



Original research

Concussion history and reporting rates in elite Irish rugby union players

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ABSTRACT

Objectives: To determine the self-reported, seasonal rates of concussion and the reporting practices among Irish rugby union players.**Design:** Descriptive epidemiology study.**Setting:** The study was conducted at the training grounds of four professional Irish rugby union clubs.**Participants:** One hundred seventy-two players (24.97 ± 4.11 years of age, 13.49 ± 5.79 years playing experience) gave consent to participate.**Main outcome measures:** Number of concussions reported during the 2010–2011 season, reasons for not reporting, and positions of concussed players.**Results:** Forty-five percent of players reported at least one concussion during the 2010–2011 season, but only 46.6% of these presented to medical staff. The reasons for not reporting their concussions included, not thinking the injury was serious enough, and not wanting to be removed from the game. The relative proportion of concussions was higher for backs than forwards; however, the severity of injury was greater for forwards. Scrum-halves (12.0%) and flankers (10.9%) accounted for the majority of concussions reported.**Conclusions:** The self-reported rate of concussion in elite rugby union players in Ireland is higher than reported in other countries or other sports. Many concussions remain unreported and, therefore, unmanaged. However, recent changes in concussion management guidelines by the International Rugby Board may impact future reporting practices of players.

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1. Introduction

Rugby union is a dynamic contact sport requiring players to perform a variety of open and closed skill activities in a game environment. Worldwide, there are 3.5 million participants, with 118 Unions participating as members governed by the International Rugby Board (IRB) (IRB, 2010). The sport is particularly popular in Ireland, where there are over 150,000 registered participants across all levels of play (IRFU, 2011). Owing to the physical nature of the game, players are at risk for concussion.

The incidence of concussion in rugby union across various levels of play has been shown to range from 4.5% to 25% of all injuries

(Bathgate, Best, Craig, & Jamieson, 2002; Bird, Waller, Marshall, Alsop, Chalmers, & Gerrard, 1998; Marshall & Spencer, 2001; McIntosh, McCrory, Finch, & Wolfe, 2010). In a comparison study between collegiate American football players and club-level rugby union players from New Zealand, Marshall and colleagues reported that rugby union players sustained three times as many injuries (Marshall, Waller, Dick, Pugh, Loomis, & Chalmers, 2002). In addition, the most common injury in these players was to the head, accounting for 19% of all injuries.

Investigations of elite-level rugby union players in South Africa, Australia, and New Zealand have reported concussion rates of 5–23% per season (Holtzhausen, Schweltnus, Jakoet, & Pretorius, 2006; Seward, Orchard, Hazard, & Collinson, 1993; Shuttleworth-Edwards et al., 2008). In addition, concussion rates in male professional sports were reported highest among rugby union players at 9.05 concussions per 1000 player exposures (Tommasone & Valovich McLeod, 2006). A recent survey of U-20 rugby union

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players in Ireland observed that 48% reported a history of sustaining at least one concussion during the season investigated (Baker, Devitt, Green, & McCarthy, 2013).

The risk of sustaining a concussion in rugby union has been shown to vary by position. For instance, it has been reported that forwards, who partake in the more physical aspects of the game including set pieces, rucks, and mauls, are more prone to concussion injuries (Bathgate et al., 2002; Best, McIntosh, & Savage, 2005; Bird et al., 1998; Bottini, Poggi, Luzuriaga, & Secin, 2000; Fuller, Brooks, Cancea, Hall, & Kemp, 2007; Quarrie, Alsop, Waller, Bird, Marshall, & Chalmers, 2001). However, other investigations have found that backs, who are involved in high-speed tackles and collisions due to the nature of their role in play, demonstrate a greater rate of concussion compared to forwards (Brooks, Fuller, Kemp, & Reddin, 2005a; Kemp, Hudson, Brooks, & Fuller, 2008; Quarrie & Hopkins, 2008). The severity of injury, as measured by days out of play, and player position has also been examined with Brooks et al. reporting that backs had higher concussion incidence rates (4.9/1000) compared to forwards (4.0/1000); however, forwards had more severe concussions (14 days absent from play) compared to backs (10 days absent from play) (Brooks et al., 2005a).

Concern has been expressed regarding the underreporting of concussion among players, which has been documented to be as high as 53–62% in sports such as soccer and American football (Broglio, Vagnozzi, Sabin, Signoretti, Tavazzi, & Lazzarino, 2010; McCrea, Hammeke, Olsen, Leo, & Guskiewicz, 2004). A study examining concussion in high school rugby union players determined that of the 62% of athletes who sustained a concussion, 20% did not report their injury (Sye, Sullivan, & McCrory, 2006). Baker and colleagues found that 48% of U-20 Irish rugby union players believe they had sustained a previous concussion; however, 44% of them failed to report their injury (Baker et al., 2013). Previous investigations have found that the most common reasons for failing to report a concussion include: not thinking it was serious enough; not wanting to leave the game; believing that concussions are part of the game; not realizing it was a concussion; and not wanting to let down their teammates (Broglio et al., 2010; McCrea et al., 2004).

Although the rate of concussion in elite rugby union players has been examined in other countries, there are currently no reported concussion statistics for these players in Ireland. Therefore, the objectives of the current investigation were to examine the self-reported rates of concussion and reporting practices among elite-level players affiliated to the Irish Rugby Football Union (IRFU). In addition, we wanted to determine whether player position was related to concussion rates and severity.

2. Methods

This study was conducted following international ethical guidelines for biomedical research involving human subjects as outlined by the World Health Organization (CIOMS, 2002). Institutional Review Board approval was granted prior to the commencement of the study. Participants for this investigation included players from the four professional-level provincial teams representing each of the provinces of Ireland that comprise the IRFU (Connacht, Leinster, Munster and Ulster). The European rugby union season typically begins in late August and concludes at the end of May. Throughout the course of the season, each of the four Irish provincial teams plays intermittently against each other and other European provincial rugby teams in the Pro12 League and the European Rugby Cup. Players from these teams may also play in international tournaments including the 6 Nations and Rugby World Cup for the Irish National team.

Managers for each team were contacted to schedule times to meet with the players and distribute the surveys at the end of the

2010–2011 season (June, 2011). Surveys were administered to the players during a team meeting held at each team's respective training ground in an attempt to maximize response rates. The study was explained to the players, following which signed informed consent was obtained and the surveys were administered. Coaches and medical staff were asked to leave the meeting room while the players completed the surveys in an attempt to limit player-response bias (Guskiewicz et al., 2005). The surveys took approximately 10–15 min to complete. The completed surveys were collected and returned to the investigators.

The survey (Appendix A) was modeled on previously published investigations and designed to examine the players' concussion history (Broglio et al., 2010; McCrea et al., 2004). The survey provided the players with a representational definition of concussion and a list of common concussion signs and symptoms defined previously (Broglio et al., 2010; McCrea et al., 2004; McCrory et al., 2009). They were then asked to provide details of their concussion history and reporting practices during the 2010–2011 season.

Data analyses were conducted using SPSS software (SPSS, Chicago, IL) with an a priori significance level set at $p < 0.05$. Descriptive statistics are provided for demographic data. Due to reports in the literature suggesting that players are more susceptible to concussion based on position (Bathgate et al., 2002; Best et al., 2005; Bird et al., 1998; Bottini et al., 2000; Brooks et al., 2005a; Fuller, Molloy, et al., 2007; Kemp et al., 2008; Quarrie et al., 2001; Quarrie & Hopkins, 2008), descriptive statistics and mean comparisons were used to determine the positions most at risk. Descriptive analyses were also provided for number of concussions, severity (as a measure of days removed from play), whether the concussions were reported to coaching or medical staff, and if not, what reasons were provided for failing to do so.

3. Results

One hundred and seventy-two players from the four professional teams representing the four provinces that comprise the IRFU participated in this investigation. This represented 80.4% ($N = 214$) of all professional-level players affiliated with the IRFU at the time of this investigation. Not all of these players answered every question of the survey. Therefore, the data presented are relative to the valid responses. Participants included 36 (20.9%) players from Team 1, 49 (28.5%) from Team 2, 50 (29.1%) from Team 3, and 37 (21.5%) from Team 4. Players had a mean age of 24.28 ± 3.67 years, height of 1.86 ± 0.08 m, weight of 101.10 ± 11.83 kg, and playing experience of 14.55 ± 4.71 years. ANOVA indicated that there were no statistical differences ($p = 0.05$) in these variables between the provincial teams. All player positions were represented, with 102 (59.0%) forwards and 70 (41.0%) backs (Table 1).

The survey asked players to report their concussion history for the 2010–2011 season. Seventy ($N = 156$, 44.9%) players indicated sustaining at least one concussion. Overall, players reported a total of 92 concussions during the 2010–2011 season, with twenty-one ($N = 65$, 32.3%) sustaining more than one concussion. The players indicated that they sustained one ($N = 44$), two ($N = 16$), three ($N = 4$), or four ($N = 1$) concussions, whilst 5 players who reported a concussion did not indicate the number sustained. The mean number of concussions for those players who sustained a concussion was 1.42 ± 0.68 . Players reported concussion symptoms lasting an average of 3.15 ± 5.10 days and they were removed from play for an average of 5.30 ± 8.65 days (Table 2).

Players were asked to indicate whether or not they disclosed to anyone (e.g. medical or coaching staff, etc.) the concussions they sustained during the 2010–2011 season. The responses indicated that 47 concussions were reported ($N = 88$, 53.4%). When asked to

Table 1
Player demographics (mean \pm SD).

	Team 1 (N = 36)	Team 2 (N = 49)	Team 3 (N = 50)	Team 4 (N = 37)	F statistic, p-value
Age (years)	24.97 \pm 4.11	24.51 \pm 3.89	23.44 \pm 2.91	24.46 \pm 3.78	F = 1.41, 0.24
Height (ms)	1.85 \pm 0.06	1.85 \pm 0.09	1.87 \pm 0.07	1.86 \pm 0.08	F = 0.84, 0.48
Weight (kg)	100.00 \pm 12.11	101.18 \pm 11.71	101.24 \pm 11.78	101.47 \pm 12.20	F = 0.13, 0.94
Experience	13.49 \pm 5.79	15.14 \pm 4.37	14.98 \pm 4.22	14.19 \pm 4.62	F = 1.07, 0.36
Forwards/Backs	18/18	20/29	19/31	13/24	

indicate to whom they reported their concussions, 28 reported their concussions to team physiotherapists ($N = 9$, 32.1%), team physicians ($N = 9$, 32.1%), their teammates ($N = 4$, 14.3%), their parents ($N = 3$, 10.7%), and other (e.g. nurse ($N = 3$, 10.7%)). No players, who indicated disclosing their concussion, did so to coaching staff. Nineteen players did not specify the individual to whom they reported their concussion. For players who failed to report their concussions ($N = 41$, 46.6%), the reasons included: not thinking the injury was serious enough ($N = 39$, 95.1%), not wanting to be pulled out of the game ($N = 35$, 85.4%), not knowing the injury was a concussion ($N = 31$, 78.0%), thinking concussions are part of the game ($N = 29$, 70.1%), not wanting to let the team down ($N = 29$, 70.1%), and other ($N = 3$, 7.3%).

Players were asked to indicate whether they were aware of a teammate sustaining a concussion during the 2010–2011 season. Of those who responded, 41 ($N = 118$, 34.7%) indicated that they did have knowledge of a teammate sustaining a concussion. When asked to indicate why a teammate's concussion was not reported, 26 players indicated: they did not think the injury was serious enough ($N = 21$, 80.8%), they did not know it was a concussion ($N = 18$, 69.2%), they did not want the teammate to be pulled out of the game ($N = 18$, 69.2%), concussions are part of the game ($N = 17$, 65.4%), they did not want to let the team down ($N = 16$, 61.5%), and other ($N = 2$, 7.7%). Table 3 provides a comparison of the reasons given for failing to report a concussion.

Finally, we analyzed the number of reported concussions sustained during the 2010–2011 season based on player position. Forwards ($N = 76$; 58.9%) reported a total of 51 (55.4%) concussions, while backs ($N = 53$; 41.1%) reported 41 (44.6%) concussions (Table 4). Backs sustained a greater mean number of concussions (1.58 ± 0.81) as compared to forwards (1.31 ± 0.57); however, this difference failed to reach statistical significance [$F(1) = 1.13$; $p = 0.12$]. Forwards had longer mean durations removed from play ($N = 47$; 6.12 ± 7.98) compared to backs ($N = 39$; 4.33 ± 9.40); however, this finding was not significant [$F(1) = 0.90$; $p = 0.35$]. Following adjustments to account for positions that are represented twice (e.g. flankers, wings), the results indicate that scrum-halves ($N = 10$; 12.0%), followed by flankers ($N = 11$; 10.9%) accounted for the most concussions during the 2010–2011 season. Fullbacks reported the fewest concussions ($N = 3$; 3.3%).

4. Discussion

This is the first investigation conducted to examine concussion among elite rugby union players in Ireland in an attempt to gain an understanding of the number of concussions sustained during one

season and the reporting practices of players. Our findings indicate a self-reported concussion rate of 44.9% of players who participated in the 2010–2011 IRFU season. These self-reported figures exceed those from previous investigations of self-reported concussion in rugby union (Bird et al., 1998; Seward et al., 1993; Shuttleworth-Edwards et al., 2008) and other contact sports (Biasca, Wirth, & Tegner, 2002; Broglio et al., 2010; McCrea et al., 2004). The self-reported concussion rates in this investigation may be partly attributed to better player knowledge about concussion. The survey used in this investigation was modeled after investigations of self-reported concussion rates in soccer (Broglio et al., 2010) and American football (McCrea et al., 2004). It provided the players with a definition of concussion and a list of common concussion symptoms. Previous studies have demonstrated that players possess misconceptions about concussions; which, subsequently, have been attributed to higher underreporting rates (Broglio et al., 2010; McCrea et al., 2004; Sye et al., 2006). In addition, the IRFU implemented a comprehensive concussion education program prior to the start of the 2010–2011 season, which may have increased player knowledge of concussion and lead to higher self-reported concussion rates among the participants in this investigation. Similar rates of self-reported concussion were found in a recent investigation of U-20 Irish rugby union players (48%) reported by Baker and colleagues (Baker et al., 2013).

This investigation also examined the rate of self-reported concussion based on player position. The current study found that the average number of concussions was highest for backs, which supports a number of previous investigations (Brooks et al., 2005a; Kemp et al., 2008; Quarrie & Hopkins, 2008). The tackle is the mechanism responsible for the majority of rugby union injuries, (Brooks et al., 2005a; Quarrie & Hopkins, 2008) and backs are most predisposed to tackling (Brooks et al., 2005a). Furthermore, Coughlan and colleagues reported that backs are likely to sustain a higher proportion of severe body loads greater than 10 G due to the velocities they achieve in the open field prior to being tackled (Coughlan, Green, Pook, Toolan, & O'Connor, 2011). The intensity of the impacts sustained by backs may make them more susceptible to concussion than forwards, which contradicts previous findings (Shuttleworth-Edwards & Radloff, 2008). Regarding the severity of the injuries, the investigation found that forwards reported suffering more severe injuries as measured by the mean number of days absent from play. These findings are similar to other investigations that determined forwards to have more severe injuries resulting in more days absent from play (Bottini et al., 2000; Brooks, Fuller, Kemp, & Reddin, 2005b; Fuller, Brooks, et al., 2007), which may be due to their involvement in collisions and

Table 2
Concussion statistics for the 2010–2011 Rugby union season.

Number (^a N) of Concussed Players, %	Total number of concussions, mean \pm SD	Mean \pm SD symptom duration (range)	Mean \pm SD ^b Step-Down duration (range)	Number of players with >1 concussion (range)
70 (^a N = 156), 44.9%	92 (^a N = 65), 1.42 \pm 0.68	3.15 \pm 5.10 (0–56 Days)	5.30 \pm 8.65 (0–25 Days)	21 (2–4)

^a N = valid number of players who responded.

^b Step-down refers to the duration of time a player is removed from play (practice and competition) following a concussion.

Table 3

Reasons for not reporting a concussion – Self and teammate. Responses are not mutually exclusive as the players were asked to rank all that apply.

	Player	Teammate
Did not think injury was serious enough	N = 39, 95.1%	N = 21, 80.8%
Did not want to be pulled out of the game	N = 35, 85.4%	N = 18, 69.2%
Not knowing the injury was a concussion	N = 31, 78.0%	N = 18, 69.2%
Thinking that concussions are part of the game	N = 29, 70.1%	N = 17, 65.4%
Did not want to let down the team	N = 29, 70.1%	N = 16, 61.5%
Other	N = 3, 7.3%	N = 2, 7.7%

scrums (Bottini et al., 2000; Fuller, Brooks, et al., 2007). Additional investigations are required to further clarify the relationship between player position and concussion rate and severity in rugby union.

The fact that many of the concussions sustained by players appear to go unreported (46.6%) is of concern. In addition, many players (34.7%) failed to report to anyone when they had knowledge of a teammate who had been concussed. These findings are similar to previous unreported concussion rates ranging from 20 to 62% (Baker et al., 2013; Broglio et al., 2010; McCrea et al., 2004; Sye et al., 2006). The primary reasons cited for failing to report a concussion included not thinking the injury was serious enough, and not wanting themselves or their teammate to be pulled out of the game. It has been suggested that the inherently competitive nature of rugby union may result in players feeling pressured to underreport concussions (Sye et al., 2006). We did not ask the players in this investigation to provide an indication of whether they felt pressured to refrain from reporting their own or their teammate's concussion. However, it appears that these players were aware of their own or their teammates concussions, yet made the determination that the injury was not serious, and subsequently, failed to report it.

Furthermore, a high proportion of players (32.3%) indicated sustaining multiple concussions (range = 2–4). Of particular interest is a player from this investigation who sustained 4 concussions during the 2010–2011 season. He indicated symptom durations ranging from 1 to 5 days. However, he did not report any of these injuries, nor did he step-down from play. In light of recent knowledge indicating possible long-term effects of multiple concussive injuries on neuropsychological function, this is quite concerning (Covassin, Elbin, Kontos, & Larson, 2010; Guskiewicz et al., 2005; McCrory et al., 2009). Zemper reported that a previously concussed athlete is 5.8 times more likely to sustain a subsequent injury in college and high school football (Zemper, 2003). A dose–response relationship between the number of previously sustained concussions and the risk for future concussion has also been demonstrated (Guskiewicz et al., 2003). To ensure proper management and safe outcomes, it is crucial that players are

educated not only on how to identify concussion, but also the potential risks associated with non-reporting of injuries.

Prior to May 2011, the International Rugby Board (IRB) regulation 10 guidelines required a concussed player, or player suspected of sustaining a concussion, to be removed from play for three weeks (21 days) to allow for a significant amount of time for concussive symptoms to clear before the player returned to full contact play. This regulation did permit a player to return before 3 weeks if there was input and clearance from a neurological specialist (IRB, 2010). Following the 2010–2011 season a graded return-to-play (GRT) protocol based on recommendations of the Zurich Consensus (2008) on Concussion in Sport was introduced (McCrory et al., 2009). These guidelines allow athlete player to return to play after six days if a medical practitioner manages the process, and the player successfully completes each step of the GRT protocol. It has been speculated that the previous three-week step-down rule elevated the risk for players by discouraging them from reporting their concussions (Marshall & Spencer, 2001). In the present study, there were a high percentage of unreported concussions during the 2010–2011 season. It is reasonable to assume that these new GRT guidelines, along with the continued education of players, coaches, and medical staff, could lead to a reduction in underreported concussions. Interestingly, during the 2010–2011 season, players indicated having concussion symptoms for 3.15 ± 5.10 days and they were removed from play for an average of 5.30 ± 8.65 days. In addition, only 11 concussed players ($N = 92$, 12%) reported stepping down for 21 days or more. This may be an indication that the medical staff had already begun to implement a GRT protocol for the management of their players or that players had clearance to return to play from a neurological specialist. Nevertheless, the impact of IRB regulation 10 GRT guidelines remains to be seen. The IRFU has made recent efforts to enhance the concussion education for players, coaches, and medical staff. Subsequently, their goal remains to reduce the rate of concussion, to provide an environment where players are more willing to report their injuries, and to provide more effective concussion management.

This investigation has a number of limitations inherent to conducting research that relies on self-reports of concussion history. We attempted to eliminate response bias by ensuring that players were able to complete their surveys in an environment free from the scrutiny of coaching and medical staff. However, by surveying in a supervised group setting, we cannot be certain that the players responded honestly and without peer influence. It has been reasoned that players may be reluctant to report their injuries, or they may be unaware of concussion signs and symptoms (Bruce & Echemendia, 2009; McCrea et al., 2004). We attempted to control for this by providing them with a definition of concussion and a list of common concussion symptoms, and by assuring them that their anonymity would be preserved. However, the nature of retrospective reporting made it impossible for us to verify players self-reports of concussion. A failure of the players to accurately report their concussions could impact the validity of our findings. In addition, not all participants answered all aspects of the surveys. For instance, only 156 out of 172 players (91%) indicated whether or not they sustained a concussion during the 2010–2011 season. Of the 16 players (9%) who failed to provide an indication, 12 were from a single club. Nevertheless, the majority (80.3%) participated in this investigation, representing a substantial portion of the overall population of professional players in the IRFU.

5. Conclusions

This study examined the rate of concussion and the reporting practices of elite Irish rugby union players. Our findings demonstrate high rates of self-reported concussion among players. The

Table 4

Concussions by position.

Player position	Number (%) of concussions	^a Corrected# (%)
Prop	9 (9.8%)	4.5 (4.9%)
Hooker	6 (6.5%)	6 (6.5%)
Lock	12 (13.0%)	6 (6.5%)
Flanker	20 (21.7%)	10 (10.9%)
No. 8	4 (4.3%)	4 (4.3%)
Scrumhalf	11 (12.0%)	11 (12.0%)
Flyhalf	4 (4.3%)	4 (4.3%)
Center	15 (16.3%)	7.5 (8.2%)
Wing	8 (8.7%)	4 (4.3%)
Fullback	3 (3.3%)	3 (3.3%)
Total	92 (100%)	

^a Corrected to account for positions that are represented twice (e.g. flanker).

concussion rate is higher among back positions, but concussion severity was greater for forwards. Furthermore, the findings indicate that many players fail to seek proper advice and medical input regarding their concussions. The need for further education is required to inform players about the significant risks associated with concussions, and to encourage them to report their injuries and seek appropriate concussion management.

Conflicts of interest

The authors report no conflicts of interest.

Ethical approval

Elmhurst College Institutional Review Board: This study was conducted following international ethical guidelines for biomedical

research involving human subjects. Institutional Review Board approval was granted prior to the commencement of the study. All participants provided informed consent prior to participation in the study.

Funding

No funding was received for this investigation.

Appendix A. Player survey on concussion

Please complete the following questions as honestly as possible. Your answers are completely private and will not be shared with coaches, staff or other players.

SECTION 1: PERSONAL INFORMATION.

1. Age: _____ years
2. Height: _____ metres/feet
3. Weight: _____ kilograms/pounds/stone
4. What position do you play in the most? _____ (Please state exact position)
5. How many years have you been playing rugby? _____ (Years)
6. What is the highest representative level at which you have played rugby union? (Please circle one option)

Senior International	Provincial	Underage International
Club International	Academy	
7. Has a doctor said you have a learning disability (LD/ADD/HD)? (Please circle one option)

Yes	No
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SECTION 2: CONCUSSION.

Use the following definition of concussion to answer the questions below

Definition of concussion: A concussion is a blow to your head that causes a variety of symptoms that may last for a short period of time, such as a few plays or minutes of a game, or a longer period of time. These symptoms may include any of the following:

- Headache
- Difficulty concentrating or focusing
- Feeling slowed down
- Dizziness or balance problems
- Nausea
- Fatigue
- Feeling dazed
- Drowsiness
- Forgetting things
- Sensitivity to light
- Loss of balance
- Sensitivity to noise
- Blurred vision

IMPORTANT:

- A) you can have a concussion without being “knocked out” or unconscious
- B) feeling “Dazed” IS a concussion

SECTION 2.1: 2010-2011 SEASON.

1. Did you experience any of the concussion symptoms listed above or have a concussion playing rugby this year after a blow to the head, even if you didn't tell anyone? (Please circle one option)

Yes No

If yes, please complete the following question and table:

2. How many concussions did you have in the 2010-2011 season? _____

	Date of Concussion (month/year)	How many days did you have any of the symptoms listed above?	Did you report your injury to anyone? (Please circle)	How many days did you sit out of your sport because of the injury?
Injury #1			Yes No	
Injury #2			Yes No	
Injury #3			Yes No	
Injury #4			Yes No	
Injury #5			Yes No	

3. If you had an injury, to whom did you report your concussion? (Please circle – you may select more than one option)

Physiotherapist

Coach

Parent

Other, who? _____ Teammate

Doctor

4. If you did not report your concussion to anyone, why not? (Please number ALL answers: Put a “1” by the first reason, “2” by the second reason, “3” by the third reason, “4” by the forth reason, “5” by the fifth reason, and “6” by the sixth reason)

_____ Didn't think it was serious enough

_____ Didn't know it was a concussion

_____ Didn't want to be pulled out of a game/training

_____ Didn't want to let teammates down

_____ Having a concussion is part of the game

_____ Other (why?) _____

5. Did one of your teammates experience any of the above symptoms after a blow to the head, even if no one told anyone? (Please circle one option)

Yes No

If yes, how many times in the 2010-2011 season? _____

6. If you did not report the concussion to anyone, why not? (Please number ALL answers: Put a “1” by the first reason, “2” by the second reason, “3” by the third reason, “4” by the forth reason, “5” by the fifth reason, and “6” by the sixth reason)

_____ Didn't think it was serious enough

_____ Didn't know it was a concussion

_____ Didn't want him pulled out of the game/practice

_____ Didn't want to let teammate down

_____ Having a concussion is part of the game

_____ Other (why?) _____

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