think you're still gonna get people who are worried about the implication of their actions either positive or negative coming back to have implications on them outside of that one specific game. (P4: barrier- legal aspects for officials)

But I'd say you definitely see a lot more of the liability here like talk about it. Here like other officials on whether, it's always like, I never heard that in Nova Scotia and never heard it in Northwest Territories at all, like, oh, you can be liable for this. So it's always like, you can only make your best judgement. And that's the only thing you'd be held against. You're not a doctor on the ice something your report, you see, but I definitely hear that liability talk a lot more in Ontario than I did anywhere else. (P8: officials liability regarding calls)

## **Sub-theme: Stakeholder Behavior and Knowledge Regarding Concussions and**

### **Rules**

All I can envision is I can envision a lot of really angry coaches.[laughing] So because I, so I don't know, like, I'm really, I really don't feel like I don't think it's gonna go well, if officials are allowed to overrule coaches on who's allowed to play, (P1: barrier – coaches behavior)

And it's also and it's also hard because the parents' perspective, I find that parents are even more likely to want their kids to play and not worrying about them in the way that I think they should be worrying about them. So you'd also have parents mad at you. (P1: barrier- parents behavior)

Well, I think they would not be in favour of it just because athletes always want to play. [pause] Rarely do I ever see any athletes who are like, Yeah, I'm really hurt, I'm not gonna play. (P1: barrier – players behavior)

And I guess the biggest thing too, would be having the, I guess buy in from the different I guess stakeholders within hockey, because I could see situations where if you if you pull a player that you probably get some, I guess like pushback and things from coaches and I guess other like stakeholders (P2: barrier – stakeholder behavior)

I think a little bit but like you're still I at the end of the day, like you're probably still going to get some pushback from like athletes and coaches saying that, Oh, we lost, not lost, but like this impacted like our chances at being able to, I guess, depending like win the game or like Johnny or Susie, like get hit, but they aren't, I guess showing any symptoms or anything like why do they have to sit off for like the full 12 minutes, We'll just throw a number out, like the set time. (P2: barrier – stakeholder behavior)

like he, you may I think after, like, a little while, like or when it first started, you may get some questions like, why did you blow the whistle? (P2: barrier – stakeholder behavior)

No, it's sort of, and then I think usually like that situation, like usually when you're blowing those dead, like, it's usually the players like down on down on the ice, or a lot of times where you almost get more humid. Sometimes it'd be sort of like you'd get that initial reaction, and then they would see the player down. But a lot of times it would be the sort of the opposite that you're allowing, like a play to progress. And they're like, why haven't you blown the whistle? And I was like, Well, I know. I know that the I guess like, We'll just use the defensive players hurt in the corner. (P2: bench reaction to official not stopping play)

Well, I think like, you'd always, I guess there's always that, I guess, the elephant in the room, like the parents would also be a lot of pushback from them, like I could see it, I guess, potentially causing, like abuse and things like that from parents. (P2: barrier – parents behavior)

But like, I think you would probably, I guess also have some, I guess, like pushback from, say, coaches and parents that think, I guess like the game is, I guess good enough now, like, why do we need to, I guess, enact rules that were able to, they figure that they're probably already managing it well enough without having to, I guess add, like a new rule in place. (P2: barrier – stakeholder behaviors)

But I think it sort of the, at the end of the day, like it may be rocky for the first couple years, or first couple months, and then It'll sort of everybody will get used to it. And I'll sort of level out and then there'll be something else that'll I guess tickle their fancy that they're able to bark about or complain about. (P2: there will be initial pushback that will go away)

But at the end of the day, like you're gonna run into situations that I guess with that, you're going to have a coach that will potentially overrule I guess the medical professionalist anyway. (P2: barrier – coach behavior)

And you because I guess we're always hoping that we're kind of reduced abuse within sports. (P2: current behavior of stakeholders)

where you're going to remove a player knowing you're going to face intense scrutiny from the player, the coach, the parents, the fans of that team, (P3: barrier – stakeholder behavior)

Well, at the high level, high performance, the coach is going to disagree with you every time because unfortunately, far too many of our coaches still have that old school mentality of, it's just hockey, (P3: barrier – coach behavior)

It's supposed to be recreational, supposed to be fun. And it's no matter if it's high performance or house level. There's too much push on winning, in my opinion. (P3: barrier – focus on winning at all levels)

Absolutely (in reference to protocol brining out focus on winning (P3: barrier – focus on winning at all levels)

Again, yeah, like I think if your child's playing high performance hockey, you've been drinking the Kool Aid for too long as I like to say and you know, you believe your kid's the next NHL star? (P3: barrier – parent behavior)

So at the heat of the moment, I think that the parents might struggle with it. But long term, they might look back and be thankful. (P3: barrier – parent behavior)

So it would be difficult to make coaches and players understand. (P3: barrier – stakeholder behavior)

But I think the longer this goes and the more regular occurrence. It happens. I mean, I mean, look, when it happened in NHL the first time it's like, the first guy that got pulled out of the game from the spotter was a big uproar. And now it's almost more of an uproar if you know that guy gets hit real hard, and they don't take him off. (P3: how stakeholder behavior changes)

I'm not sure that I would remember specifics, but I don't know that I've ever had a negative response from the bench. You know, it's either a neutral or, or positive. You know, reception. Thank you appreciate the information. Or a neutral, understood, but, but never a negative. What do you want me to do about that? You know, are you telling me to pull the player? I don't I don't get that from any, any coaches that I've dealt with? (P4: bench response to official making comment about player injury)

and I think the but the coaches deserve to know so that they're not screaming for you know, coaches look for any advantage Hey, ref I think I think that player who's already scored three against this today he looks concussed. Don't you think you should pull him out of the game? You know that, that that the ref the refs aware of what they need to do, and the coaches are aware that they that they could be subject to that issue in the game. If the ref deems it necessary or the linesperson, right, we're not we're not trained but that guy is. So if he makes the call, he makes the call. (P4: barrier – coaches using removal protocol as game strategy)

I think that there are already rules in the book to manage that. You just have to give the officials guidance, right, a coach who is badgering you about players on the other team potentially being concussed gets, you know, either a warning or a minor penalty for unsportsmanlike conduct. And that'll put an end to that pretty quickly. (P4: managing coach behavior)

Right. You know, look, gamesmanship is part of every sport. You're, if you're not cheating, you're not trying right is the old adage. (P4: barrier – coach using protocol as game strategy)

And so if you if you make it clear to coaches that if they are delaying the game, to ask for players on the other team to be removed, because they've got a concussion, you know, you just make it clear that they can't do that. (P4: managing coach behavior)

Right. Like, you know, you tell coaches that you don't, you know, if you've got a concern about a player from the other team, you go to the other bench, and you provide your concern, you don't go through the referee. And if you do, you're gonna, somebody from your team's gonna sit in the box. Easy. (P4: managing coach behavior)

Correct. (P4: in response – barrier – coach behavior)

And I think that you're going to see pushback from you just to get to the point of, of having the having Hockey Canada say, yes, there's going to be a lot of pushback from the, you know, frankly, the Neanderthals that continue to roam the halls of hockey Association's and branches across the country, (P4: barrier – old school mentality of stakeholders)

who, you know, think we've sissified hockey over the last 15 years. And this is just another example of the sissification of hockey, right? Hockey is a tough sport, and you got to be tough in order to play, (P4: barrier – old school mentality of stakeholders)

you know, for taking kids out, because they got a little bell ringing, right. (P4: barrier – knowledge of stakeholders)

And unfortunately, those folks tend to be the guys generally who've been around for a long time and have influence within whether it's associations or branches, and sometimes it can be hard to move off of their current way of thinking. (P4: barrier – old school mentality of stakeholders)

Coaches (P4: barrier – coaches behavior)

But I think if you take somebody's kid off the ice, you know, there is going to be a dad who loses his mind that his kids not playing because obviously, there's a scout from an NHL team in the crowd that day who's not going to see him play and now what's his life Like? Right? (P4: barrier – parents behavior)

So yes, that exists. But I think it's tertiary after players and coaches as coaches first then its players, coaches 85% of the problem players 10, parents Five (P4: barrier – stakeholder behavior)

And in a respect that wasn't already viewed by the trainer, or the coaches. You know, the level that I'm thinking of mainly these coaches and they own their teams, it's their livelihood and stuff like that. So even just two minute penalties can be you know, can be a pretty big change of events and they're and they're in their respect and can cost them money. (P5: level of play effects influences coach reaction)

And I know, I think more in today's game from a personal level, I'd say the players and the coaches have become a little more, you know, cognizant of, of injuries of such injuries, though, there's they're definitely not the level that they should be the training staff, (P5: coach and player knowledge has increased)

And anytime the player safety is in question, if the coach is not in favor, I don't think that's a good look on his part. Anyhow. So I, I really don't believe the coaches would be opposed to the conversation. (P5: optics of coach going against official)

The players, maybe the players are pretty stubborn in their own sense, as was I when I was playing I, I wouldn't want to get taken out of the game. But you know, looking back on it now. If it was in my best interest, I assume that yeah, you sort of have to give responsibility to the people that are looking out for you. (P5: barrier – players reluctance to leave game)

And I think parents, I hope parents would support it. You know, because at the end of the day, it's not something that would be implemented. It's sorry, it's something that'd be implemented in the best interest of their children. So I think, yeah, I don't think they'd have any questions, questions about it. I mean, it could be frustrating in the event that your player gets, or your son gets sidelined, or your daughter for something that wasn't relevant, though. (P5: parental behavior should be positive)

And a lot of players at that at a younger age, they won't tell you their hurts. (P6: barrier - players don't disclose symptoms)

And, you know, like I said earlier, there's some players or some people that won't tell you they're concussed, they're fine. You ask them if they're blurry, they say they're fine. (P6: barrier - players not disclosing symptoms)

Not getting that support from officials or even minor Hockey Associations saying no, we, we don't feel comfortable with referees taking this over, we want our coaches to be able to handle it, because they're getting the, in their eyes, they're getting the best training out of it. (P6: barrier – stakeholder buy in)

I think you're gonna get mixed reviews. (P6: stakeholder behavior)

Just you might get some players and coaches that appreciate it, because they feel that officials need to add one more thing to their game and to help out more. (P6: stakeholder behavior)

And then you're going to get some, I think that would say, you know, I don't we don't like this just, that's a little bit more power than the referee needs. (P6: barrier – stakeholder behavior – additional power of officials)

And we don't want them to, to handle this situation. (P6: barrier – stakeholder belief out of scope for officials)

But I definitely think there will be definitely a lot of mixed reviews on that both good and bad. (P6: there will be mixed feelings on new protocol)

I guess I forgot parent to that's a tough one to I'd say mixed reviews. (P6: parent behavior)

But I also know some psyches of some players knowing that they hate refs, they don't like them. And they'd rather not have them deal with stuff like that, you know? (P6: barrier – stakeholders beliefs on officials)

And then there's others who, like I said, don't appreciate them. (P6: barrier – stakeholder beliefs on officials)

No, I think a lot of everyone's obviously got their opinions. I think some of it are you get paid to do this. You're screwing us. It's all about you kind of thing. So a lot of people think otherwise. And they don't understand that. (P6: stakeholder beliefs of officials)

I think it would be because it's already in existence in whatever capacity it is within their own organization. (P7: barrier – stakeholder behavior- pre-existing procedures in place)

I think there would probably be some hesitancy for players and coaches to be receiving it from the officials because it's not currently within the scope of our role on the ice. (P7: barrier – stakeholder – out of officials role)

Parents are always going to parents are always going to act absurdly and illogically in a hockey rink. I don't think that would change anything. (P7: barrier – parents behaviors)

I think that's a healthy thing. That doesn't necessarily mean everybody's going to pay attention to the changes that come their way. The bigger the change, the harder it is for everybody to hear and understand the information that's being brought out. (P7: barrier – stakeholders not wanting change)

Yeah, that's how it exists already. You know, linespersons can blow the play dead. If there's an injury linespersons can assess misconduct or game misconduct or gross or match penalty, all the same. And, and when that happens, the there certainly can be more Anger and frustration from the coaching staff at the referee didn't see it, it was called by the linespersons. (P7: barrier - coach response to linesperson making call)

No, I, I think I felt bad because I think there's the adrenaline factor that gets thrown in there where I know whether it was any sport I played, whether it was my head, my foot, my knee, my arm, any injury that I'd have. Once I start playing the sport, it's almost like, my body just blacks everything else. And I don't really feel anything. It's just, I know I have one thing to do, and it's go out there and play whatever sport I'm playing and play it with to the best of my ability. (P8: player ability to play through injury)

I would say from my own personal experiences, I'd say yes. (P8: players playing through injury)

That most of the sports I've played in it's, you'll see everyone they want to keep playing is you feel if you don't play, you're not only are you not playing but you're hurting the people on your team by not playing. They have to pick up the slack or they might not the team might not succeed because you're out and you just have that in the back of your head too. (P8: player thought process on playing through injury)

Once you get up I find, the higher levels, like if you're in your, you know, U18 AAA, you're not going to get that same thing with I find with the coaches, there's more of the mentality on winning than it is on the having fun part. And it's there, the head coaches get to kind of take the kids word for it. Do you feel fine? Yeah. Okay. Get back out there. (P8: level of play effects coach response to concussion)

So like you didn't even if you felt you had a glimmer of a head knock. You weren't saying anything? I go, No, I'm fine. Nothing happen there is once you're out, you're out. (P8: players playing through injury/concussion)

But it's again, I don't want that trainer yelling at me saying I should have called the penalty on blah blah blah five minutes ago in the game and I don't want to go to the trainer [intelligible] maybe that's concussion and you shouldn't let that kid play again. (P8: each person has their role)

as an athlete from experience, I three, like three different concussions. And I had a different reaction, to all three. The first one, I was literally dazed and confused, walking around, I had a golf ball sticking out of my head, as like, I think something's wrong. And right, yeah, you're right, you have to leave the game. The second one, I guess I was out cold on the field. 10 seconds, didn't realize got up, kept running into the play, trying to get back in the play. Trainers telling me I had to get off and me basically telling them to F off. I'm fine. I want to keep playing. And then the third one, it hit me, I felt fine. It was okay. I was reffing like I still felt like my jaw was sore, like the pocket me right here flat. So I just kind of swelled up. I did two more games at night. Two more the next day. Then it was Monday morning and class where I was just so there's some times like I said, I've seen all three, three different reactions to three different ones. And you'd have anything from I think at the start, you get more frustration. (P8: players reaction to concussions)

Maybe in the end, if you could ever see them again, there might be that that thanks, like a like, Thanks for looking out for me. But there definitely be some frustration, especially if it's depending on what type of game you're involved in, like, you know, like a low level, like started the regular season game compared to you know, game five of the OMHA semi finals, there's gonna be big things. (P8: players response to officials if they are removed)

I think once we start going, it will get better. I think there already is a turn like I do see better response, like when you see a player get hit hard or go down or if they're down for a significant period of time. They like they leave the, the trainers are usually taking them out, they're going to the room. The parents are usually there to see all the time when the parents come down and then We'll take them out. (P8: stakeholders current response to injured players)

But It'll be just one of those ones where I think at the start, though, there'll be more frustration more angry people, but as it goes it will just become common practice and I don't think it will be as big of a problem. It'll just almost be something It'll be expected. Like you'll see. Like that hit will come in. It'll almost be a coach arms. I'll be like, Oh, I'm gonna lose Johnny for the next 10 minutes here. He's gonna have to go in the quiet room. (P8: expected response of stakeholders)

A younger official, I think would have a harder time. Like an up and coming official. But you'll see that with, with, not with a lot, but it is. coaches know how to try to play and touch buttons, and trying to get around the system and try to play you. Like I myself, like when I'm out there. I look like I'm a younger official when I'm out there. And it's like, I got to get 20 years reffing under my belt like I've, I've seen just about everything. You're not going to fool me on this one today type thing. But they'll always try until they know you. But that's I think just hockey and sports in general. The rules are there, but we try to push every rule to its absolute breaking point just to see what we can get. Or if we can break them and get away with it. (P8: barrier – young officials being bullied by coaches)

I think you definitely see that. Well, this guy has been a trainer for 20 years, you've been on an official for five years. He knows what concussion is, you've you're only doing this now. I think you definitely see stuff like that. (P8: barrier – stakeholders belief that officials have the knowledge)

Were you see something like, it's not the, I remember the first Junior game I ever did when I was 20, 19-20 years old. A guy comes up cursing and swearing at a ref after you just got to hand is the ref turns back at him. Tears strip up at him, calls him every name in the book and then tells him to get the guy back when he's not looking. He couldn't do he can't say that anymore as a ref it's the same thing. I don't think it'd be perfect to start but I think as it goes on, It'll get better. The same thing with any new penalty that we get put

in where it's always it's all you hear talk about when it first goes in and then sometimes even before the years out you're not talking about it anymore. (P8: barrier – all stakeholders behaviors)

I've seen I've seen it from time to time where as an official individual has been hit in the head. From my, from what I've noticed, I would say they have a concussion, they should be removed. Do they always give a move? No. And that's part of the problem. I see with that. (P9: officials past actions if suspected concussion)

Um, the importance of winning, I think, you know, parents, coaches, if it's like their best player, they wouldn't want them removed from the game. If they feel like, doesn't necessarily have, they don't necessarily have to, like they've done their check, especially when it comes to important moments. We know that the seasons can be skewed a little bit there. So I think that would be that would be a factor or an issue there. (P9: barrier – importance of winning)

Um, no, I can't see really, really anything like, you know. (P10: barrier – stakeholders none)

Well, not really. I think that if, you know, I think coaches also look out for the kids for their player safety as well. So I can see like them really saying much too, that I can I can't imagine unless the kids I mean, the kids may put up a fuss if they're really, if they say they're feeling well, or something like that. But you know, if the show that they're obviously not, then there may be some conflicts, but other than that, not really no. (P10: barriers – stakeholders none)

No, not really. I think they like I said, I think they would probably notice if their children are probably not looking well out there. And then understand if we saw the same thing, and we asked him to leave for their own safety and health. (P10: barriers – stakeholders none)

You know what most, I would say most of the real changes have come into play when you make that call on the ice. Unfortunately, I don't think coaches and parents spent a lot of time reading the Hockey Canada rulebook (P3: barrier – stakeholder knowledge of rules)

and, and finding out what the new rules are until you call that in a game. And then they're like, What the heck is that? You gotta go explain, oh, this is the new rule under, you know, section, whatever. And they're like, Whoa, I have no idea. This was even a rule. (P3: barrier – stakeholder knowledge of rules)

That's absolutely right. Like not, if you ask any non hockey official, what the role of the official is not one of them is going to say, maintain safety. Right? That is our number one goal is to maintain the integrity and safety of the game. (P3: barrier – misunderstanding of actual role of official re: safety)

And everyone's like, Oh, they are out there to call the rules. But calling the rules means keeping the players safe. So I think that's a huge discrepancy, there's people don't realize that is our main goal is to is to have a safe game out there, we want the game to end with no injuries. (P3: barrier – misunderstanding of actual role of official re: safety)

I think so. Though the benefit would be hard to predict. I think that officials are underappreciated, and I don't think that'll ever change. I think officials have accepted the fact that they're underappreciated and that will never change. (P5: officials feel underappreciated)

I don't think you know, it's not something that I'm going to lose sleep over. Because I've come far enough understanding error with enough experience that I now understand, you know, what it is that we do and what our expectations are so, (P5: officials acceptance of being underappreciated)

Yeah, like I've always vouched. I've always vouch that coaches, parents, everyone should take the ref course to understand how difficult it can be at times to be an official. (P6: stakeholders don't understand all it takes to be an official)

And certainly as officials, we see that when we go to the rink and what month are we in and we're into January, and I'm still getting complaints about things that were a new rule two years ago, so yeah. (P7: barrier – stakeholders not knowing rules)

But again, it just comes down to I've had coaches that you know, played 20 years in the NHL, they still don't know what a trip is. So it {both laughing} comes you know what I mean? The coach isn't out there. The coaches out there to focus to read concussions, he's out there to read the play and to make his team win (P8: barrier – stakeholder knowledge of rules)

you know, and so I think it'd be difficult for the parents at the time. And say I was right, and that player was concussed, and then was checked out, maybe the parents think back see a oh man thing. Thank goodness, that referee had the wherewithal to the kid from the game. (P3: benefits of protocol)

### **Sub-theme: Geographic Location**

Yes, I think that difference experience different difference in location. (P1: barrier – location)

I don't feel like I have um noticed an increase in awareness of concussions appear in the north like I would like. I'm, I'm aware of a lot of the different kind of unrest a campaigns for getting in for disseminating information about concussions as our knowledge of concussions has increased? And I don't feel like it's made it up here. (P1: barrier – location and lack of knowledge)

I think that there's both Yes, I think there's, there's definitely rural and then rural and northern is like is the combination. So when I first started, so I [pause] don't wanna say for certain officiating, because I was officiating before. But when I first started coaching would have been in the early 2000s. And there was a very limit in Saskatchewan, rural Saskatchewan, and there was a limited knowledge about concussions. But there was a definite big push going on with trying to get more information out there. And Saskatchewan had health regions actually had positions called Acquired Brain Injury coordinators, who worked with people with significant brain injuries, but also was disseminating all of the new information on concussions out into the community. And as someone who was just aware of that professionally, it that was a big fight to get that information out to people and to help them understand what concussions really are. And, and so that was in the early 2000s. And now we're in 2021, almost 2022. And here in Northern Manitoba, I feel like we're in the same spot. (P1: barrier - location and lack of knowledge)

And harder in rural areas than it is in urban areas? (P4: barrier – location – rural vs urban)

problems? Um, I would I would say it wouldn't cause any problems. Being from a city, I think, I think it's a good thing, especially now that we're we don't have as many officials as we've had in years past. It's, it's one of those things that we're trying to keep everyone involved in the game. And I think, I think it wouldn't be a problem. (P6: location – urban vs rural)

I'm currently a I've currently ref in six different centers. I've reffed in [name of town A], [name of town C], [name of town D], [name of town E] and [name of town F]. So I've kind of wrapped and a couple minor communities involved with [name of town E]. But I've kind of wrapped within that. So I've definitely done a lot of travelling, I've definitely been able to be a part of a lot of minor hockey games. (P6: official refs in more than one association)

I being that I'm involved as a coach out in [name of town F] I definitely think having those smaller communities be a part of this is a lot better. Because they usually when they when they do stuff they usually can pay for, you know, a lot of them, they combine with their ref group. So instead of [name of town A] where you got like so many different groups [name of town F], Let's just say it's so small that they're ref referees and their players in their organization work together and they collaborate. And I think when they spend the money to get these programs and stuff, it's a lot easier out there in those smaller communities so that they can make sure that everyone gets educated. And it's not, did you get this person educated? Because there's so many more players and so many more teams involved. So I think it might actually work better in the smaller communities. Before it comes to the bigger centers. But yeah, I would just be involved with that, and the size and the numbers of the organization. (P6: location – urban vs rural)

So I think they do as well as they can, it's certainly difficult when you have such a wide geographical scope and low population density, you know, in our province, in particular in BC that, you know, making



sure that that information is disseminated correctly can be a challenge, and I think they do as well the job as possible. (P7: location – rural vs urban)

ah, no, not really. I think that's you know, actually, I think you'd probably make it easier because I think they probably understand your decisions and stuff like that. And they probably see you as probably in like taking care of I guess of their kids, I guess, by seeing that they're not well, and I guess, you know, telling them to leave is the way that you know, I guess shows that you care to care about the kids safety and health to take them off. Yeah, (P10: size of community effecting ability to make decision

## **Appendix F: Quotation List: Theme: Procedure and Documentation**

### **Sub-theme: Post Injury Tracking**

Well, and it's usually is currently it's supposed to be the coach. (P1: record keeping post injury – coach job)

Yeah. And like I'm trying, like, I know, like, there's so I guess like it talking from like a game. She was like the I know, it's think it's say like the junior B Junior C league? I think the I know, like, say I used to be youth, U15 I think U13 Like they use like an electronic game sheet now. And I'm not sure if some of the minor hockey and stuff have sort of switched to that too. So it could be if everybody was sort of using sort of the electronic game sheet that like would be it'd be fairly easy probably, like you said, to put in like the, uh, something I made a mechanism to catch or not catch, but I guess document sort of, I guess suspected concussions. (P2: record keeping post injury – easier with electronic)

no, that's like a, that'd be sort of the huge challenge is like, and I guess from even from like, a hockey administrative side of things, like what, I guess who's going to, I guess, look after that, like, that's sort of like, I guess adding, I guess, a little bit more, I guess, burdens to associations, and different things like that to (P2: barrier – increased administrative burden)

But I guess there has to be a way of, I guess, getting that information to everybody that's involved. (P2: record keeping post injury)

So and then, I guess some of it that sort of ends up It'll, soon as we, I guess there's official sort of deal with it, initially, submit, whether it's the board or on the game sheet, like it's on to the like associations to deal with it. I guess, sort of the example here, I guess, with New Brunswick for minor hockey, like it's, there's one, one individual that hands out all the suspensions. Like every single came incident report from the province goes to I think he's in like another city, like he's, I think, in Moncton, and it goes to him. And he, like, signs up letters to the players, like it's (P2: record keeping post injury)

Yeah. And I'm not at sort of, I think, yeah, like, I don't know, how it, it's sort of interesting. Like, when you've sort of said the, I guess things about, like, the rugby, I guess, associations or leagues that do it. So it'd be sort of interesting to see, I guess what their, I guess best practices? Or how do they sort of manage it? You might, I guess, not need to reinvent the wheel, you might be able to, I guess not, I guess take things from them. And do use those instead of trying to come up with say, your own idea how to deal with it. (P2: record keeping post injury – follow rugby)

And I think that's a reasonably discrete difference. And then I think the third thing is feedback, right? You removed this player, they did not have a concussion, you remove this player they did. So that you understand. Not that you should or shouldn't have done what you did, right? It's not a criticism, but rather an opportunity for learning. (P4: post removal feedback to expand knowledge of official)

So that if you, if you're being overzealous about it, you can dial down your criteria, or if you're being or if you're not getting kids who have concussions removed from the game, you can increase your vigilance about watching for it. (P4: post removal feedback to expand knowledge of official)

I think association level? You know, I think the closer to the kids, the better. But I also think whoever that is, at the association level, the duty of care is to the player, not the association. (P4: who is in charge of post removal record keeping)

Right. So it's a, it's a specific individual within the association who's trained in concussion protocol, you know, as a concussion expert, preferably a doctor, right, like, you know, or, or a trainer or somebody who is, you know, not just a guy that got pulled off the street, who's the concussion expert now. (P4: who is in charge of post removal record keeping)

And that is a very big city, you know, big association, kind of all it's easy to do, as opposed to, you know, Melville Saskatchewan Association, right. But, you know, I think if you if you create that duty of care

towards the player, rather than the association, may, maybe that's the way that information can be gathered effectively, and players can be helped. (P4: who is in charge of RTP)

I think that could be added on to the director of discipline and the league, it should be a league responsibility, (P5: post injury management)

So say anytime a player has been sidelined twice or three times for a suspected concussion, it should be something that is looked into a little heavier from a league perspective, that should trickle down to the teams. I'd say they should have a little more responsibility in that regard. (P5: injury tracking – follow up if athletes suffered multiple concussions in season)

And a lot of that would come from the team. (P6: team needs to provide documentation)

I think that's something where, in speaking from Hockey, Alberta's point of view, I think that's something where maybe they do invest a little bit more money, and maybe they hire, kinda, I haven't fully looked at Hockey Alberta staff, but maybe have a division of safety, where you have a Director of Safety, and then you have people for different zones that handle this stuff. (P6: RTP management-who)

So, you know, having people in each division that have emails or they get access to these forms? (P6: online forms allow for wider access to information)

They will, yeah, that that be the best option is just divided up a little bit further. And then that way, you're not entirely barred down with all this stuff. You have separate people that handle it. And then they can somebody who's probably a safety certified person, somebody who's got a lot of training a lot of background with that stuff. (P6: RTP management – who)

A combination of league and branch that's, depends on the level now and the league and the caliber of it, (P7: who is in charge of tracking concussions)

I would say follow the same protocols that the leagues would be doing now. So the leagues that have a mix of league and branch for their supplemental discipline, that's, that would be kind of the same model, they should follow there you know, for, for example, around here, the Western Hockey League doesn't adhere to Hockey Canada, they have a league standard, whereas the junior B levels, it's a combination of branch and league because there's a standard provincially but also within the leagues. So I think it would be a case by case basis based on the league or branch or association involved. (P7: who is in charge of tracking concussions)

They should have to go to the hospital or to the clinic or whatever that next medical step is (P7: post removal protocol – medical follow up)

Yeah, I don't think it has to be overly complicated. I think the teams, the teams manager, same thing would kind of be in play. That being said, if like same as if suspended player plays while they're still suspended, and comes down on the coach, that coach is then suspended for playing suspended player. So I think in the end, it's always would come down to the head coach, it's their responsibility to make sure every person on their game sheet is eligible to play. But it's I would send still put some onus on the manager to make sure because they're I guess managing the day to day for roster if that makes sense for minor hockey. (P8: tracking of concussions – team responsibility)

Um, I know, like, again here in OMHA, it's, there's league liaisons, like so you have, you have your league, then you have your liaison for that league. And then there's a couple different leagues that'll make up, everything's just kind of a spider web going out to get encompass all the teams because obviously, you're not always gonna have you know, a team from [name of town A], Ontario play a team from [name of town B], Ontario. But they're kind of they're in the same association, but different leagues within the association. But I think be would just be a liaison that would kind of report back to head office, and then maybe have some type of auditing system with this. I don't think it's something that has to go too complicated with this. It might be something, start, start small. See how it works. And if you are having problems, or if you're noticing that there is fake records being made or something, you know, or people falsifying stuff, then

maybe expand from it, but it might be something you know, start small and work your way up to it. It'll definitely be pushed back from the start, I'd find this you especially like the U18 AAA level, like it's, there's a lot that in the U16 AAA, you'd have a lot of hang up get a lot of angry people in some of those games. (P8: tracking of concussions – different associations in same league)

I would say the league conveners. So whichever league that they're a part of I think that would have to be the conveners so that they can have a discussion. They can follow up with the teams and the coaches and the players as well. (P9: RTP guidelines – who oversees)

I guess it would also have to go to probably the officiating managers as well. Let them understand that We have made this decision, it was based kind of what we saw. So again, it's got a little bit of a paper trail, and further research can be done about it moving forward, whether or not it's working, you know, what, what other steps can be taken to help alleviate any pressure that might be happening. (P9: documentation – tracking and protocol effectiveness)

I'd say probably notifying the local minor Hockey Association I think it's probably good and I guess depending on how it happens, like say for concussion actually happens on the ice. I'd like to say an action like that you notify the provincial Hockey Association president I think could be a step you can take as well. [pause] But first the local the local level of course, I'll go to local then go to provincial (P10: post removal notification)

### **Sub-theme: Documentation by Official**

There has to be some type of documentation we would have to add. So, um, across Canada, there's different ways that officials document any kind of incidents that occur. So it could just be something written on the back of the game sheet if that's the way your organisation does it. Or it could be a separate game report. Where I am, we no longer write on the back of the game sheets, we actually write separate game reports all the time. And so I feel like it would need to be a game report you would just basically describe it like if there was if there wasn't a penalty, but you would write it up the same way if there was a penalty, you know, number 11 went into the boards and the or into the corner in the in the defensive end to you know, pick up the puck number 11 came in and their feet got tangled up or whatever and describe what happened. And then, at the time of the point in the game where they, you know, were injured in some type of description of how they reacted, and you'd probably need to put the criteria you used in it, like what things you saw. And that's why you would need to write it up, because you would need to be proving to the association and to the coaches, why the player needed to be removed? (P1: type of documentation needed by official)

Absolutely. Because that's all documentation is like that. And it would be confusing to have some Canada based documentation and then some branch and some provincial like I think it would be easier to keep all documentation the same? (P1: type of documentation- HC wide)

but it probably would be just to have like a spot on the game sheet, I guess where you would indicate. (P2: type of documentation needed by official)

or something, it possibly would be just on the game sheet sort of indicating, especially if there's sort of, I guess, like a time stipulation to it would be stabbed, like to say the players name, or not name but number team, and like, what time they came off, and if they went back on type thing. (P2: type of documentation needed by official)

We've been electronic for like, either, is sort of the two options like typically. Like, I guess for, like, the minor Hockey Association, like I look after here, we use goal line. So they're able to submit the incident report on goal line, like provincially. We also have like access to the goal line. So we assign on it and we also submit like our gaming incident reports in the I guess the other way would be on if you have to submit it, regardless, (P2: incident reporting ease with electronic)

it's typically electronically the other way would be sending like an Excel document. (P2: type of documentation needed by official)

I mean, I think you could probably roll it into, like a regular game report. Or if you have a misconduct or a game rejection, you've got to go in after the game into your portal account and fill out all the information. I'm sure we could have some sort of online document there where that could be followed up with. (P3: type of documentation needed)

Yeah, absolutely, for a couple of reasons. Number one, everyone has a phone nowadays. And you know, you can do it in the dressing room right on your phone. Most of our high performance games come with an electronic game sheet. So it's emailed to you right after the game. By the time you get in the dressing room, it's on your phone, you have all the information, the game number, the teams, the coach the players, and then you can go online and click a box rather than try to write something and I don't have the best penmanship myself. So it's definitely a lot easier to read something that's typed out or printed on paper rather than a handwritten statement. (P3: documentation needed – ease of electronic game sheets/reporting)

Yeah, I think so. Not necessarily a game report. But I think, you know, we use High Sport in BC, and it has the opportunity for notes to now electronic game system, game management system, so you can put it in the notes or it could be an addition to the, to the reporting structure to be able to say, you know, player number x from Team y, referee noted potential for, for concussion to coaches at whatever time. (P4: documentation needed by official)

Yes, yeah. Much easier to report and amalgamate the information into something broader. (P4: electronic makes record keeping easier)

I mean, we have to write these days, we have to write game reports for pretty well, everything as much as a misconduct. So I think in that event, it would be pretty simple as just a typical game report from our point of view saying why we suspected the player was injured, what happened sort of the lead up to it, and then how it was dealt with (P5: type of documentation for removal)

I think you can easily have a game report of similar nature for injuries. (P5: type of documentation for removal)

Yeah, electronic only. Okay. Thankfully, (P5: ease of electronic game reports)

I think, because we don't, we don't have any forms obviously yet for that stuff. (P6: documentation needed – something would need to be created)

But I think if we were to go about this having included with our write up forms that we have for suspensions have a separate book for a concussion protocol call it concussion protocol. (P6: documentation needed – need to create – paper based documentation)

So it would be set up similar to the write up sheet, but it would obviously be more related to the injuries, the assessment, stuff like that, what we saw what happened (P6: documentation needed)

to then be able to give it to the coach, and then if they need to see medical advice, or medical help giving them this form this documentation, so that the medical assistance is able to look at it in and help out and, and maybe will limit the amount of questions they asked limit the amount of movements they have to do. And it would just kind of help that process and speed up. Maybe that players recovery. (P6: documentation being available to teams and players)

In terms of receiving paperwork, and who knows, maybe in the future, they could do this online. So you have an online submission. (P6: online forms would be beneficial)

Like I said, the online, having an online submission form would probably be a lot easier. Everyone pretty much has a phone nowadays, or a tablet or something that they can access the internet with? (P6: ease of electronic reporting)

I don't know. Maybe they're probably like maybe an app? Because I know Hockey Canada, they have a they have like a concussion app and an injury app. So maybe something along those lines, maybe it is in that app, they have a separate form that they include, for this these type of situations. (P6: electronic reporting – app)

As suppose it would have to follow you know, something similar to what our existing game report is where, anytime, depending on which league you're working, anytime players removed from a game due to a penalty, you have to fill out a game report and, and detail this situation. So now if hypothetically, there was a concussion or other medical things involved, I would presume that that would follow the same course. (P7: type of documentation needed)

You know, I gave your goals, your penalties, and then just another block on your game sheet where they would be recorded, what time it happened, what time the player is eligible to play again. (P8: documentation on game sheet)

I think the game sheets fine in. That's the I don't know how all jurisdictions do it now. Like where we are now. Everything's done on an iPad. Everything's there. If we have any penalties that would require suspension or anything, we have to type up a note and We signed a notes like digitally signed the note it goes on. We lock the game, so that games automatically upload it to their cloud or wherever it's all stored. But then it's I think it's the team's manager to then go in and make sure everything like all suspensions are put forth and report them fully. Like they do on the sheet but it's still the team's manager to report it. So I think it'd be the kind of fall into the same thing. Where, okay, yeah, you had this player had to leave the game concussion symptoms gets reported they're allowed to come back once they get a are returned to play. (P8: documentation needed)

Probably an accident injury report. They'd be filled out whether that be online, or like, you know, a form that they provide us with that indicates when it happened. When it has happened, all the situations leading up to it to describe to describe the incident. (P9: documentation needed – reporting)

I think a game incident report is probably sufficient. Like say we fill out that we had to remove the kid because we felt like he wasn't playing to his you know, he wasn't healthy I guess like say yes, we felt like he had a concussion or was in playing like he said it wasn't in the game I guess. I guess you can say (P10: documentation needed due to removal)

### **Sub-theme: Return to Play Guideline Needed**

Like one of the things for we just had my son's hockey team had someone get a concussion and had to go away in the ambulance. And we referred to sport Manitoba's wonderful information, which is not hockey specific to help guide that return to play. But you would the coach knew that but we would need to have everybody aware of where are we going to get the information in which guidelines are we going to follow? (P1: RTP guideline to follow)

Exactly. Yeah, exactly. And we have to decide, Is there a not is each branch or each province going to have a Manitoba like a hockey return to play guideline? Because I haven't really looked but it wasn't my understanding that there was a specific hockey one. That was from the general sport. Yeah. (P1: RTP guideline to follow)

Yeah. And I guess like, that's sort of the, the challenge would be, I guess, what, I guess mechanics or things would be in place to I guess, either clear that individual from, I guess, a concussion protocol? Or if they're removed by the official, are they done, say for the game? Or is it that they would have to go through like, a SCAT or something along those lines that I guess would be in place to sort of be able to tell whether I guess they're able to come back or not into the game? (P2: RTP clearance)

But I think one of the other barriers to is, is making sure, I guess, the athletes receiving, I guess, proper, I guess, treatment or diagnosis in the situation. So I think that's sort of one of the other big pieces of all this is (P2: RTP guideline – team requirement post removal)

Like, I guess here, it's a sort of provide a little bit of fee, I guess how it sort of works like you have your minor hockey Association's you have your, I guess, like districts. And I guess, trying to think, I don't know if it zones so and then be the provincial organization. So whether it be I think it's sort of for some of the, I guess, like higher level, we'd say, if you're talking about like, U15, like AAA or U18 AAA, like it would probably, those months would fall under specific weeks. But it makes sense. At the end of the day, like the minor hockey, like can competitive recreation stuff, it would fall on the, I guess, like the specific associations involved. (P2: RTP guideline – team requirement post removal)

Well, I guess, for me, it's like, soon as it's, I guess, for me, even like a suspension side of things like I, you know, I guess, assess the penalty, write the report, it's off my plate. It's not my issue. Like I don't give out the suspension. And like, I don't have to worry if I guess if a certain player is playing, I guess, when they're suspended. (P2: post injury clearance not part of officials role)

Well, yeah, it's it. So it's like to get out of it. You need probably there has to be somebody probably do either review the documentation by either I don't I don't know if they need like a doctor's note or if it's like a athletic therapist or a physio for clearance or, or what it is, but yeah, (P2: RTP clearance)

Yeah, I don't know. Would you go as far as to say if a referee deems a player unsafe and fills a report out removes that player from the game that player has to get a doctor's clearance to come back? I don't know if you could go that far. (P3: RTP documentation and process)

And then, you know, whatever happens from that point, I'm gonna leave to the experts to say, right, the player has to be removed from the game for how long whatever, right, but we stopped the game, tell the coach, and then let the coach deal with whatever the implications are of that information. (P4: post removal guidelines – team needs to manage)

But you know, as well as I do, right, whether it's the player or the coach, or, or some other leader in the association, they just want to get back on the ice as quickly as possible when they feel like they're ready. Right? (P4: RTP needs to be out of teams purview)

I mean, there are return to play protocols for injured players. Right. And so, you know, is it is it a requirement that once you've been removed from play that you have to be seen by a medical professional and assess assessed for concussion and, and receive a return to play authorization from a doctor may, maybe. (P4: RTP guideline needing to be enforced)

I think if you issued say is this blue card and the kid has to say he's out the rest of the game. And I think that's perfect and he is diagnosed with a concussion yes to get cleared before he comes back. I think that puts the onus directly on the player, the team the parents the guardians to make sure that the that the child is cleared to play before coming back early because we've seen or I've seen people you've come back too early and you've just made the problem that much worse now. (P8: RTP guideline – player needs clearance)

### **Sub-theme: Injury Time**

The, I guess, clear, clear things as a way, because I guess, to use a little bit of an example, like there's a, like a rule within like minor hockey. So, for like competitive and recreational hockey in New Brunswick, that if like a coach comes out, to I guess, tend to a player, they have to sit off, I think it's like 12 minutes of game time. So, so like, their little bit here, there's sort of like a rule, I guess, in place a little bit. But like, I don't think it's literally, I guess, like that time isn't really effectively used to say to do any, any, I guess like sort of testing or anything like that rule, I guess, came in place, because teams or I guess, hockey administrators felt that there was individuals that were sort of laying on the ice just to try to either draw penalties or to allow their team to get a break and thing, so wasn't something they put in place over say concussions. (P2: instituting injury time)

Yeah, I would like to see something like that happen for sure. (in response to P3: implementing injury assessment time)

You know, 15 is out of the game for 10 minutes of playing time. Am I noting what time it is on the clock? And okay, therefore, I can't see that person before this time. (P4: barrier to injury time – officials not able to pay attention to who is on ice)

And do I see them again? Right? Are they illegal player, like, what do we do with them to make sure we understand that they're, they're ineligible when they're off the ice? And who's responsible for that? (P4: injury time – how is it managed and enforced)

If it's a valuable tool for player safety? We've, I'm sure we could figure out a way to make it manageable, right? They sit in the penalty box, but not serving a penalty, right. Like, you know, there they are away from the team. And it's clear that somebody the timekeeper in this case is keeping track of when they can return to the ice. (P4: injury time – how is it managed and enforced)

But as long as we don't put that on the officials sure that if that's a tool that's valuable for player safety, it's worth looking. (P4: injury time – adding too much to official role)

Yeah, I would, you know, a temporary remove from play to re-evaluate and 5-10 minutes, whatever so be, I think that would be probably better than just an absolute. (P5: implementation of injury time)

You know, currently the rule is, is if a player is tended to on the ice he has to leave the ice until the next stoppage so, you know, I've seen guys fake injuries in that respect to get a to penalize the opposing team a little higher, and then come right back out. And then you, you know, you look kind of stupid, but I think if players were forced to be sidelined for 10 12, 15, five, whatever, whatever amount of time it should be, and then to be re-evaluated, I think that would probably be a good thing. For sure. (P5: implementation of injury time – injury no longer used as strategic tool)

Ah, I mean, you I assume you probably have to impose a penalty. You know, you'd have to write the rule in the sense that a penalty would be applied in the event that the player returned to the ice prior to the 12 minutes being elapsed. It would be something as easy as you write it into the rulebook. And then any infraction where a player has to be sidelined for you know, 10-12 minutes, whatever it is, you were you would have to report it to the timekeeper. I think if you did it that way, and then it was something that could be visually seen by everyone. And even if you put it on the board or there's I think there's pretty easy ways of there's easy ways of doing it in the sense that it wouldn't cause too much trouble in the player returning to the ice. (P5: how to manage injury time removal)

I would say yes. Because obviously the last thing you want is a player not to play unless they're being idiots. But that's a whole other topic great. But I think that would be beneficial. But I also know with a lot of concussion protocols that are also in place it is a recommendation and but I believe a requirement to remove that player from the playing surface. And I think I think for that it's more sound prevention and stuff cause on the ice, there's lots of sound. There's lots of movements. So by removing them from that and getting them to a space where it's calm, there's not a lot of noise. They can focus but not like focus. But they don't have all those different stressors coming into their head, I think would be good. And then if everything's okay, if all the signs checkout, returning to play coming back onto the playing surface. (P6: implementation of injury time)

Yeah, I think that's what you're seeing in the professional leagues, whether it's football, hockey, all the rest of it. (P7: implementation of injury time)

So I yeah, whatever the science indicates, is an appropriate amount of time to go and do the assessments. I support that. (P7: use science/research as guide)

They don't they? Yeah, I don't even think you could keep them on the bench. Right? (P7: how to make injury time be for assessment)

If you look at what any of the professional leagues are doing, they have a whether it's a weird tent, that's apparently light and soundproof on the sidelines or a room somewhere in the arena, they do get removed from the game for a timeframe. (P7: implementation of injury time – use pros as guide)



Whatever the science indicates, we should follow that. (P7: use science/research as guide)

And, you know, based on my knowledge of what current policies would be, I don't think he could sit on the bench and you'd have to again, he still no matter what it would happen, you'd have to remove it from the officials hands into somebody more qualified, even if we could have the power to remove them from the game. (P7: officials should not be doing assessment)

I would like the rugby one. I love that rule. So you know what, here's 10 minutes, you can go off and come back in the game. Like when I played rugby. When you were off, you were off. (P8: benefit of injury time)

But if you have that little time for breather that 10 minutes, then it could, it could help the person from getting it worse. (P8: benefit of injury time)

Yeah. Right now you have like Hockey Canada standard. If someone comes out on the ice, you have to You're off till the whistle. I've literally seen it where a player doesn't want to get off the ice. They keep them at the door, the puck drops, he jumps right back out on the ice. But if there was a set time, like okay, you're down. They're not allowed out for 5-10 minutes, I think. But in you made it for all type of injuries, not just headshots. Or head injuries. I guess. If he was standard across, I think it would work. I think that would work. Yeah. (P8: benefit of injury time – reasoning for it)

I don't I don't think. [long pause] Just trying to think here. It's hard to put a number on that, in my opinion. I mean, they could sit out Let's say 10 minutes if that's what it is. Okay. But when it comes to a potential head injury, concussion, 10 minutes time up, may not be the number, right, like, you may need days, right? Yeah, he may seem better in 10 minutes. But when it comes to the head, we don't know if that 10 minutes is enough. And we're putting that person back at risk. So putting a number to it. I don't know if I could justify that. (P9: hesitancy in designated injury time)

Yeah. Yeah. I think, I think, there may need to be more time taken into consideration when it comes to potential head injury. And everyone's different, you know. Sometimes you could feel some, you could feel it right away. Sometimes it takes a little bit longer. And so now if you're putting that person at risk it may not have been the right decision, you know, so (P9: designated injury time – strict protocol of what needs to happen during)

## **Appendix G: Quotation List: Theme: Training Needed**

### **Sub-theme: Stakeholders**

And I'm also really cognizant of the fact that we're just learning more and more in general about how the brain works, you know, how it gets injured, how it heals, you know, and, and what we can do to help it and what, you know what the kids need. And I think that the disseminating information because it's new and changing, like I was alluding to the fact that I was talking about 20 years ago, and we know way more about concussions and brains than we did 20 years ago. (P1: training needed - stakeholder education on concussions)

So I do feel like a whole campaign needs to happen to get that information out. However we can get it out whether it starts with officials and coaches and you know, gets shared with parents (P1: training needed - stakeholder education)

So it's, and I guess the thing about it, too, would be to also provide like education to the to the stakeholders, like the coaches, I guess, team officials, and to get their buy in to. (P2: training needed- stakeholder education)

Like, I think there probably would need to be like a specific course. Because I guess you sort of use the examples of all the signage that you'd have, you sort of have in rinks where it's, I guess I'll use, like a abuse of officials as an example, like you have, I guess you've sort of as an individual, you've seen, I guess, numerous different signs, and different, I guess, initiatives to try to curb that and like it hasn't, I guess, really work that well. So I think you need to try to think of, I guess, a little bit outside the box and try to think of some different ways to try to educate individuals, I don't know if it's the having sort of the mod a module or I guess, part of say respect in sport, just including it in that or it's sort of as it's trying to capture. (P2: training needed- stakeholder education)

They sort of click on, like we they either, say a player, the coach, or a fan, and an official, and it sort of takes you to like a certain stream, and then you get your little certificate at the end that you can put up in the office as a as a joke. (P2: training needed – stakeholder education)

And I guess, and when I'm speaking of that is trying to, I guess, limit the level of abuse I guess officials receive, like, I could see this being another avenue for fans, I guess, fans, coaches, players, parents, administrators, getting, I guess, angry at officials (P2: barrier – stakeholder behavior)

The second one would be instructing the players and the teams, because they need to know what's going on, they need to know the importance of what's going on, they need to know the relevance of player safety. (P5: barrier – stakeholder training)

But anyone playing at a higher level of at a higher age group, I think they would, the I hope, anyhow, that they'd be a little more attentive to the training and to the instruction that they're receiving. And I think that it should be something that they would focus on as well, because, you know, a message that's being spread a lot more frequently these days is there's still a lot of life after hockey, whether you make a career out of it or not. And that's, you know, more important than missing two periods of a hockey game, or whatever it is. So I think, I think just having people realize the importance of the long term effects, and the road that's ahead is more important than I think that I hope anyhow, that people would take that into consideration. (P5: training needed – athletes)

And maybe that's where parents, if a program like this was put in place, maybe that's where parents need to understand that this is what the referees are told to do. And this is how it's supposed to happen. (P6: response to stakeholders who disagree with decision)

So obviously, same thing, understanding that, you know, the officials are taking the course to officiate, but they're also taking the side course, to help prevent concussions and help and help, you know, mitigate any

further complications that may arise from it. (P6: training needed – stakeholders that officials have been educated on concussions)

And that's huge is the parents and the coaches and the players understanding that that's what we're here to do. We're not here to make anyone's life in or jeopardize anyone's life or jeopardize anyone's ability to continue playing. (P6: training needed – stakeholders – officials do not want to remove athletes unless needed)

Um, maybe a bit of both. Maybe not as long of a course. But just something that just, you know, allows them to understand that this is what we're deciding to do. And even like you said, with media, like, you know, everyone's on social media, everyone's twittering and are tweeting and Facebooking and all that. So definitely, on everyone's part, including the governing board's bodies is just making sure that stuff becomes available so everyone is able to access it. So that you know, if you choose not to take the course there's still not the whole course but there's still minor clips and minor items that they can post that they can help out people who maybe can't attend these courses or can't afford them if they are at a cost or don't want to do them because they just don't want to do them (P6: training needed – stakeholders on new protocol)

Yeah, I think that's something that they do as well, with and they've done increasingly effectively, as rules have changed over the recent few years. They'll distribute video, they'll distribute some documentation. But I think no matter what changes occur, it should be disseminated to everybody involved in the game. (P7: education of all stakeholders)

And they could you know, if it's not officials, then maybe it's even training for the existing medical personnel on the teams right? I think he could enhance what we already have. (P7: training needed – additional training for team medical/training staff)

I think the second thing would be education you know, doing something that drastic gonna take a very in depth approach, making sure everybody involved in the game really understands the change, and that the officials have the authority to remove a player due to suspected head injury for X, y & z reason. (P7: training needed – all stakeholders on new protocol)

Um, I think the exact same that should be the same training that the officials get on it. I don't think there should be anything really special between the two. (P8: training needed – stakeholders)

I think that I personally think almost every person like every coach should take like a beginner's refereeing coach or refereeing course, just to see some things. (P8: training needed – stakeholders need for referee course)

And like if you did the concussion one. And same thing and show examples of this is when a referee would have to take a player out of the game, just so everyone is on the same page. And I think that would help some of the like, as much as we want everything to be black, black, and white, in officiating hockey, there's a lot of grey. And that's the hardest point of it. But as long as everyone's shown the same thing, I think that would help, (P8: training needed – all stakeholders take the same concussion info course)

So going through Hockey Canada, making sure that coaches, referees, parents are all aware that we have a responsibility in the care of all our athletes, (P9: training needed – all stakeholders)

Again, I think because I know, I know, there are coaches that go through the module learning every year as well. So I think that would be one step, I think making it known on, you know, their websites, the league websites. Yeah, I mean, just to Hockey Canada, to the OHF. giving that information that kind of at length, that this is something that's moving forward due to safety. (P9: training needed – all stakeholders)

uh, yeah. Like say, like a Concussion Awareness course. Maybe? Or, like, say, like a, I guess call like first aid? Right, I guess maybe do like first aid course to ensure that they know the signs of concussions. And I guess any other injuries really? Yeah. (P10: training needed – stakeholders on concussions)

But actually, this is another discussion. But I don't think that there's a sufficient amount of training with the coaches for return to play. The other thing that I think is part of the problem is that you don't need to recertify at all when you're a coach. So I've been a coach for hockey for like 20 some years. And so if I don't take a state new safety course, which no one's actually made me take for some time, I ah wouldn't have all the up to date concussion information. And so probably there needs to be some extra training, I think, for coaches on safe return to play and also even where to find the information. (P1: training needed - coach)

I do I think what they need to do is because there's no recertification requirement process, like yearly for coaches, like there are for referees. It's a lot harder to disseminate new information about any injuries, and I'm but especially concussions, and there probably needs to be an additional for all of us that are hanging around out there who took our training like so long ago, there needs to be like a specific, I think there should be a specific concussion um training for coaches. And I think if they make it for the officials, they could just have the coaches take it to, (P1: training needed - coach education on concussions)

like, they do already do that in Hockey Canada. I'm not sure if you're familiar with requirement, or maybe it's just Manitoba, where we have to take respect in sport. like, so they could do something along the same lines, I think for training about concussions, right. coaches and officials take the same training. And they add that in. And then I think that if they rolled it out that way, it would work more smoothly. (P1: training needed - coach education on concussions)

That's old school hockey, that's just where it is rub some dirt on and get back in. So we need to educate our coach far more and we need to have the understanding that you know that 1% of the minor Hockey Association has a chance to make the NHL, this is not the end of the world if they don't win this game, you know, they have to realize it's sport. (P3: training needed – coaches knowledge of injuries)

So, you know, I imagine Hockey Canada would put out bulletins and what have you, and would probably come down to the association that you belong to maybe having part of a, you know, a rollout in their preseason, whether it's a parent meeting or association general meeting, something like that. (P3: training needed – coach education on new rule)