2015

The concussion crisis in the national hockey league

John J. Miller
Troy University

John T. Wendt
University of St. Thomas, jtwendt@stthomas.edu

Journal of Contemporary Athletics
Volume 9, Number 1
ISSN: 1554-9933

THE CONCUSSION CRISIS IN THE NATIONAL HOCKEY LEAGUE

John J. Miller[1] and John T. Wendt[2]
[1]Troy University
[2]University of St. Thomas (MN)

ABSTRACT

At elite levels, such as the National Hockey League (NHL), aggression is considered to be important as a successful strategy. Aggressive players are quickly recognized for their style of play by coaches, management, other players, and fans (Cusimano, Chipman, Volpe, & Donnelly, 2009). Coupled with the concept that hockey played in the NHL is a fast, collision sport lends itself to the potential of concussions. The speed, hard ice, boards, sticks, pucks, player collisions, body checks, and illegal on-ice activity contribute to the prevalence of concussion (Collins, Fields, & Comstock, 2008; Goodman & Williamson, 2009). Additionally, the perceptions that concussions are ‘‘a part of the game’’ and the ability to return to play quickly as a sign of ‘‘toughness’’ is prevalent. However, an attitude that emphasizes tough of players who can ‘‘heroically brush off’’ injuries often compel players to neglect their own safety and health for the game (Cusimano et al, 2009).

Concussions have become a considerable issue in sports as occurrence rates have increased (Benson, Meeuwisse, Rizos, Kang, & Burke, 2011). There may be a number of reasons for the increase of concussions in sport. For example, a concussion is no longer defined as the player losing consciousness (Ellenbogen, Beger, & Hunt, 2010). However, what were once referred to as “dings,” “hits,” or many other less significant-sounding names by athletes are now clearly defined as concussions (Ellenbogen et al., 2010). Yet, many athletes do not recognize their symptoms as being the result of a concussion, nor do they believe that sustaining a concussion is a potentially grave problem (Kaut, DePompei, Kerr, & Congeni, 2003; Rutherford, Stephens, Potter, & Fernie, 2005). Such perceptions may change dramatically in the near future as two major lawsuits have been filed against the NHL by former players. In both lawsuits, the players assert that the NHL was negligent in informing them of the high rate of injuries resulting from playing professional hockey, especially the increased risk of brain damage due to concussive and sub-concussive brain trauma.

The first section will analyze the litigation against NHL brought by parents of a former player who is deceased. The second section discuss on the need for a paradigm shift of the culture of sport to make hockey safer from the fans as well as the NHL. The third section will focus on the application of risk management in regards to minimized violent behavior in hockey. The last section will address issues of monitoring youth hockey for concussions.

LITIGATION AGAINST THE NATIONAL HOCKEY LEAGUE

Presently, the culture of sports praises athletes who persevere through injury and personal hardship. As a result, an athlete may do whatever it takes to achieve recognition, thereby reducing the importance of possible future consequences as being inconsequential. A prime example of an athlete doing whatever it takes to make it in professional sports may be the case of NHL hockey player, Derek Boogaard.

Boogard v. National Hockey League (2013)

Athletes have been known not to report their own concussions because of the win at all cost mentality, their desire to continue to play or worry about losing a spot on the team (Shoalts, 2011). The machismo culture of many sports which has been described as "uniformly aggressive and humourlessly chauvinistic" (Giulianotti, 1999, p. 155), could contribute to athletes being over-motivated thereby pushing themselves beyond their normal physical capabilities. On numerous occasions, players, coaches, or broadcasters refer to the warrior mentality of the athletes. Often those who incur a concussion and do not report it or return to play too soon are portrayed as "the hardest worker on the team" or determined to prove himself "to be the best." However, that mindset can work against such a player during a violent, collision activity such as hockey.

Derek Boogaard was a tough hockey player who died of a prescription drug overdose in Minneapolis, Minnesota on May 13, 2011 at the age of 28. His parents, Len and JoAnne Boogard (last name spelled differently than their son) have sued the NHL Players Association alleging that the NHL was negligent in monitoring Derek Boogaard for brain trauma during his NHL career. The complaint further states that the brain trauma caused chronic traumatic encephalopathy (CTE) as well as pain and suffering and loss of a normal life (*Boogard v. National Hockey League*, 2013). According the complaint, Boogaard was specifically drafted as an "enforcer" on the ice and not for skill in skating or shooting a hockey puck. An enforcer is a person on a hockey team whose main assignment is to engage in fist fights with players from the opposing team (*Boogard v. National Hockey League*, 2013). The complaint alleges that Boogaard was drafted by an NHL team because of his ability fight which, in turn, would enhance ratings, earnings and exposure of the sport of professional hockey. In fact one hockey team owner once quipped, "We're gonna have to do something about all this violence, or people are gonna keep buying tickets" (Darby, 1994, B9). After years of fighting on the ice of hockey rinks, Boogaard turned to the team doctors who dispensed pain pills without conditions so he could deal with his pain. The complaint further alleged that once Boogaard became addicted to these narcotics, the NHL promised his family that it would take care of him and it did not (Corboy & Demetrio, 2013).

Alleged Negligence

The *Boogard* complaint alleged that the NHL was negligent in its dealing with Boogaard and other players in the league. According to the Restatement of Torts (1965), negligence is "conduct which falls below the standard established by law for the protection of others against

unreasonable risk of harm" (p. 282). A negligent situation is generated when an unreasonable risk of harm through inadvertence is present (Dobbs, 2000). To prove negligence four elements must exist: 1) duty; 2) breach of that duty; 3) proximate cause; and 4) damage. All four elements must exist for negligence to be present (Dobbs, 2000).

Duty

A duty is a special relationship betweenn two or more parties that may be created by statute, contract, or common law (Dobbs, 2000). Regarding the duty that an organization has for professional athlete, the court in *Turcotte v. Fell* (1986) reported that the duty of care owed to a professional sports participant was to avoid reckless or intentional conduct, not negligence. The *Boogard* complaint alleges that the NHL had a duty to inform players about the high rate of injuries resulting from playing professional hockey and the higher rate of injuries sustained by enforcers in the NHL. Additionally, the NHL had a duty to alert the players that enforcers had an increased risk of brain damage due to concussive and sub-concussive brain trauma, were particularly susceptible to addiction issues, and had an increased risk of developing addiction to prescription pain medications (*Boogard v. National Hockey League*, 2013).

Breach of Duty

To be negligent in the sports context, a standard of conduct under which all players abide by, or ordinary care, is different than what a reasonable person would do in similar conditions. Professional hockey is a skilled, exciting game, rooted in a heavily reinforced culture of aggressive play (Bernard & Trudel, 2004; Brunelle, Goulet, Arguin, 2004). Hockey is one of the few professional sports, other than boxing and mixed martial arts, that "tolerates" or even promotes fighting during play (Bloom & Vanier, 2004). An example of the acceptance of fighting is an instructional book for young hockey players in which Bobby Orr, a NHL Hall of Fame defenseman, instructs young players the best method to win a hockey fight. Moreover, fighting and body checks, even after the play has been completed, are not outside of the reasonable anticipation of the participants in the game (*McKichan v. St. Louis Hockey Club*, 1998). Thus, it would very difficult, but not impossible, to assert negligence in the sport of hockey. However, *Babych v. McRae* (1989) held that the negligent violation of a NHL safety rule was a valid cause of action.

Proximate Cause

For proximate cause to be applied the conduct must be a factual cause of another's physical harm (Gash, 2003). If the plaintiffs in *Boogard* can sufficiently demonstrate that the NHL breached their duty to the players, and that this breach was a factual cause of the damages, the issue of proximate cause must be established. It is important to note that the term proximate cause and foreseeability have been used interchangeably recently (Gash, 2003). Foreseeability is considered to be the degree to which an organization knew, or should have known, that a participant may be exposed to harm (Dobbs, 2000). Being able to identify foreseeable risks provides a basis by which the risk of potential injury to a participant and the duty by a

sponsoring organization to exercise appropriate care for an injured person exists (American Jurisprudence, 2004).

To establish foreseeability reflection of previous studies regarding concussions in sports would be useful. Iverson, Gaetz, Lovell, and Collins (2004) reported that athletes who sustained multiple concussions reported significantly more symptoms as well as exhibiting a clear trend toward lower memory scores at baseline. Multiple concussed athletes have been shown to be six times more apt to experience post-traumatic amnesia as well as eight times more probable to incur five or more minutes of a mental status disturbance (Iverson, et al., 2004). Gerber and Kozora (2000) reported that there is a concern for the long-term effects of athletes who have a history of suffering concussions. The risks identified in the study were cognitive changes, decreasing sensory skills, decreasing motor skills, dementia, depression, and increased recovery time after sustaining more than two concussions during sporting activity (Gerber & Kozora, 2000).

The *Boogard* complaint alleges that the NHL should have foreseen due to knowing or should have known that hockey players, specifically enforcers, were being exposed to potentially unneeded injury. Regarding the likelihood that concussions to hockey players, such as Boogaard, contribute to CTE, Dr. Robert Cantu, co-director of the Boston University CTE's program said:

How much is the hockey and how much is the fighting, we don't really know…We haven't definitely established that the skills of hockey as a sport lead to a certain percentage of participants developing CTE. But it can happen to hockey players … (Schwartz, 2011, para. 5).

Previous studies have indicated that being dependent on athletes to report their concussion symptoms may result in increasing the likelihood of future significant brain injury (Kelly & Rosenberg, 1997; Lovell et al., 2003). As a result, it may be difficult to have an exact determination of the number of concussions because under current NHL rules clubs are not required to disclose the specifics of a player's injury, and concussions can be described as the nebulous "upper body injury" (Klein, 2013). For example, Columbus Blue Jackets center Artem Anisimov was hit by Detroit defenseman Kyle Quincey, hit his head on the ice, did not get up and was carried off the ice on a stretcher. Two days later the Blue Jackets announced that Anisimov was out due to an unspecified "upper body injury"(Mixer, 2013).

Damages

While concussion in sports is hardly a new issue, athletes exposed to contact to the head are at risk of eventually suffering permanent brain damage from concussions received during practices or games (Yard & Comstock, 2009). Additionally, reports have indicated that athletes have become permanently damaged following their careers, or in some cases ending their careers (Benson et al., 2011). Examples of NHL players who have had their lives negatively affected in this manner include Eric Lindros, Pat LaFontaine, and Scott Stevens (Leonard, 2013).

After Derek Boogaard's passing it was determined that he had chronic traumatic encephalopathy (Branch, 2011). CTE is a progressive degenerative disease of the brain found in athletes with a history of repetitive brain trauma, including symptomatic concussions as well as asymptomatic subconcussive hits to the head (Boston University, 2013) CTE has been

confirmed in many retired professional football players and other athletes who have a history of repetitive brain trauma. The autopsies of former NHL enforcers Bob Probert and Reggie Fleming also showed CTE (Associated Press, 2011).

As mentioned earlier, Derek Boogaard and others have been found to have had CTE. Although the occurrence of one concussion is usually not life-threatening, suffering more than one can lead to traumatic results. Often referred to as second impact syndrome, if a player returns to competition and suffers another concussion before the symptoms of the first concussion have entirely been dissipated there may be a loss of autoregulation of the brain's blood supply (Harmon, 1999; Saunders & Harbaugh, 1984). This decrease of blood supply to the brain can ultimately lead to a herniation of the brain that is often fatal (Harmon, 1999). (Harmon, 1999). According to Cantu (2003) symptoms of second-impact syndrome may include fatigue, headache, disorientation, nausea, vomiting, or report of a foggy feeling.

Assumption of Risk

To analyze the negligence issue brought forth by the *Boogaard* case, "it is important to distinguish between normal aggressive conduct that can be contemplated from sports participants and ... dangerously excessive violence" (Calvert-Hanson & Dernis, 1996, p.131). The NHL could contend that players assume the risk of all injuries inherent in professional hockey. Generally, participants in an athletic event are held to assume the risks of injury normally associated with the sport (*Niemcyzk v. Burleson*, 1976). To be sure there is an inherent risk of injury in all sports. An inherent risk occurs when an athlete voluntarily assumes the foreseeable dangers of the activity and the activity is considered an integral part of the sport (Cotten, 2010). For example, football would not be football without tackling and blocking, ice hockey would not be the same sport without "checking" a player into the boards, or a baseball would be the same without a player sliding into a base or diving for a ball. In each case the athlete knows that the potential for injury in each of these actions exists. Thus, many claim that athletes assume the risk of injuries incurred while playing a certain sport (Dobbs, 2000; Miller, Wendt, & Potter, 2010).

In each sport, injury patterns relating to particular types of injuries tend to emerge. Sports such as hockey have been shown to exhibit more acute traumatic injuries due in large part of the collisions and fights that take place between players. However, individuals must have actual knowledge of the risk at issue in order to invoke the assumption of risk doctrine (Restatement of Torts, 1965). It stands to reason that people cannot a make a rational choice to face a risk if they are not knowledgeable about a danger. The knowledge required in assumption of the risk analysis is actual knowledge, not constructive notice (*Meulners v. Hawkes*, 1974). As Hoshizaki said, "The truth is that we don't know, so I think it is important to take the approach that when you don't know what the risk is …" (Bergeron-Oliver, 2013). If hockey players are not familiar with inherent risks such as the problems presented by a potentially severe, yet relatively imprecise injury such as a concussion, it would be unlikely for them to assume the risk (*Hoge v. Munsell et al.*, 2001). This type of knowledge is key as the crux of the *Boogaard* negligence case as the allegations include the NHL lack of disclosure to inform players about the high rate of injuries resulting from playing professional hockey; the higher rate of injuries sustained by enforcers in the NHL as well as increased risk of brain damage due to concussive and sub-concussive brain trauma that may be incurred in the game of hockey.

It is significant to note that the court in *McKichan v. St. Louis Hockey Club* (1998) indicated that violence, including body checking and fighting, even if it violates rules of the game and causes injury, is not actionable. However, a previous court found that action alleging negligence could be pursued (*Babych v. McRae* (1989). Thus, the question remains as to how to manage the risks in question? Does the management of the risks in hockey simply shift the risk elsewhere? The conventional assumption is that most risk management measures are effective – and there certainly is evidence to support that view. Literature points out how behavior changes in response to an implementation to a measure. For example, the introduction of safety measures in highway construction reduces the frequency of vehicle accidents (Hedlund, 2000; Holland & Hill, 2007). To extrapolate to this paper, players may be less likely to engage in fights or other violent behaviors in hockey, if they knew of the potential consequences regarding head injuries. Thus, it is important to anticipate and manage how a decrease in fights or other violent behaviors may be perceived by the players and patrons.

PARADIGM SHIFTS OF VIOLENT HOCKEY BEHAVIOR

There is support that the drive to curb the violence from which concussions often result is coming from former players and fans. Ken Dryden, a Hockey Hall of Fame goalie who earned a Calder Trophy (NHL Rookie of the Year); a Conn Smythe Trophy (NHL Most Valuable Player), five Vézinas Trophies (Outstanding Goalie) and six Stanley Cup Championships spoke about his perceptions of concussions in the sport. Dryden stated:

I think that this is one of those big questions like cigarettee smoking was 40 or 50 years ago that we look back on now and we wonder how we could have been so stupid…I think this is the one, in sports, that 40 or 50 years from now, people will look back at us and wonder "What was wrong with them? How didn't they get it? Why were they so stupid?" (Spencer, 2013, para. 10).

In 2011, the concussion protocol from trainers conducting an examination on the bench during a game to requiring players displaying symptoms to be given a baseline test by a doctor in a quiet location before returning to the ice was changed. The NHL would also impose fines on teams and coaches that have players who rack up a high number of suspensions and forming a special committee of NHL player discipline czar Brendan Shanahan, Rob Blake, Steve Yzerman and Joe Niuewendyk to continue looking at the concussion issue (The Canadian Press, 2011). Shanahan stated:

> I do believe the credit goes to the players…I don't know if there's too many players in the NHL that understand CTE, but I think that players just in general have learned and understand the importance of taking care of their brain and the difference of playing through an injury and playing through a concussion. The players aren't always happy when they get a phone call from me, but overall they want dirty, illegal head shots out of the game (Cotsonika, 2011, para. 78).

There may also be a paradigm shift among the fans. In a game during the 2011 season Montreal Canadiens forward Max Pacioretty hit Boston Bruins defenseman Zdeno Chara that sent Pacioretty to hospital with a concussion (Farber, 2011). After viewing the incident, Dr. Pierre Harvey, a physician from Riviere-du-Loup, Quebec and former hockey player brought forward a motion to criticize the contentment of the NHL concerning the violence in hockey at

the 2013 Canadian Medical Association (CMA) Meeting. The motion was approved by two-thirds of delegates (Graveland, 2013a). However, the NHL did not suspend Chara because they felt that it was "hockey play" and found no evidence that the check was not delivered in any manner that could be deemed dangerous (Graveland, 2013b). Harvey dismissed the concept that most of the concussion may be accidental, "Those players are so good at their jobs, it's impossible for them not to know they are going to check the guy in the head…They know what they're doing. And it's permitted. It's tolerated by the NHL" (Southwick, 2013, para. 4). After the Chara and Pacioretty incident, Bettman said:

> There's no one single thing causing concussions…There is no magic bullet to deal with this. I know that it's an emotional, intense subject, particularly for our fans. We get it. But dealing with this issue is not something you can do whimsically or emotionally…You really have to understand what's going on (The Canadian Press, 2011, para. 30).

In order to gain insights into "what's going on", it would be advisable for the NHL Board of Governors, owners, and players work to develop risk management policies. Objective risk management practices such as stringently sanctioning all violent behavior, including fights, raises the probability that risks can be completely managed, thereby averting the potential health issues due to concussions incurred during a hockey fight. Additionally, there may be perceptions that once the inventory of risks has been accounted for (i.e. all violent behaviors have been eliminated), that the management of all risks has been completed. However, these perceptions can generate a false sense of security that may diminish the players' awareness, thereby creating even larger risks. In order to gauge whether sanctions against any behavior that exposes another person to brain injury, specifically hockey fights, are effective it is useful to briefly place this type of measure in even a broader, more modern risk management context referred to as Enterprise Risk Management.

APPLICATION OF RISK MANAGEMENT

Risk management has evolved rapidly over the past 20 years. However, it is imperative to stress that modern risk management is now structured around a comprehensive practice for assessing and addressing risks (Miller, Wendt, & Young, 2010). This approach, often labeled Enterprise Risk Management (ERM), contrasts from traditional risk management practices in several ways. First, ERM identifies and assesses the broadest possible array of risks faced by the organization (Miller et al., 2010). Second, ERM creates a comprehensive organizational policy for managing risks (Miller et al., 2010). Third, ERM entrenches procedures for the continuing identification and assessment of risks while providing an implementation process for the day-to-day management of those risks (Young & Tippins, 2000). Ultimately, most experts agree that the key characteristics ERM are: 1) top management involvement in the establishment of risk policy, and 2) the participation of all employees (i.e., players and officials) in the management of risks that fall within the scope of their general responsibilities (Andersen & Schrøder, 2010; Lam, 2003; Slovic & Peters, 2006; Young & Tippins, 2000). ERM approaches risks as a highly interconnected collection of risks that need to be managed, not just in response to the potential exposure to harm of a particular risk, but with a specific focus on the comprehension of the interrelationships of all risks in question (Andersen & Schrøder,

2010). This central insight produces a number of effects that extend and frequently challenge thinking about risk management (Miller et al., 2010).

An example of the implementation of ERM in the NHL is Rule 48. Over the past three years, the NHL has investigated penalties due to illegal hits to a players head, usually referred to as Rule 48. Introduced for the 2010 – 2011 season, on-ice officials had the ability to call a major penalty for any targeted hit to the head from the lateral or blind side, but there was a concern that the referees were not calling the penalty because it was too severe (Urtz, Jr., 2011). For the 2011 – 12 season the NHL removed the lateral or blind side requirements as well as changed the penalty from major to minor (Rosen, 2011). Brendan Shanahan, NHL Senior Vice President of Player Safety and Hockey Operations and in charge of NHL discipline said, "Last year it was about lateral, blindside or east-west hits. ... We have in our minds broadened the net" (Allen, 2011, para. 2). For the 2013 – 14 season the Competition Committee of the NHL removed the word "targeted" where the rule now states, "A hit resulting in contact with an opponent's head where the head was the main point of contact and such contact to the head was avoidable is not permitted" (Rosen, 2103, para. 27). It was thought by eliminating the word targeted and adding avoidable there will a greater onus on player's to avoid reckless conduct (Friedman, 2013).

However, it became apparent that Rule 48 needed to be changed even further. A 2013 study found that not only did concussions not decrease after the introduction of Rule 48, but also that concussion incidence was unchanged between the 2010–11 and 2011–12 seasons (Donaldson, Asbridge & Cusimano, 2013). In a separate interview, Cusimano said,

> If player safety is the prime priority of the NHL in bringing this kind of rule in ... then they need to relook at this in a very serious way and adjust things…If it isn't a priority, I could see them just leaving things the way they are and it's kind of a Band-Aid response to a major problem (Branswell, 2013, para. 5).

Cusimano was also critical on the new language of Rule 48 where penalties may not be called if the injured player put himself in a vulnerable position: "And this highlights one of the major problems in sport and particularly in hockey these days. We victimize the victim even more, rather than looking at the game and the system and saying: 'What can we do to reduce these injuries?'" (Branswell, 2013, para. 21). Cusimano also suggested a possible deterrent instead of a minor or major penalty "If there were more severe consequences to those who inflict that kind of injury – let's say that player was out for an equal amount of time as Crosby—that might have more impact" (Branswell, 2013, para. 23).

While acknowledging that hockey is a high risk profession, there can be actions taken to reduce the risk. Dr. Louis Francescutti, past president of the Canadian Medical Association stated:

> What we want to do is make it crystal clear that violence must be addressed…Don Cherry (Hockey Night in Canada television commentator) may not agree with me … but purposely hurting someone is not part of the game of hockey" (Savard, 2013, para. 2).

Broadly, it can be said that risk tends to degrade an organization's (or an activity's) value if it not addressed (Rescher, 1983). Thus, the case can be made that effective risk management contributes to organization or enterprise value (Williams, Smith, & Young, 1998). However, there is some controversy as to how "value" is measured because it can mean very different

things in different settings. For the hockey patron, the value of the event would seem to be derived from an interconnected range of "experience elements", such as ambience, competitiveness of the event, concessions quality, security, and a range of other issues such as seeing their favorite hockey players compete, including fighting, against each other.

In the extreme, measures such disallowing the players to continue to fight until they tire out but before penalties are assessed, could become so burdensome that they offset reduced ticket prices, attractive concessions, and the general excitement of attending a professional hockey game. In other words, the lack of fighting in the game could degrade the value of the experience. Thus, risk management decisions almost invariably involve a generalized risk-reward trade-off (Adams, 2001). It is impractical to have zero risks in a sports activity without degrading value. As a result the decision process must follow an optimizing rule, balancing the costs and benefits against overall risk management objectives (Rescher, 1983). It might therefore be noted that the real impact of modern risk management on measures like the sanctions against situations which may decrease the likelihood of head injuries adds to the dimensionality to the analysis.

Any individual measure should be considered in terms of its relationship to overall organizational policy, risk policy and to the interconnectivity that exists between risks. And, the temporal dimension must be considered as well—a risk management measure is introduced and it must not only suit its original purpose such as decreasing opportunities for head injuries but must in some way anticipate the ramifications of other consequences such the impact on youth hockey. Dr. Charles Tator, project leader for the Canadian Sports Concussion Project at the Krembil Neuroscience Centre, is also concerned about concussions and Rule 48 saying, "Professional hockey is still a bad influence on the amateurs" (Branswell, 2013, para. 9). Over 160,000 children were seen in emergency departments last year for sports-related concussions (Safe Kids Worldwide, 2013). Cusimano argued that tougher rules in the NHL would ultimately protect younger players because other players and leagues want to emulate the NHL (Boyle, 2013).

MONITORING YOUTH HOCKEY FOR CONCUSSIONS

Despite the protests of Charles Barkley and other well-known sports figures, today's professional athletes do act as role models for children (Rutten, Stams, Biesta, Schuengel, Dirks, & Hoeksma, 2007). The expansion of the sports industry is epitomized by the increased coverage of athletic contests from twenty-four hour sports television channels such as ESPN and the Internet (Gillentine, Crowe, & Harris, 2009). A desire to achieve the fame and fortune of athletes has led children to emulate players who thrive in their respective sports (Rutten et al., 2007). If excessive violence is prevalent in professional sports, a child may think that it is acceptable to utilize similar aggression (Rutten et al., 2007). University of Ottawa professor and concussion researcher, Blaine Hoshizaki has argued for a better way to monitor concussions in both children and adults and many concussions go unreported:

It's a challenge for young athletes to diagnose their own concussion and of course that athlete will go out and play football or hockey…They'll feel a little uneasy, a little disoriented perhaps and experiencee a little bit of a headache and won't consider that a concussion and won't report it (Bergeron-Oliver, 2013, para. 9).

Brian Christie, concussion researcher and director of the Neuroscience Graduate Program at the University of Victoria, recently received a $1.4 million grant from the Canadian Institutes of Health Research to carry out the five-year study to examine 200 healthy young hockey players, ages 6 to 17, to determine what their neurological activity looks like before suffering a concussion (CBC News, 2013). The aim of the study is to create baseline data for this group of young hockey players and increase the ability of doctors to accurately diagnose concussions and determine recovery and return-to-play (CBC News, 2013). Additionally, the Coaches of Canada has recently promoted concussion awareness programs and education resources to help coaches identify the signs and symptoms of a concussion, as well as return-to-play guidelines (Coaching Association of Canada, 2013).

CONCLUSION

Hockey has risk, but violence is not an integral, essential part of the game. Jody Shelley, a former NHL enforcer argued that fighting is "something that's unique about our game, it's something that gets negative press way more than positive press and it's only at times that negative stuff happens" (Whyno, 2013a, para. 16). The National Hockey League (NHL) may be facing the point that the integrity of the game cannot be separated from player safety? Athletes that participate in any sport in which the head may be exposed to contact are at risk of eventually suffering from permanent brain damage from concussions they experience during their practices or games (Yard & Comstock, 2009). For a number of years NHL Commissioner Bettman has stated that he and the NHL are "studying" the concussion issue. In fact, the midst of more calls about curbing the violence Commissioner Bettman said,

I think the level of dialogue gets sparked by an occasional incident, and an incident of this nature when you look at everything else that is going on in the season was really a small pebble relative to a beach full of sand, which is seeing an incredibly entertaining season…I think sometimes an incident, as rare as it might be, tends to get focused on disproportionately (Whyno, 2013b, para. 6).

Due to the confusion as to whether bringing a negligent violation of a NHL safety rule is a valid cause of action (*Babych v. McRae*, 1989; *McKichan v. St. Louis Hockey Club*, 1998), an understanding of managing the risks incurred by the players that result in concussions is imperative. The effective implementation of Enterprise Risk Management provides a "value added" dimension by offering greater opportunities for hockey fans to view the superstars of the sport more often. For example, the Canadian Broadcasting Corporation (CBC) has estimated that approximately 13% of all NHL players missed games because of concussions during the 2011-12 hockey season (Klein, 2013). This number of games equated to nearly 1700 man-games that were lost (Wharnsby, 2012a). Notable players lost to concussions during 2011-2012 were Columbus Blue Jacket defenseman Radek Martinek for 70 games; Philadelphia defenseman Chris Pronger for 69 games; and Pittsburgh Penguins superstar Sidney Crosby with sixty games (Wharnsby, 2012a). The top three teams affected were the St. Louis Blues that had more than 160 man-games lost, the Pittsburgh Penguins with 145 and the Minnesota Wild with 120 (Wharnsby, 2012b).

The National Football League (NFL) and team owners recently agreed to a $765,000,000 settlement to fund medical exams, concussion-related compensation, and a program of medical research for retired NFL players and their families (Florio, 2013). Recently, former players of

the National Hockey League (NHL) filed a class action lawsuit against the NHL and NHL Board of Governors (Leonard, 2013). The action alleges that the league did not adequately study concussion prevention or alert the players about the consequences of concussions. The NFL has revenues of more than $9 billion. On the other hand, the NHL has revenues of approximately $3.3 billion. Some feel that a NFL-like settlement would cripple the NHL (Brown, 2013).

Will the concussion lawsuits represent a paradigm shift in the culture of sport, that internal disciplinary mechanisms for player protection are not enough? (Roser-Jones, 2013). The NHL players and Players Association (NHLPA) need to support changes. The players and the NHLPA have to work with the owners to improve player safety. Or as Ken Dryden put it, "We need to see hits from behind and hits to the head for what they really are. We need to see finishing a check for what it really is. These and other plays are not traditions of the game worthy of protection. They have brought danger to the game. They have hurt the game" (Dryden, 2004, para. 24). Fighting is prohibited in the Olympic Games as well as US college hockey, yet they have produced some of the most spectacular games ever. Would fighting have improved the "Miracle on Ice"? The fight culture of hockey has to change.

REFERENCES

Adams, J. 2001. *Risk*. London: Routledge.

Allen, K. (2011, September 20). NHL broadens head hit rule. *USATODAY.COM*. Retrieved from http://content.usatoday.com/communities/gameon/post/2011/09/nhl-broadens-head-hit-rule/1

American Jurisprudence (2nd. ed.). (2004). *Negligence*. Eagan, MN: Thomson-West Publishing.

Andersen, T. J., & P.W. Schrøder. (2010). *Strategic risk management practice*. Cambridge, MA:Cambridge Press.

Anker, J. (2013, August 30). Why my son will never play football. Retrieved from http://www.hlntv.com/article/2012/05/04/why-i-will-not-let-my-son-play-football

Associated Press. (2011, March 2). Probert had degenerative brain disease: study. Retrieved from http://www.cbc.ca/sports/hockey/probert-had-degenerative-brain-disease-study-1.1040931/

Babych v. McRae, 41 Conn. Supp. 280, 567 A.2d 1269, 1989 Conn. Super. LEXIS 11 (Conn. Super. Ct. 1989).

Balukjian, B. (2013, July 17). Hockey still plagued by concussions, despite rule change. Retrieved from http://www.latimes.com/news/science/sciencenow/la-sci-sn-hockey-concussions-20130717,0,6800845.story

Bergeron-Oliver, A. (2013, August 7). Concussions threatening our kids: Report. Retrieved from http://www.ipolitics.ca/2013/08/07/concussions-threatening-our-kids-report/

Bernard, D. & Trudel, P. (2004). The values of coaches and players about rule infractions, violence and ethics. *Safety in Ice Hockey, 4,* 152-163.

Benson, B. W., Meeuwisse, W. H., Rizos, J., Kang, J., & Burke, C. J. (2011). A prospective study of concussion among National Hockey League players during regular season games: The NHL-NHLPA concussion program. *Canadian Medical Association Journal, 18*3, 905-911.

Blair, J. (2013, August 29). In the wake of NFL concussions settlement, will NHL follow suit? Retrieved from http://www.theglobeandmail.com/sports/football/in-the-wake-of-nfl-concussions-settlement-will-nhl-follow-suit/article14033493/

Bloom, G. & Vanier, J. (2004). Coaches' perceptions of aggression in elite women's ice hockey. *Safety in Ice Hockey, 4,* 12-23.

Boogard v. NHL Players Ass'n 2013 U.S. Dist. LEXIS 38840 (C.D. Cal. Mar. 20, 2013).

Boston University Center for the Study of Traumatic Encephalopathy. (2013). What is CTE? Retrieved from http://www.bu.edu/cste/about/what-is-cte/

Boyle, T. (2013, July 17). NHL headshot rule not working: study. Retrieved from http://www.thestar.com/sports/hockey/2013/07/17/nhl_headshot_rule_not_working_study.html

Branch, J. (2011, December 5). Derek Boogaard: A Brain "Going Bad." *The New York Times*. Retrieved from http://www.nytimes.com/2011/12/06/sports/hockey/derek-boogaard-a-brain-going-bad.html

Branswell, H. (2013). Study finds recent rule changes didn't reduce rates of concussions in NHL. *The Globe and Mail*. Retrieved from http://www.theglobeandmail.com/sports/hockey/study-finds-recent-rule-changes-didnt-reduce-rates-of-concussions-in-nhl/article13291450/

Brown, M. (2013, November 7). How concussions in the NFL will make fights in the NHL stop. *Forbes*. Retrieved http://www.forbes.com/sites/maurybrown/2013/11/07/how-concussions-in-the-nfl-will-make-fights-in-the-nhl-stop/.

Brunelle, J.P., Goulet, C., Arguin, H. (2005). Promoting respect for the rules and injury prevention in ice hockey: evaluation of the fair-play program. *Journal of Science and Medicine in Sport, 8*, 294-304.

Calvert-Hanson, L. S. & Dernis, C. (1996). Revisiting excessive violence in the professional sports arena: Changes in the past twenty years? *Seton Hall Journal of Sport Law, 6*(1), 127-166.

Canada's Sports Hall of Fame. (2013). Ken Dryden. Retrieved from http://www.sportshall.ca/honoured-members/28092/ken-dryden/

Cantu, R. C. (2003). Recurrent athletic head injury: Risks and when to retire. *Clinical Journal of Sports Medicine, 22*, 593–603.

CBC News. (2013, August 7). B.C. brain researchers launch youth concussion study. Retrieved from http://www.cbc.ca/news/canada/british-columbia/story/2013/08/07/bc-concussions-youth-hockey.html

Coaching Association of Canada. (2013). Concussion Awareness. Retrieved from http://www.coach.ca/concussion-awareness-s16361

Collins, C. L., Fields, S. K., & Comstock, R. D. (2008). When the rules of the game are broken: What proportion of high school sport-related injuries are related to illegal hits? I*njury Prevention, 14*(1), 34-38.

Collins, M.W., Lovell, M.R., & Mckeag, D. B. (1999). Current issues in managing sports-related concussion. *Journal of the American Medical Association, 282(*24), 2283-2285.

Corboy & Demetrio. (2013). Corboy & Demetrio files wrongful death lawsuit against NHL in death of Derek Boogaard. Retrieved from http://www.corboydemetrio.com/news-412.html.

Cotsonika, N. (2011, November 2). Brain disease claims divide hockey doctors and Boston University researchers. *Yahoo Sports*. Retrieved from http://sports.yahoo.com/news/brain-disease-claims-divide-hockey-164100916--nhl.html

Cotten, D. J. (2010). Defenses against negligence. In D. J. Cotten & J. T. Wolohan (Eds.), *Law for recreation and sport managers* (4th ed., pp. 66-79). Dubuque, IA: Kendall/Hunt.

CTVNews.ca. (2013, April 17). Violent NHL playoff have fans, pundits crying foul. Retrieved from http://www.ctvnews.ca/violent-nhl-playoffs-have-fans-pundits-crying-foul-1.797205

Cusimano, M.D., Chipman, M. L., Volpe, R., & Donnelly, P. (2009). Canadian minor hockey participants' knowledge about concussion. *Canadian Journal of Neurological Sciences, 36,* 315-320.

Darby, J. (1994, October 16). Injuries can be a pain. *Boston Herald.* B9

Dobbs, D. B. (2000). *The law of torts*. St. Paul, MN: West Group.

Donaldson, L., Asbridge, M., & Cusimano, M. (2013). Bodychecking rules and concussion in elite hockey. *PloS One*, *8*(7), e69122.

Dryden, K. (2004). Saving the game. *The Globe and Mail*. Retrieved from http://www.theglobeandmail.com/globe-debate/saving-the-game/article742669/?page=all

Echemendia, R. J., Putukian, M, Mackin, R. S., Julian, L., Shoss, N. (2001). Neuropsychological test performance prior to and following sports-related mild traumatic brain injury. *Clinical Journal of Sport Medicine, 11*(1), 23-31

Ellenbogen, R., Beger, M.S., & Hunt, B. H. (2010). The National Football League and concussion: Leading a culture of change. *World Neurosurgery, 74*(6), 560-565.

Farber, M. (2011, March 10). NHL loses moral compass with Zdeno Chara hit on Max Pacioretty. Retrieved from http://sportsillustrated.cnn.com/2011/writers/michael_farber/03/09/max.pacioretty.zdeno.chara.hit/

Florio, M. (2013, October 9). Owners ratify concussion settlement, hearing set for October 28. Retrieved from http://profootballtalk.nbcsports.com/2013/10/09/owners-ratify-concussion-settlement-hearing-set-for-october-28/

Friedman, E. (2013, September 9). 30 Thoughts: NHL clarifies illegal check to head rule. Retrieved from http://www.cbc.ca/sports-content/hockey/opinion/2013/09/30-thoughts-nhl-clarifies-illegal-check-to-head-rule.html.

Gash, J. (2003). At the intersection of proximate cause and terrorism: A contextual analysis of the (proposed) Restatement Third of Torts' approach to intervening and superseding causes. *Kentucky Law Journal 2002-2003l, 91*, 523-611.

Gerber, D. & Kozora, E. (2000). Neuropsychology of sport concussion. *CNI Review, 2*, 35-40.

Gillentine, A., Crow, R. B., & Harris, J. (2009). Introduction to the sport industry. In A. Gillentine & R. Brian Crow (Eds.), *Foundations of sport management* (pp. 1-14). Morgantown: FIT/West Virginia University Press.

Giulianotti, R. (1999). *Football: A sociology of the global game.* Cambridge, UK: Polity.

Goodman, D. & Williamson, I. W. (2009). Concussion in youth hockey: Risk factors and management across observation strategies. *Safety in Ice Hockey, 5,* 211-230.

Graveland, B. (2013a, August 21). Doctors say NHL owners too complacent when it comes to violence in the game. *Yahoo Sports Canada*. Retrieved from http://ca.sports.yahoo.com/news/doctors-nhl-owners-too-complacent-violence-203621636.html

Graveland, B. (2013b, August 22). Doctors say NHL owners too complacent when it comes to hockey violence. Retrieved from http://www.ctvnews.ca/health/doctors-say-nhl-owners-too-complacent-when-it-comes-to-hockey-violence-1.1421479

Harmon, K.G. (1999). Assessment and management of concussion in sports. *American Family Physician, 60*, 887-894.

Hedlund, J. (2000). Risky business: Safety regulations, risk compensation, and individual behavior. *Injury Prevention, 6*(2), 82-90.

Hoge v. Munsell, et al., 749 N.E.2d 985 (Ill. 2001).

Holland, C. & Hill, R. (2007). The effect of age, gender and driver status on pedestrians' intentions to cross the road in risky situations. *Accident Analysis and Prevention, 39*(2), 224-237.

Iverson, G.L., Gaetz, M., Lovell, M. R., & Collins, M. W. (2004). Cumulative effects of concussion in amateur athletes. *Brain Injury, 18*(5), 433–443.

Kaut, K.P., DePompei, R., Kerr, J., & Congeni, J. (2003). Reports of head injury and symptom knowledge among college athletes: Implications for assessment and educational intervention. *Clinical Journal of Sport Medicine, 13*(4), 213 –221.

Kelly, J. P. & Rosenberg, J. H. (1997). Diagnosis and management of concussion in sports. *Neurology, 48*, 575-580.

Klein, J. (2013, February 26). A wave of concussions hits the N.H.L. Retrieved from http://www.nytimes.com/2013/02/27/sports/hockey/another-wave-of-concussions-hits-nhl.html?_r=0

Lam, J. (2003). Enterprise risk management: From incentives to controls. Hoboken, NJ: Wiley Publishing.

Leonard, P. (2013, October 5). George Parros' concussion leads NHL GMs to express need for stricter fighting penalties. *NY Daily News*. Retrieved from http://www.nydailynews.com/sports/hockey/fighting-rages-nhl-article-1.1477334

Lovell, M. R., Collins, M. W., Iverson, G. L., Field, M., Maroon, J. C., Cantu, R., Podell, K, Powell, J.W. & Fu, F.H. (2003). Recovery from mild concussion in high school athletes. *Journal of Neurosurgery, 98*(2), 296–301.

McKichan v. St. Louis Hockey Club, L.P., 967 S.W.2d 209, 1998 Mo. App. LEXIS 489 (Mo. Ct. App. 1998).

Miller, J. J., Wendt, J. T., & Potter, N. (2011). Implications for concussion assessments and return-to-play standards in intercollegiate football: How are the risks managed? *Journal of Sport Administration & Supervision, 3*(1), 91-103.

Miller, J. J., Wendt, J. T., & Young, P. C. (2010). Fourth Amendment considerations and application of risk management principles for pat-down searches at professional football games. *Journal of Legal Aspects of Sport, 20*(2), 108-134.

Mixer, R. (2013, February 24). *Columbus Blue Jackets: Game day: Chicago*. Retrieved from http://bluejackets.nhl.com/club/news.htm?id=657146.

Meulners v. Hawkes, 299 Minn. 76, 80 (1974)

Niemcyzk v. Burleson, 538 S.W.2d 737, 740 (Mo. Ct. App. 1976).

Rescher, N. (1983). *Risk: A philosophical introduction to the theory of risk evaluation and management*. Washington, D.C.: University Press of America. Restatement (Second) of Torts § 466 (1965).

Rosen, D. (2011, June 21). *Board of Governors approves changes to two rules.* Retrieved from http://www.nhl.com/ice/news.htm?id=566579

Rosen, D. (2013, September 30). *Hybrid icing tops list of NHL rule changes for 2013-14 season.* Retrieved from http://www.nhl.com/ice/news.htm?id=684940

Roser-Jones, C. (2013). A costly turnover: Why the NFL's bounty scandal could change the current legal standard of deferring to internal disciplinary sanctions in instances of game-related violence. *Sports Lawyer Journal*, *20*, 93-133.

Rutherford, A., Stephens, R., Potter, D., & Fernie, G. (2005). Neuropsychological impairment as a consequence of football (soccer) play and football heading: Preliminary analyses and report on university footballers. *Journal of Clinical Experimental Neuropsychology, 27*(3), 299 –319

Rutten, E. A., Stams, G. J. J. M, Biesta, G. J. J., Schuengal, C., Dirks, E., & Hoeksma, J. B. (2007). The contribution of organized youth sport to antisocial and prosocial behavior in adolescent athletes. *Journal of Youth Adolescence, 36*, 255–264

Safe Kids Worldwide. (2013, August). *Game changers: Stats, stories and what communities are doing to protect young athletes*. Retrieved from http://www.safekids.org/sites/default/files/documents/ResearchReports/final_sports_study_2013.pdf

Saunders, R. L. & Harbaugh, R.E. (1984). The second impact in catastrophic contact-sports head trauma. *Journal of the American Medical Association, 452*(4), 538-539.

Savard, C. (2013, August 22). *Canadian doctors believe NHL too complacent on violence issues in hockey.* Retrieved from http://www.ourhometown.ca/hockey/HH0113.php

Schwartz, A. (2011). Hockey brawler paid price, with brain trauma. *The New York Times.* Retrieved from http://www.nytimes.com/2011/03/03/sports/hockey/03fighter.html?pagewanted=all&_r=0

Shoalts, D. (2011, December 20). Maple Leafs' Armstrong only the latest NHLer to conceal concussion. *The Globe and Mail*. Retrieved from http://www.theglobeandmail.com/sports/hockey/leafs-beat/maple-leafs-armstrong-only-the-latest-nhler-to-conceal-concussion/article620232/

Slovic, P. & Peters, E. (2006). Risk perception and affect. *Psychological Science, 15*(6), 322–325. Southwick, R. (2013, August 21). *CMA passes motion condemning NHL for level of violence in hockey.* Retrieved from http://www.ipolitics.ca/2013/08/21/doctors-pass-motion-condemning-nhl-for-level-of-violence-in-hockey/

Spencer, D. (2013, April 23). Ken Dryden warns of "catastrophic repercussions" on concussion issue. *The Globe and Mail*. Retrieved from http://www.theglobeandmail.com/sports/hockey/ken-dryden-warns-of-catastrophic-repercussions-on-concussion-issue/article11494059/

The Canadian Press. (2011, March 14). NHL GMs decide on new concussion protocol. Retrieved from http://www.cbc.ca/sports/hockey/story/2011/03/14/sp-nhl-gm.html

Turcotte v. Fell, 68 N.Y.2d 432, 502 N.E.2d964, 1986 N.Y. LEXIS 20856, 510 N.Y.S.2d 49 (1986).

Urtz, Jr., T. (2011, April 30). Rule 48 needs to Be amended for safety. *Bleacher Report*. Retrieved from http://bleacherreport.com/articles/685178-nhl-will-a-player-get-paraylzed-before-rule-48-is-rewritten

Wharnsby, T. (2012a, April 10). Final concussions and suspensions list | Hockey | CBC Sports. Retrieved from http://www.cbc.ca/sports-content/hockey/opinion/2012/04/concussions-and-suspensions-list.html

Wharnsby, T. (2012b, August 5). Concussion numbers were staggering in NHL's 2011-12. Retrieved from http://www.cbc.ca/sports-content/hockey/opinion/2012/04/concussion-numbers-in-the-nhl-were-staggering-in-2011-12.html

Whyno, S. (2013a, July 11). NHL players bristle at fighting debate despite fan support for ban. *National Post*. Retrieved from http://sports.nationalpost.com/2013/11/07/nhl-players-bristle-at-fighting-debate-despite-fan-support-for-ban/

Whyno, S. (2013b, November 11). NHL commissioner Gary Bettman says debate over fighting getting too much attention. *The Canadian Press*. Retrieved from http://www.theglobeandmail.com/sports/hockey/bettman-wonders-if-fighting-debate-in-nhl-is-getting-too-much-attention/article15374154/

Williams, C. A., Smith, M. L., & Young, P. C. (1998). *Risk management and insurance* (8th ed.). New York: McGraw-Hill Book Company.

Yard, E. E. & Comstock, R. D. (2009). Compliance with return to play guidelines following concussion in U. S. high school athletes, 2005–2008. *Brain Injury, 23*(11), 888–898.

Young, P.C. & Tippins, S.C. (2000). Managing business risk: An organization-wide approach to risk management. New York: AMACOM.