

Editorial

Concussion education, identification, and treatment within a prospective study of physician-observed junior ice hockey concussions: social context of this scientific intervention

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The Hockey Concussion Education Project (HCEP) is a prospective study in which education and surveillance interventions of 2 junior (16 to 21-year-old) fourth-tier ice hockey teams took place during the 2009–2010 season.

The HCEP originated from the observation of inadequate and inconsistent concussion care in junior ice hockey. The precipitating event occurred when a junior-level coach overruled a team physician on a return-to-play decision of a player with a concussion. The coach allowed the player to return to play against medical advice. When confronted by the physician concerning the risk to the player, the team, and the league, the coach responded, “Who needs a doctor anyway?” This incident convinced me to undertake further scientific study of concussions and to advocate for consistent medical care of athletes who sustain them.

This editorial will outline multiple observations that came out of the HCEP. Some of these observations are subjective and most pertain to the sociological context in which hockey is played. The cases and case examples discussed mainly represent individuals from the HCEP. A few individuals from the author’s practice identified as not participating in the prospective study are also described. The 3 associated scientific articles published in this issue of *Neurosurgical Focus* contain scientific research on concussion incidence, education, and return-to-play findings that resulted from the HCEP.

A review of previous concussion studies shows many different protocols and guidelines gathered under varying levels of expertise. Direct, independent, scientific evidence of the true incidence of concussions, gathered by physicians according to a single internationally agreed upon protocol, is needed.

The 2009 Zurich consensus statement on concussions resulted in a protocol guideline from a 10-year international, cooperative, and multidisciplinary consensus of current evidence and expert opinion. The Zurich statement was

used as the basis for the HCEP definition of concussion, identification/diagnosis, treatment, and return-to-play guideline.

The HCEP was composed of an educational component and a surveillance component. Players in the study were tested for their baseline concussion knowledge and were then randomized into 1 of 3 groups: 2 groups received different forms of concussion education and 1 group was the control. The intervention groups were given concussion education and were tested postintervention. All the groups were then sequentially tested at Game 15 and Game 30 of their regular hockey season to determine the change in their knowledge of concussions.

The surveillance intervention component of the HCEP consisted of having a qualified sports medicine physician and neutral trained observers attend the regular season games of the 2 teams. A probable concussion was initially identified by the medical and neutral observers during the game. A suspected concussion was recorded, and the player was medically evaluated in a vacant dressing room. If the medical evaluation was positive for a concussion, the player was removed from the game and was requested to follow up with the HCEP physician the following day for reevaluation and appropriate treatment. If the player’s immediate evaluation was negative for concussion, he was returned to play. For a complete and detailed description of the methods used in the HCEP please see Echlin and colleagues’ article, “A prospective study of physician-observed concussions during junior ice hockey: implications for incidence rates,” in this issue of *Neurosurgical Focus*.

In Canada, ice hockey is a major cause of sport-related concussion.⁹ Senior hockey players can travel at speeds of up to 48 km/hour (30 miles/hour) when skating and up to 24 km/hour (15 miles/hour) when sliding. These athletes can make contact with numerous hard surfaces such as the boards, glass, ice, goal posts, and fellow players. It is not surprising that a concussion is the most common athletic injury and that hockey rates among the highest of all contact sports for concussion rates per player exposure.¹ Research has documented the significant effect that concussion may have on the individual and society.^{4–7,11–14}

Despite long-standing concerns in the medical community, concussion has received little attention from the general population or from the athletes.¹⁶ Cultural and social obstacles may prevent the seriousness of this brain injury and its long-term effects from being appropriately recognized.

To effect a cultural change concerning concussion,

widespread education is needed for all individuals involved in contact sports. Improved identification, treatment, and prevention of concussion should be based on prospective standardized evidence.

The athlete and the individuals who surround the athlete (parents, coaching staff, club and league executives, trainers, and physicians) are key to taking responsibility for concussion identification, treatment, and prevention.

Our shared social responsibility concerning concussion care of the athlete will be discussed in this editorial.

The Athlete

The athlete who sustains a concussion is often forced to suffer in silence with this “invisible” injury. This silence reflects both a lack of understanding and cultural resistance.

Concussion is popularly perceived to be a benign and temporary injury, euphemistically described as a “bell ringer” or “dinger.” A player who sustains this type of injury is often encouraged to believe that suffering from concussion is a “rite of passage.” Competitive athletes learn at a young age to please those who support them. They do not readily admit to weakness or injury. These athletes may believe that this behavior pleases coaches and parents, enhances their image with their peers, and allows them more playing time.

According to the Zurich statement, athletes suffering from concussion-related symptoms should be immediately removed from the field of play and medically assessed. An athlete whose symptoms have resolved must complete a minimum and progressive 6-day stepwise activity-based return-to-play process.¹¹ This is the guideline of the Zurich Conference on Sport Concussion.

Current clinical and empirical evidence demonstrates that the failure to act and restrict the player diagnosed with a concussion from further immediate play may place the athlete at a significant risk of short- and long-term cognitive disability. A concussed player often ignores concussion symptoms and resists being evaluated. He or she returns to play while suffering from symptoms and is more vulnerable to sustaining another concussion with the associated post-concussion syndrome. Post-concussion syndrome involves a prolonged period of recovery and sometimes lifetime disability from symptoms such as headache, dizziness, fatigue, irritability, light and sound sensitivity, and memory and concentration impairment. The incidence of post-concussion syndrome is poorly documented, and poorly understood, but it is widely reported.

The most catastrophic and lethal brain injury resulting from sport-related trauma is called second impact syndrome, or SIS, which occurs when an athlete sustains a second head injury before the first has resolved. The pathophysiology of second impact syndrome is thought to involve a swelling of the brain induced by the initial brain injury. This swelling can lead to brain herniation through the skull base, causing respiratory failure and death. The prevalence of second impact syndrome is low, although it is more common than previously suspected.⁹

Recently, retired football players from the National Football League and the Canadian Football League en-

deavored to raise awareness of concussion. These athletes are beginning to speak out about long-term cognitive disabilities, as well as the pathological link between repetitive concussions and chronic cognitive impairments including chronic traumatic encephalopathy.^{6,7,12,13}

A concussion is often not suspected unless the individual loses consciousness. Frequently athletes are allowed to return to play in the same game while actively suffering from concussion symptoms. One of the primary difficulties in obtaining data on the incidence of concussions has been athletes’ lack of self-reporting of symptoms, which are headaches, blurred vision, and difficulty with concentration and memory lapses.

The reluctance to report a concussion most commonly occurs because the athlete is either unaware of the seriousness of this brain injury or fears that he or she will be restricted from play.^{2,3,8,10,15} Kaut et al.⁸ found that 30.4% of the athletes admitted to continuing to play while experiencing symptoms after being hit in the head, with football players exhibiting a high incidence of this behavior (61.2%). Only 43% of all athletes surveyed stated they had some knowledge of concussions.

The HCEP protocol used an “against medical advice” form during the study. This action was taken when a player was diagnosed with a concussion resulting from a fight and refused to follow the established HCEP protocol. Athletes diagnosed with a concussion often have mixed feelings about the diagnosis, frequently wishing to minimize its seriousness. However, some athletes express relief at being given permission to stop playing, to rest, and to avoid further debilitating injury. These mixed feelings may be due to the fear of further injury combined with both internal and external pressure to continue to perform.

The lost playing time and status resulting from a concussion represent a common fear that has been reported by injured athletes. An athlete may fear the loss of the identity he or she has derived from sport. Players frequently may place themselves at risk of further injury by ignoring concussion symptoms in order to avoid loss of status and playing time.

Case Examples

Player A. When this player in the HCEP was diagnosed with a concussion after a fight and appeared at the office the next day for further testing and treatment, he asked, “Doc, I was wondering why I hadn’t been called in previously, as I have had other concussions this year. The only reason that I came in was that I am tired of living with these headaches and other symptoms.” Player A admitted to sustaining concussions twice before the initial evaluation and that he had failed to report his symptoms in an effort to keep playing and please his teammates.

Player A reported that he was having difficulty in his university classes, and he feared he would not be able to obtain the grade point average needed for graduate school admission. He admitted that he felt pressure from a team executive who had promised him a letter of recommendation for graduate school.

As part of his treatment process, Player A was given

medical academic deferral and accommodation from the university until his recovery was complete. He reported that his club's management continued to pressure him to return to play despite the full knowledge of his diagnosis, treatment plan, and ongoing academic difficulties.

Player B. This player in the HCEP study was concussed by an opposing player and was returned to play by his trainer. Subsequently he took himself out of the game due to blurred vision and headache symptoms. He remarked on the lack of sportsmanship and respect demonstrated by his opponents. The opposing team had berated the injured player while he lay face down on the ice and chided him for leaving the game despite injury. He remarked on the frustrating lack of respect from opposing players, many of whom he had known and competed against over many years. During his evaluation, the player admitted to failing to report a concussion 1 week earlier. He returned himself to play against medical advice, despite extensive education and warnings concerning the dangers of returning to play before he had recovered.

See the *Appendix* for the case histories of 10 athletes who, in their own words, describe the effects of concussion on their own lives.

The Parents

Parents and the support that they provide are essential to the success of a competitive athlete, but parents may become overly invested in their child's success. They have been observed to reinforce the athlete's fears about losing "ice time" and falling behind their peer group if they admit to the symptoms of a concussion. In many of the concussion cases during the HCEP, the athlete's health did not seem to be a priority.

Case Examples

Parent V (parent of a clinical patient not involved in the HCEP). This father of a 14-year-old concussed hockey player stated that he could understand the parents of players with concussions wanting to ignore their children's medically diagnosed brain injury. He said that parents had a significant amount of time and money invested in the child, and if there was nothing visibly wrong, he should be on the ice with his teammates.

Parent W (parent of a clinical patient not involved in the HCEP). This father of another 14-year-old hockey player digressed from a discussion of his son's concussion symptoms to a complaint about the amount of money that he had invested in his son's hockey equipment, personal trainer, psychologist, and private schooling.

General Remarks. On 2 separate occasions, HCEP players diagnosed with concussion by the physician at their respective games refused appropriate follow-up and specialized care, obtaining instead a return-to-play note from their family doctors. When the family doctors of these individuals were contacted and properly informed concerning the initial diagnosis and care offered, the physicians stated that players and parents deliberately deceived them concerning the injury. In one of these cases,

the parent had urgently enrolled his child in the long-term care of a physician to provide his son with a return-to-play note. The management of the club and the league were aware of this deception but took no action.

Parents X and Y. Parent X of an HCEP athlete said, "The doc is a quack, and he is providing an unsafe playing environment for my son...He needs to play on instincts, and can't be worried about getting a concussion every time he goes into a corner." Parent Y of another HCEP athlete said, "I know my son and he seemed like himself at break-fast, so I see no reason why he should not be out there at practice."

General Remarks. Four further cases of minor hockey players presented to the clinic for diagnosis and management of a concussion. The parents of these young athletes similarly declined to continue with appropriate treatment when they were informed of the diagnosis and the possibility of extended medically supervised absence from sport.

Parent Z. In contrast to the aforementioned parents, this parent of an HCEP athlete exhibited a positive parental intervention. Parent Z's son initially refused medical evaluation after a suspected concussion. The coaching staff actually encouraged him not to be evaluated by the physician. The parent of this player intervened and convinced him to be evaluated before returning to play.

Parent Z said, "It's only a game, and it is not worth the risk of a significant injury." After the physician had evaluated and in this case returned the player to play, Parent Z apologized to the physician for his son's behavior.

The Coaches

Coaches have a significant responsibility to be become informed about concussion and to educate and protect the players under their supervision. In study by Sye et al.,¹⁵ concerning the players' understanding of concussion and return-to-play guidelines, the authors found that players predominantly obtained their information from coaches/teachers, and this was followed by medical personnel and then other players.

Coaches can experience conflict between the pressure to win and the protection of the long-term health interest of the player. In a recent study by Cusimano et al.,³ 22 of 34 minor league coaches refused to have their teams watch a video about concussion prevention because they thought that it would make their players less aggressive and less successful as a team. Traditionally, sporting culture has rewarded athletes who "play through" or feign toughness for the benefit of the team.

Hockey coaches are responsible for the on-ice success of the team and distribution of playing time among players. If players feel that their playing time will be reduced or they will be "punished" with less ice time if they admit to concussion symptoms, they may often not report the symptoms, despite the possibility of long-term brain injury.²

Case Examples

Coach A (not an HCEP coach). This coach stated that

before the season he opposed having someone else make player-related decisions, even with respect to concussions. At the end of the season, Coach A stated that despite struggling with this issue of player control, he was relieved not to have to make medical decisions and that a qualified individual was present to perform that function.

Coach B. This coach also said that at the start of the season he was opposed to having decisions concerning players taken out of his hands. He explained that by going through the injury and rehabilitation process twice in the same season with his son, he now supported and understood the importance of the medical intervention. Despite this important education-based insight from the study, Coach B said, “The medical management of concussion will not be accepted easily by the current social structure of the game.”

During the playoffs, Coach B’s son suffered an apparent third concussion of the season. The therapist/first responder informed Coach B of the injury, and that he should be restricted from further play until appropriate medical evaluation. Nevertheless, Coach B’s son was permitted to play the rest of the game without the suggested medical evaluation.

An example of the fear that exists in the social structure of hockey concerning concussion was recently apparent at the university level. A request for involvement of a major Canadian university to participate in an HCEP educational and surveillance study was proposed and accepted at all levels including the athletic director, head athletic therapist, and the team physicians.

When the coach was approached, he declined the opportunity. His reasons were that he was uncomfortable with the neuropsychological testing tools and that he did not think he could fit a 3-hour testing period for education and preseason neuropsychological testing into his team’s schedule. The coach was supported in this decision by the administrative and medical staff.

League and Team Executives

The league and team executives are responsible for enforcing the rules of the game and providing a safe environment for the players. The executive level can provide an important layer of player protection.

The team executives are commonly observed to defer the responsibility for player injuries and health to the coaching and training staff, focusing instead on the elements of the team and the outcome of the game.

A powerful example of lack of understanding and appropriate executive leadership occurred when one team executive removed his team from the HCEP and direct emergency medical supervision halfway through the season. This incident highlighted the effect that an executive can have on players who are dependent on these individuals to protect them. This withdrawal occurred despite the fact that the HCEP was a physician-instituted concussion study that the club had been fully informed about and had agreed to participate in.

The executive stated he would only allow his club to return to the study under the condition that the pro-

tocol be changed to prevent the physician from examining a suspected concussion until after the game and with the permission of the trainers, coaches, and players. This executive wished to prevent his players with a suspected concussion from being evaluated immediately by a qualified, experienced sports medicine physician.

A formal meeting was held to inform the league and the participating clubs that no changes would be made in the HCEP study under the existing University of Western Ontario ethics committee–approved protocol. The executive was asked to directly inform the primary investigator of the team’s intentions to continue under the existing protocol. The team executive failed to comply, and the team was removed from the HCEP.

Executives on both HCEP teams resisted fully implementing the project by refusing to perform baseline tests in new players added to the team during the season. One executive complained of ongoing player resistance to the project. The manager stated that he feared a “*mutiny*” among the players concerning postinjury testing and that his team would lose players as a result.

A trainer asked HCEP Player C why he refused the evaluation request after an observed concussion by a physician. The player said that he had already passed the screening test several months before during his recovery from his first concussion of the season, and he did not understand why he had to be tested again.

The team executive was asked to explain to Player C that he had to be evaluated and the executive refused, indicating he *did not* want to cause disruption in the locker room by arguing with the player. He said he would like to remove the player from the study.

Player C was observed to sustain multiple hits to the head in subsequent games and to have reduced reaction time necessary to escape the hits. Sadly, this player sustained an intentional elbow to the head 3 games later, which resulted in a documented concussion. He was removed from the game and was evaluated for a concussion by the HCEP physician. This player was unable to compete for the rest of the season as a result of the concussion and the post-concussion syndrome.

Player D, who left the HCEP after refusing evaluation following a suspected concussion, was also observed in subsequent games to sustain a disproportionate number of direct and indirect head traumas. After an observed head hit, Player D exhibited a loss of emotional control, yelling, slamming his stick and the bench door repeatedly for several minutes in front of a large crowd.

The general manager confronted Player D and his parent about this aberrant behavior. The general manager, who understood that the player’s behavior might have resulted from a concussion, suggested the player take time off for “bumps and bruises” *instead* of undergoing appropriate medical evaluation. The player’s father responded to this suggestion by stating that the general manager was “making a mountain out of a molehill” and there was no need for any further action.

The Team Therapist

The team athletic therapist/first responder (previously

known as the trainer) ideally has sports medicine and first responder knowledge, and should be able to identify a suspected concussion injury and refer the player to a qualified physician for a medical diagnosis. Athletic therapist certification requires extensive post-secondary education to achieve qualification. According to the Zurich statement protocol, the therapist should remove the player from the game if a concussion is suspected and refer him/her for secondary medical diagnosis and treatment.

The team therapists at lower junior and minor hockey levels are usually volunteer first responders who have minimal knowledge of protocols for identification and treatment of concussion or long-term consequences of concussion. Despite the efforts of national certification and league regulatory bodies to improve the acceptable safety standards, this deficiency has been observed to currently exist. Lack of appropriate sports medicine knowledge, confidence, or independence may contribute to a trainer's inability to remove a player with a suspected concussion from the game. The many responsibilities of the team therapist often prevent this individual from observing a concussion when it occurs and may require the intervention of other team members.

Therapists have reported pressure to please coaches, parents, players, and management. They also report an inability to sustain the scrutiny of their decisions for excluding injured players from play.

Case Examples

Therapist A (not an HCEP therapist). This HCEP therapist stated that he was uncomfortable working with his own son's team because he feared that other parents would suspect that taking players out for suspected injuries would favor his own son with increased ice time.

Therapist B. This therapist, who worked professionally in an associated medical field, allowed himself to be seen and identified as the team "doc." In private, however, he said that he was relieved to have a doctor at the game because he was not comfortable behind the bench and feared his ability to cope with a real trauma.

Therapist C. This trainer admitted that he was uncomfortable speaking out and taking a stand against his team's lack of concern about concussions. He felt he could be blackballed by his ownership or might not be able to find a position with another team in the future.

Prior to removal of Team B from the HCEP, Team B had 8 players who were diagnosed with a concussion; at that time, 6 players had been diagnosed with a concussion on the paired Team A. At the conclusion of the study, Team B reported that no further regular season concussions had occurred. Team A, however, during the same period, reported an additional 7 observed and diagnosed concussions (total 13).

The disparity between the numbers of observed and diagnosed concussions involving Team A and B players after Team B was removed from the study may demonstrate an example of underreporting and undertreatment of this injury.

The Physician

The physician has the primary role in diagnosing and managing the treatment of players with concussion in sports. The specialty-trained sports medicine physicians involved in the HCEP encountered frequent resistance to identifying and evaluating athletes suspected of concussion. Furthermore, athletes rarely reported their own injury. The reluctance of the athletes to self-report and their observed inclination to mask concussion symptoms is often a result of their fear of lost playing time during the recovery process.

Some of the HCEP sports medicine physicians also reported experiencing a conflicting empathy for the athlete with a suspected concussion, despite their duty to remove the individual from play and provide appropriate evaluation. The team physician's first duty is to protect the patient/athlete by providing independent medical care. The struggle with team-related bias may occur due to the regular involvement with the team and intimidation within the sports environment.

As a result of specialty training, the sports medicine physician has the opportunity to educate and formalize the training of all individuals involved in contact sports, including other physicians. Concussion education is most important for the physician's medical peers, who may not have received the same level of exposure and training pertaining to this injury. It is important for the sports medicine physician to be involved in promoting concussion prevention, which involves reviewing the way games are played to decrease the incidental incidence of these injuries and eliminate their intentional causes.

The word concussion must be openly and accurately defined. The true incidence of concussion must also be accurately documented and available for review.

Opinion Statement from Author

Scoreboard results and sports culture sometimes lead the athlete, coach, manager, and even team medical personnel to ignore the long-term health of the player in favor of a short-term goal.

Consider this remark made by a general manager who acknowledged that 3 of his players were not able to play in a crucial playoff game because of concussions: "...not great news at all, but it is what we have to deal with. Our backs are against the wall down 3-1 and short-handed. I can't wait until the other teams are on an even playing field and not playing with injured players as I'm sure our team isn't the only team getting concussions. I just have to be content that at least our players are playing *somewhat* safe."

The pressure to win the next period, game, or series is an important and overriding factor that blinds many of those who should be protecting our young athletes. The fact is that hockey is only a game, as previously stated by a hockey parent, who persuaded his son to be evaluated for a concussion that placed his son's long-term health at risk. Hockey and other contact sports should always be respected as a game, not a life-and-death battle that places the participants at needless risk for future disability.

The athlete has to be educated about the long-term seriousness of concussion and encouraged to self-report. Sport culture must permit the athlete to report the injury and seek appropriate treatment without fear.

The adults who surround the athlete must take the leadership in promoting respect for the game and the long-term health of its participants. The identification, treatment, and prevention of concussion must be seen as a priority.

The parent, team trainer or therapist, coaches, club and league executives, and physician must become better educated in the identification and management of concussion, as well as the shared responsibility that it demands.

It is the responsibility of league or governing sport bodies to enforce rules that protect the health of the player, to recognize deficiencies in current concussion knowledge, and to institute preventative measures based on accurate data.

We can no longer claim that we do not know how to identify or evaluate this injury. Nor can we say that we do not know what the consequences of this injury are. We know they can be significant and life altering. It is everyone's responsibility to see and to act.

The personal testimonials of individuals who have suffered from concussion, and who desired to share their personal and powerful insights, are included in the appendices of this article. (DOI: 10.3171/2010.10.FOCUS 10222)

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The author reports no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper. Dr. Echlin is a fellowship-trained Primary Care Sports medicine physician, who has been a junior level hockey team physician from Major Junior OHL and NCAA Division I, to the fourth tier junior level for the past 10 years. Dr. Echlin is also the primary investigator of the games described by the Hockey Concussion Education Project (HCEP).

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Appendix

The following case histories were contributed by patients treated by the author. The treatments reflect the author's specific practice and his approach to concussion management. The testimonials were the athletes' way of sharing their experience with concussion and post-concussion syndrome.

Case 1: A 20-Year-Old Male Hockey Player

January 2009: I was diagnosed with post-concussion syndrome, from the accumulation of concussions that went undetected after 10 years of hockey and lacrosse. *October 2009:* I have had headaches and a changed lifestyle. I was playing goalie for [name of team removed] when I was run, and the back of my head hit the post and then the ice. The goal counted with only ten seconds left in the second period while it is believed I lay unconscious. I remem-

ber seeing all black lying on my back trying to catch my breath. I opened my eyes and slowly regained my breath. I was required to go to the bench for the remainder of the 2nd period because I was down for too long to remain in the game. My coach and trainer repetitively asked, "Are you okay to play?" I decided to return to play in the 3rd period, after becoming very emotional telling my team to protect me. Any competitive athlete questioned if they are okay to play will always say yes; I wish I was either given no option or was more in tune with how I felt. The third period seemed to drift by with cloudy vision, which I had experienced playing hockey on and off for about 6 years, not knowing it was the sign of a concussion. The following day at school I didn't feel right with a constant migraine and went to the hospital. I was told I had had a concussion, not to play hockey until the headache was gone and going to school would not be harmful.

After 4 months of trying to determine what was wrong with me, practising with the team once and making numerous trips to the hospital, I was living as normal as possible. In school and work I had felt achy, tired, headachy, and frustrated. Family and friends had noticed me becoming easily irritated. I remember sitting in my room itching to do something, usually resulting in me getting into a fight with mom, or my siblings. Co-workers had noticed my lack of memory repetitively forgetting about my shifts, which was extremely uncharacteristic. Once getting in touch with Dr. Echlin in January, I was shut down from my grade 12 year immediately not knowing when I would return or if I would be graduating or going to university with my classmates. The worst part about the entire situation [was that I] did not know when I would be back to normal, when I could play hockey, and when I could go back to school. Once being "shut-down" I was limited to no TV, computer, Xbox, was on a regimented sleep schedule, and didn't attend school or do work, and was limited to what felt like no life. As an outlet I tried watching my team play, the noise, lights, and watching what I was missing out on was too hard to take. My coach and trainer showed very little understanding and must have sought legal advice as they removed themselves from the situation. I ultimately became disconnected from the team entirely, which was tough to do as I had always prided myself on being a team player. Other symptoms I had developed were sensitivity to light and sound. I could only watch half a period of hockey on TV before developing a migraine. I had also become extremely emotional; I remember absolutely bawling my eyes out on occasion for extended periods of time, losing complete control of my emotions. Once again this was uncharacteristic of my normal behaviour. Depression was there, and thoughts of suicide crossed my mind on a few occasions. This was a scary time in my life; I had never lost touch with my emotions and thoughts to such an extent. I also had headaches so bad I couldn't sleep; I was put on sleeping pills, which slowly became addicting and I tried to sleep without them.

It was not until late February, early March I was taking two classes in school, and one night school course in order to finish my final year. My weekly schedule was basically attending night school twice a week, go into

school once a week for the social aspect and to collect work for the week. Weekends I would rarely see friends; if I did I was out until 10 and felt I was missing out on one of the best years of my life. These were some of the darkest days of my life. Every morning there was basically nothing to look forward to except my girlfriend, friends, and the hope of playing hockey again. Thanks to my family, friends and the cooperation of teachers, I managed to graduate with honours. The summer was a good shut down period with no work, and little stress. Over the summer I decided to attend university with a reduced course load although my doctor was not entirely in agreement with the idea, I felt it would be more detrimental to watch all my friends go away and feel even more disconnected than to partake in classes part-time. I believe I definitely made the right decision. I rested up over the summer to take three courses as opposed to five in each semester. My university was extremely willing to work with me, supplying numerous accommodations. I am taking my core courses and tacking on electives at the end of my university career, or as I can handle to take them.

Throughout this entire experience it has been a struggle to deal with my emotions, headaches and entirely new lifestyle. I will never forget absolutely breaking down the day I was told I would probably never play contact sports again. Removing sports from my lifestyle has been extremely difficult; it feels like I completely lost my identity as a person. The hardest part through all of this is the fact that as much as people can try to understand no one knows what it's like until they go through it. Through my experiences the emotional side of the injury has been tougher to deal with compared to the daily headaches. My doctor, girlfriend and family are extremely conscious of what I am going through and are very understanding in the toughest of times. For the most part friends and other outsiders do not see my injury like they would a broken leg; it's an invisible condition. Friends may make comments if I can't come out, or when they feel like I have an unfair advantage writing exams with accommodations. One outlet I find relieving is talking to other people with PCS [post-concussion syndrome], and other brain injuries sharing experiences. Through university I have definitely had some fun and have learned not to push it, which took a long time after training myself to constantly push as an athlete. I am slowly coming to terms with my condition; I have learned to cope with it as much as possible. It has been almost a year and a half now of headaches; I am slowly losing hope [of] a one hundred percent recovery. Although I would love some answers as to when I am going to get better, I am taking it day by day hoping for the best. Another question I would love answered is what if I had never played in the third period—would things be different today? Unfortunately there is no answer to these questions. Lately I have had little sign of improvement with only a month remaining in the school year. I am hoping another summer of shutting down will be the cure.

Case 2: An 18-Year-Old Female Former High School Wrestler

On December 6th, 2008, everything about my life had changed. It was a Saturday afternoon at a high school

wrestling tournament that ended up teaching me one of life's greatest lessons the hard way. Looking back almost a year and a half later, I recognize that I have learned a lot about myself and the severity of brain injuries that are often overlooked. I hope one day I am able to look back at this experience with enough accumulated knowledge to help me look out for myself and others who are going through similar experiences.

During the second match of my first and last official wrestling tournament, I was pulled over my opponent's shoulder and slammed onto the mat head-first. I can remember feeling an odd sense of pain behind my eyes and yelled out "my head!" When this happened the referee and my coach came over to see if I was all right, as I had trouble opening my eyes and standing up because I was feeling dizzy and nauseous. The two of them thought I was okay because the fall didn't look out of the ordinary and I had not lost consciousness. My peers and coaches encouraged me to continue on with the second match and onto another one after that. Although I mentioned how I didn't think I should keep wrestling, my desire to succeed seemed more important than the pain I was feeling at the time. I can remember feeling extreme pressure inside my skull and how all I wanted to do was sleep.

Up until I had landed on my head during my first wrestling tournament, I had had no knowledge of what a concussion really was or the dangerous signs people need to look out for. Throughout my short lifetime, I have participated and competed in many different types of sports, so the feeling of extreme exhaustion was not unusual for me. On the night of the tournament, I honoured previous commitments by spending the night babysitting, which I found to be unusually frustrating and confusing. The couple I was babysitting for could tell something was wrong with me and ended up calling my parents a few days later to see if everything was okay.

On the Monday back to school I went on a field trip that I had been looking forward to for days, with the Social Justice Committee I was a part of at school. Despite how important the trip was for me, I cannot remember a single thing that happened except for the fact that the day ended with me getting sick in the washroom. After the trip, we returned back to school just in time for my wrestling practise. During practise, I was not able to prevent myself from falling asleep so my coaches sent me home thinking I was extremely overtired. On my second day back at school after the tournament weekend, I was even more confused and unable to remember where my classes were. After being told to call my mom, she picked me up from school and took me to see a doctor that one of her friends had told her about. The doctor we had seen informed us that landing on my head during the wrestling match had left me with a serious concussion that could take many months to heal.

After seeing the doctor, I was no longer allowed to watch TV, go to school, listen to music, spend a lot of time alone, sleep for long periods of time, read, use my cell phone, go on the computer, work out, or go out with any of my friends. This was extremely frustrating for me during the times when I was able to process that everything in my life had been taken away, at least until most of my

symptoms had subsided. My doctor and parents were trying to make my daily life as simple as possible in order to allow my brain to heal. It was not until I started to break out of the daze I was in, that I started to feel angry and hurt about not being able to live the way I used to. I felt really alone, anxious and depressed because I could not do all of the things my friends were doing during senior year. Living in my house with two active younger siblings was also really hard for me because I was always jealous that they were able to continue on with their many sports, and were able to live independently.

There were times when I would understand and agree with what my doctor had to say but other times I would be in complete denial that anything was wrong and would try to get away with things such as going out for runs. I only ended up going on a few runs though, because after each one I would get sick and have really bad migraines. Many months after the injury, I still cannot find a way to sort out and describe everything that happened because all of my memories seem like blurry pieces of information. I sometimes get choked up and stressed out by the fact that I cannot remember so much of the last year such as my eighteenth birthday, and often wonder how this all could have been avoided. I think about how, if I had been taken out of the tournament immediately after I hit my head and not continued on to another opponent, everything could have turned out differently. Since my injury, I have learned that once you have a concussion, your brain is even more sensitive and prone to further damage. It bothers me to think that I might not have had to sit on the sidelines of my life for a year if someone at the tournament had known the repercussions of undetected brain injuries.

It is a fact that people who have had concussions suffer from not having control over their emotions. While I was off school I had frequent mood changes that often frustrated the people around me. When these people became angry at me for my emotions, they didn't realize that I was already hurting and feeling ten times more frustrated than they were. Not being able [to] explain, control, or even understand why I was feeling and acting the way I was was confusing and alienating. I felt as though no one was really able to understand what I was going through so eventually, I gave up on trying to maintain relationships with some of my friends. Many of my friends couldn't understand that even though I looked okay, I still couldn't go out and do things the way I used to until all of my symptoms had gone away. There were times when my friends would say to me out of frustration, that I seemed fine so I should stop looking for an easy way out of school work. This continues to anger me because I may have seemed okay, but I was not getting an easy way out of anything. My concussion set me back a year, causing me to miss my high school graduation with all of my friends and classmates, a moment I will never get to relive. I realize now that my friends cannot be blamed for not understanding my situation because they were never really given any information about serious concussions. All throughout my years of playing sports and schooling, I never knew how important it really was to protect your head and to step in and pull someone out of the situation immediately after they hit their head, winning

or not. I feel strongly that it is highly important for parents, athletes, teachers, spectators, and especially coaches to learn more about brain injuries and the consequences for failing to recognize the seriousness of hitting one's head.

Today I appreciate just how lucky I was to have had the doctor I did throughout this entire ordeal. He is the only person who took the time to tell me over and over again that he understood, I was going to be okay, and what I was going through happened to others. I found great comfort in his understanding and reasoning, despite the fact that on some days it was the last thing I wanted to hear about. The most important thing that he taught me that will stick with me forever is that: a brain injury is just like any other injury; you just cannot see the cast and bandages. Despite not being able to see the cast on your brain, it still needs the same type of nurturing and care as a broken arm or leg. You cannot fully immobilize your brain, but you have to find a way to allow it rest and relaxation until it is healed. This process was difficult for me to master and I wish I had done a better job of it a year ago. Although I ended up winning the wrestling match that gave me my concussion, I ultimately ended up losing. I hope the idea of never being able to play again is enough motivation for athletes to let themselves lose a game in order to sit out and recover correctly so that they are able to continue on with all aspects of their lives.

Case 3: A 25-Year-Old Female Former Hockey Player

[Date of injury removed] The last 5 years have been the hardest, most challenging years of my entire life. I was assaulted in a hockey game, which resulted in a head injury that turned my world upside down. Before this incident I always succeeded in everything I put my mind to and surpassed all expectations and challenges put before me. I was always described as a vibrant, driven, focussed and friendly person. After I got injured it left me with such dramatic changes in my abilities that I was almost a different person. I slowly and steadily went into a shell. I still can't recall or retain information very easily. When I listen to people speak or when I try reading, it is very frustrating because by the second sentence I have already forgotten the first. I am in pain with bad headaches almost every day and jaw pain that is getting worse. There is often numbness in my legs that makes it very difficult for me to walk properly or stand for very long. I have also been suffering from insomnia. I would be past the point of exhaustion, but I can't sleep. My anxiety is debilitating and I have a dizzy nauseous feeling most of the time. When I shut my eyes, my head spins and my body almost always falls sideways. I can't take a shower without holding onto something or I will fall.

I couldn't understand at the time why my friends (all but one!) were not around to support me. Shortly after the injury my boyfriend of almost 2 years broke up with me. My teammates never even invited me to the Award Banquet that year. My mother woke up one morning to find my trophy hanging in a bag from my door knob. People were treating me differently and I couldn't take it. It made me angry, sad, and misunderstood. I had been quite popular and had a lot of friends, but almost overnight people stopped calling me to do things with them. I didn't have

the organizational skills to coordinate get-togethers like I used to so my social life deteriorated.

I wasn't in a position to ask for help and I didn't know where to turn. One doctor that I went to at a sports injury clinic wanted to help, so she sent me to a doctor at rehabilitation hospital that was supposed to help her with a diagnosis and a treatment plan. He spent five minutes with me asking me what happened. He told me at that time that it was very "interesting" that I was able to recall details of what happened during the assault. He said that he couldn't understand why I was sent to him and it was wasting his time. That was the end of my endeavours, at that time, to seek medical help.

Before my injury I was working as an Accredited Pharmacy Technician while attending night school to earn extra credits that would benefit me when I went off to college that September. I was awarded an academic scholarship in the Bachelor of Science Nursing Program [name of university removed]. I suffered my concussion 6 months before I was to start school. With the lack of understanding on how to treat a brain injury we were misinformed by the family doctor, who told us that like reconditioning the body after an injury, the brain also requires exercise. I attended school that September, but was unable to continue in my program. I tried to attend Nursing School again the next September (thinking by now I should be over this concussion). I had to quit and return home in October. I was unable to proceed because of the inability to retain information and because of the severe symptoms of my pain. After I returned home I tried working a couple of times but I was UNABLE to commit to be a reliable employee. I was sick, tired, confused and in severe pain. I was dependent on my family and that was hard because I had always been a very independent person. They were suffering too, watching me go downhill.

I became very depressed. I was a person that was "programmed to succeed" so I couldn't help feeling like a failure. I started to alienate myself from people so I wouldn't have to explain why.

I was slowly losing everything instead of moving forward like other young adults my age. I was in so much pain physically and emotionally that I felt relief from pain medication, but that also started to become a problem. I was losing HOPE, but I was sensible enough to know that masking my pain wasn't the answer.

I have recently been diagnosed with post-concussion syndrome and have learned that there is a treatment plan that should help with a lot of my continuing symptoms. I'm learning that resting my brain...instead of exercising it will help my injured brain to heal. This has taken away a lot of my shame and guilt.

Now, when I rest I try not to tell myself "I'm lazy." I try saying, "You are healing an injury."

Case 4: A 20-Year-Old Male Hockey Player

I have been playing hockey since I was four years old and one thing that has always been consistent for both me and my fellow players: the basic idea of playing through pain. As hockey players, we all learn at a young age that we have to be able to take the bumps when they come or else we won't last very long in the game. This

ideology is an awesome metaphor for life in general because we learn to push through the hard times. The only problem is, pushing through head pain and acting like it isn't there doesn't make you stronger—it gradually breaks you down.

I've had some random injuries in my life that, in some instances, have ended seasons for me. I got used to avoiding doctors if possible because they were frequently the bearers of bad news. This meant that I never once went to a doctor when I had head pains, particularly this season—the doctor had to contact me the last time, to ensure I would go in. I used to play a fairly physical game, and though that certainly wasn't the only aspect of my game, I really loved contact. When I was in Grades 8 and 9, I was one of the smallest players and as such, wanted to prove myself by always going after the biggest guy on the other team. Then, as I grew into one of the bigger guys, the physical aspect of my game became more intense.

In November of 2009, a team trainer asked me if I had ever had a concussion (perhaps suspecting as much). I told him that I had never been diagnosed with one by a physician, so no. Later that same month, my team was playing an away game and I was playing very well (probably my best since I had returned from surgery on my wrist six games prior). The third period was getting pretty physical and it was a tight game. One of the other team's better defencemen and I had been at each other most of the night but we were both too worried about the score, so it was nothing more than chirping and hitting. He ran me once when I was getting a pass on the boards in my zone but it didn't work out—all that ensued was more chirping. The next time the puck went to him on the point, I ran him and he got his elbow up enough to give me a little daze—I didn't even think twice about that because it happened all the time. The puck was fired down the ice and I beat him back to his zone to pick it up. With the puck on the boards, he hit me enough from behind that my head bounced off the glass, and the next thing I remember was both of us with our helmets off and a fight. I knew the time remaining in the game and the score, and also realized right away that this was not the time to be fighting. I tried just holding on to bring the linesmen in so that we wouldn't get fighting majors, but that was a bad idea. My opponent pulled up on my leg and I fell back and I hit my head on the ice, hard.

More embarrassed by my stupid actions than anything, I left the ice to go get changed. I had a bad headache but was sure it was nothing and was way more concerned about what my coaches would say to me when they came in—they wouldn't be happy that their Captain was in the dressing room instead of helping the team get a much needed goal at the end of the game. I did a concussion test with the doctor that was at the game and told her I was fine and that all I wanted was some food. I went home and thought that with a good sleep, I'd be all set for class the next morning.

The next day I had a really hard time concentrating in class, but I didn't think anything of it because that had been par for the course for most of this year (which was a much different experience than in previous years). I got a call after class from my manager saying that Dr. Ech-

lin wanted to see me and I told him that I was fine. Dr. Echlin insisted that I come in just so that I could prove to him that I was perfectly fine. I was having a real problem trying to read my work off of my computer screen so I agreed to go—getting out of the library and taking a drive could only do me well, right? Dr. Echlin told me that I was concussed and that he could not clear me to play until everything cleared up. I can't say that I was surprised but I was disappointed for sure!

After going through and discussing some of the games that I had played before I saw a doctor, we figured out that I had probably had at least two or three concussions since the start of September before this last one. Stacking the concussions just made it harder and harder to ignore and hide the symptoms and this one tipped the scale for sure.

For the next month and a half, I could hardly read. If I did an hour of work, I'd have to take a two-hour nap. Walking to class began to get difficult because of the head rushes. I went from being a hard-working student and athlete to someone that couldn't be either. Everyone related to hockey wanted to know when I was coming back and I couldn't give them a straight answer because I didn't know. Rightly so, they wanted answers that I couldn't provide because of the situation I was in. As it was, I had to postpone all of my Christmas exams, causing me further stress. My parents weren't worried about me playing hockey again (though they would have loved to see me well enough to get back on the ice); they were more worried about school and my future. They told me that I had my whole life to live and that I only had one brain...so don't mess it up! I trusted them and agreed but I was determined to turn things around for myself. I would have a couple of good days in a row and be able to do work and maybe a little bit of exercise, and then I would call my coach and tell him I was coming back—thinking that if I believed I was going back right away, I could make myself get better. It took until the middle of January before I realized that my season was over. Admitting defeat is tough and I hated the fact that I had promised so many people that I would get back on the ice but I wasn't going to be able to pull through on that promise. I felt guilty, frustrated, and honestly, devastated by all that had happened.

Concussions are an odd injury. Through all my wrist surgeries, no one ever questioned if I could play again because they could see the cast or the fresh scars and realize that I wasn't ready yet. With a concussion, only a few people like my parents or girlfriend could tell that something was off when they were talking to me—anyone who didn't know me as well had no idea that I had a brain injury. No one can see a concussion when they look at you, so you have the appearance of being fine. Most people don't understand concussions and it is very hard to get people to buy into the fact that there is something actually wrong.

It has been more than five months since my last concussion and my symptoms are starting to get better. Reading and memorization were a real problem for quite a while but now things are getting a lot easier. I am down to four classes at university in hopes of keeping my marks close to where they used to be. The physical change was huge after the concussion, as I lost 25 lbs fairly quickly

because I was unable to exercise or train. This experience taught me a lot: I am NOT invincible... and my brain is something very worth protecting.

Case 5: A 19-Year-Old Male Hockey Player

The following is the player's direct, first-person description of the concussion:

When I first got hit I didn't know what was going on. I lost my sight and tried to follow the boards back to the bench. My legs felt weak, like it was hard to keep my balance. I got the puck along the boards and tried to stick handle but I had no control over it. I tried passing the puck but I could barely see it and could get nothing on it. It was the same with the shot that I took. I couldn't see the goalie and couldn't get anything on the shot. Then I scored and I had to follow my teammates back to the bench.

Case 6: A 23-Year-Old Female Elite Cyclist

In the summer of 2009 I was injured in a crash in a cycling race in Canada. I do not remember the crash, or about five to ten minutes after it, although I am told that I was talking the whole time (but repeating myself over and over and not lucid). The last thing I remember before the crash was climbing a hill in the race. The next thing I remember is climbing into the ambulance.

Once I arrived at the hospital, which took approximately 30 minutes by ambulance, I was rushed into a private room where I was attended to by nurses and a doctor. The doctor found that I had injured my shoulder, needed stitches for a laceration to my head, and directed the nurses to clean up and cover my wounds. I suggested the possibility that I may have had a concussion, but he was not convinced this was the case. He instructed me to go home and be sure to take it easy, and if I had any vomiting or blacking-out that I should come back to the hospital immediately.

That night I moved into the [team masseuse's room] and her job became to take care of me. I still wanted to be part of the team, and despite a bit of neck pain and being really tired I didn't think anything was seriously wrong, so I continued to follow the team as they raced, resulting in long days and early mornings. As the days went by it became more obvious that something was very wrong. I was able to sleep for many hours multiple times during the day on top of my usual evening sleeps, and was still getting headaches, nausea, and significant neck pain.

I finally flew back [home], as planned, four days later, where I met my parents who had helped me set up an appointment with my family doctor. Since it was summertime, many doctors were away which further complicated matters. I ended up seeing two family doctors and three sport medicine doctors, without anyone really knowing what to do except prescribe rest.

In the cycling world, many people had heard about my crash, and one person I remember specifically said, "You're lucky it was *just* a concussion"! To this day I think of that comment and it reminds me how little is understood about this injury. Within two weeks of the crash, fellow cyclists started to question my injury, as most think of a concussion as a 24-hour to 1-week-long injury.

Many doubted that I was *actually* still injured. Having a concussion is an invisible injury. If nobody asks how you're feeling, it's very hard for them to see that anything is wrong. I believe it was only when I had to give up my spot on the Pan American Championship team that others realized that I really couldn't ride and that I was still seriously injured.

The next few months were probably the hardest for me: not knowing how long the recovery would take, having others doubt what I was going through, and me myself not truly understanding what I was dealing with.

When I first got injured, friends noticed how upset I was and suggested I contact a sport psychologist. Apprehensive about the idea of going to a psychologist, but open to any option that might help, I decided to contact a local sport psychologist. This was perhaps one of the best things I ever did. Despite not having any specific background in concussions, his support was tremendously helpful. He helped me to take everything one step at a time, and continue to look at my past accomplishments and make little baby-step goals towards the future. He helped me to stay relaxed through the use of mindful meditation, and creating daily logs of my recovery progress.

Dr. Echlin was very helpful. He helped to arrange an appointment for me to visit Dr. Johnson in Toronto, and more importantly helped me to contact other athletes who have been through serious concussions and successfully re-entered into their competitive sport.

Over 10 months later, I am still dealing with my head injury on a daily basis. I have learned many of the triggers of my headaches, and how to best avoid them. I still get headaches rather frequently, and am only able to exercise at low intensities every few days. However, when I look back on where I was last June, I see that I have improved.

From all that I have learned, I think the most useful thing for me was talking to others who had been through serious long-term concussions. There is a lot of cynicism from the public about post-concussive syndrome, and many moments it even caused me to doubt myself. However, it is a real condition that mostly just takes time and "taking it easy" to heal. Although ten months can seem like forever, I am confident that I am almost healed. Every week I feel that I can add a bit more to my life. One of the more positive results of this injury is through this whole process I decided to quit my job and go back to school to pursue a master's degree in a field I have been fascinated with my whole life: sport psychology.

Case 7: A 20-Year-Old Male Hockey Player

Recently I have suffered from post-concussion syndrome. I had received a second concussion within a few weeks of a previous hit to my head. Before, I would hear on TV and the news of players suffering from concussions but I never really took it too seriously, thinking that the player would be fine and bounce back, no problem. I learned that receiving a concussion is a big deal after I got my last one.

[In] 2009, I was hit with an elbow to my head playing in a Junior A hockey game. I do not remember the game, preparing for the game, nothing. I remember sitting in the dressing room with a paramedic, not knowing what hap-

pened. The next few months consisted of headaches, light sensitivity, sensitivity to noise; even just walking around too much seemed to cause those severe headaches! It puts you into a state of depression and you feel like you have a long road back to recovering. Luckily, I saw Dr. Echlin and he kept a close watch on my progress. If I hadn't seen him, I would most likely have rushed back into playing within a few weeks and run into more trouble with more concussions. That is a big problem these days: players, coaches, trainers, all rush concussion victims back into action too quickly!!!

If I could give a concussion victim any advice, it would be simple. Get help, see a specialist, and DO NOT RUSH! You have the rest of your life to live!!!

Case 8: A 20-Year-Old Ex-Hockey Player

Concussions were never something I took serious until I had to quit hockey because of them. I am currently 21 years old and haven't been able to play contact sports for more than 5 years. I was playing high level hockey when I received my 8th concussion. I have had concussion many different ways, playing on monkey bars, roller blading, wrestling with friends and playing hockey and lacrosse. My last and most serious concussion I suffered in a hockey fight. I had post-concussion syndrome, which then turned into a daily chronic headache which lasted for years. Concussions are such a scary thing because they are not like a broken arm; they can't just be healed with a cast or medication. The brain is such a complex thing. After I had to quit hockey the headaches and the lack of physical activity led to depression. Since I couldn't play the sport I loved I felt like I no longer fit in. Since I wasn't able to work out or do any physical activity for a long time I put on weight, which made me feel even worse. I began to no longer find joy in hanging out with friends or being social. It made tasks such as school and work much harder to deal with. The years I should have been having the most fun, I was dealing with this problem. Concussion [is] not just a minor injury; it can lead to so many other major issues, whether physical or emotional. Concussions are too often ignored because it is an injury you do not see. I know how easy it is to tell yourself you don't have a concussion when you really do. I told myself that a few times. Doing serious damage to your brain is not worth playing that extra game or those few extra shifts. Concussions can lead to so many other serious problems that I personally experienced and would not wish upon anybody. They are a very serious injury and should be treated that way.

Case 9: A 54-Year-Old Ex-Professional Football Player

Circa 1984, one of many concussion experiences:

Player [talking to self]: Where am I?

Oh yeah, we're in Calgary.

What happened?

Oh yeah. Got knocked out. Again.

I am still laying flat on my back. Wow.

I can see the trainer and doctor coming towards me. The game has stopped. TV timeout. Hey, at least I get some air time.

They're here. First, they check to see if I have sensation in my extremities (feet and hands). I check out. NOTE TO SELF... Thank God!

Doctor: "OK. We are going to have to ask you a couple of questions to see if you're alright (translation: if you can go back to play). We believe you may have suffered a concussion."

Player: "Well, whatever. I did get knocked out but I am OK now. I am good to go."

Doctor: "I still need to ask you a few questions."

Player [talking to self]: I need to answer these questions, even if I stretch the truth... I NEED to get back into the game.

Doctor: "Where are we?"

Player: "McMahon Stadium. Calgary."

Doctor: "Who are we playing?"

Player: "You kiddin'?" If we're in Calgary, we're playing the Stampede."

Doctor: "What is the score?"

Player: "We are losing 14-7."

Doctor: "What is the time in the game?"

Player: "Move your fat ass so I can see the score clock."

Doctor: "No, without looking?"

Player: "OK, somewhere in the second quarter."

Doctor: "What happened?"

Player: "I hit my head on the turf, while tackling the quarterback."

Doctor: "You seem okay, but let's take it slow. We'll walk back to the sideline, and see how things go over the next few minutes."

Player Commentary

The first thing I do when I get back to the sideline (bench) is hide. I need to follow the old adage "out of sight out of mind." I take a knee at the end of the bench, where the big boys (O lineman) hangout, as they provide the best cover. They never look over here.

The game is back on.

([I look] around). Hey, how did we get onto the field? I don't even remember entering the stadium. I feel empty... and, truth be told, frightened. I have no idea how we're going to leave the stadium.

(Next series, back on field.)

(Afterwards):

As it turns out I had a great game. But I did not remember anything after the concussion.

Thank God for game film.

Background

Back in the day, a man would return to the field after being knocked out. That was the sign of a *real* ball player. As a pro, you *always* went back.

Just grab some smelling salts...and off you go!

Going back into the game was a personal victory. You could always tell *that* story in the locker room or the bar. Heck, lots of players didn't remember anything about the game until they saw the game film. You just grabbed your *huevos* and got back out there. It was a different era of sport. Real sports. When a man was a man.

Unfortunately, today there are still times we cannot remember that last play in our daily lives. With no cameras we rely on someone else—a friend, a family member, and maybe a wife (usually a second or third)—to tell us about it.

As players, we lived our dreams, but now some live our nightmares.

(The nightmare of anger, alcohol and/or substance abuse, depression, memory loss, spousal abuse [both ways], dramatically reduced life expectancy [56], etc.)

As a Canadian I lived my dream, but with it came a cost. Any regrets? HELL NO!

Case 10: A 43-Year-Old Ex-Professional Hockey Player

I played hockey since the age of 5. I not only was good at the sport but I truly enjoyed practicing, which in turn made me better. I began to suffer concussions during my Junior A career. It was all extremely new to me—the effects at the time of injury and just how to make this unnatural feeling “go away.” There was never any thought about tomorrow. It may sound extremely primitive, but my trainer would give me warm cups of water and over twenty minutes or so things would improve. We didn’t know what we were dealing with. I had not been “knocked out” but rendered “off,” “dizzy,” and “spacey.” This made a diagnosis and future game plan difficult back then. My trainer wanted the best for me as I obviously did for myself, but where were the answers?

Time has played a critical role in the acknowledgement and understanding of concussions. For the most part,

no longer is a player or person looked at as being soft or not up for the task. However at the professional level, that problem is still prevalent. Many times it is the player who is not being perfectly honest with the doctors and trainers for fear of losing his position on the team. Compounding this is the stigma of a concussion history that attaches itself to a player whereby opponents make cheap and unnecessary attempts to make a name for themselves at the price of one’s health. In a weird and twisted way they are rewarded for their actions. These players are rarely the ones who make a difference on the score sheet but those that become coveted by opposing teams and their contracts reflect it.

Concussions will always occur. In a high paced, contact sport like hockey with strong, powerful men skating at high speeds, it is inevitable for this unfortunate aspect of the game to [be present]. One would just like to think that players would respect their opponents and avoid doing the unnecessary in deliberate fashion. In the event that a player does suffer from “concussion like symptoms” get real and acknowledge that it is a concussion and make sure the proper steps are taken to assist the PERSON back to proper health. The one remedy that I have always found to be the best is simply time. In that, I find it ironic that it has taken this long for the injury of suffering a concussion to be talked about more openly and honestly than ever before. The use of the “C” word should not be whispered. On that same note, one would hope that all advances in this field are being shared and funding is being used appropriately.