

RFU Community Rugby Injury Surveillance and Prevention Project

CRISP 2014-2015

Season Report



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SECTION 1 - EXECUTIVE SUMMARY

OVERALL FINDINGS

- ❖ The overall injury rate in community rugby during season 2014-15 is stable compared with previous seasons with approximately one missed-match injury in every three team games.
- ❖ The injury rate within community rugby is lower as you move down the league structure.
- ❖ One-week time-loss injury rates in men's senior community rugby are approximately half of those reported for Premiership rugby.
- ❖ On average three players per team will be unavailable for match play each week throughout the season due to injury.

CONCUSSION – MOST COMMON DIAGNOSIS

- ❖ There was an increase in reported concussions during season 2014-15 compared with the season 2013-14.
- ❖ The increase in reported concussions might represent a real increase in concussion risk but, since overall injury risk is stable, may also be due to the promotion of concussion awareness through RFU 'Headcase' and the increased profile of this injury through the media.
- ❖ There was one concussion for every 19 team games (or 1 in every 10 matches)
- ❖ 67% of all concussions were sustained in the tackle.

THE KNEE – HIGHEST BURDEN (NUMBER X TIME LOST PER INJURY)

- ❖ Is the third most commonly injured site, but injuries to this site are the most severe in terms of matches missed. Therefore knee injuries account for the greatest total of matches missed.
- ❖ Injury prevention exercises that target the lower limb are being introduced into CRISP during season 2015-16.

THE SHOULDER – MOST BURDEN FOR UPPER LIMB

- ❖ Is the second most commonly injured site, with a high mean severity (matches missed). Therefore shoulder injuries account for the most matches missed for an upper limb site.
- ❖ Shoulder injury prevention exercises are being introduced into CRISP during season 2015-16.

THE TACKLE – MOST COMMON INJURY EVENT

- ❖ Is associated with 54% of all injuries.
- ❖ When tackling, the most commonly injured sites are the head and shoulder. Good tackling technique can reduce injuries to these areas..
- ❖ Strategies to reduce injuries to the tackled player should include conditioning exercises for the knee and ankle.

THE SCRUM

- ❖ Accounts for 4% of all one-week time-loss injuries (19 injuries in total).

Since changes in the scrum engagement at the start of season 2013-14:

- ❖ The overall incidence of scrum injuries has remained stable compared with previous seasons.
- ❖ There has been an increase in the incidence of injuries to the hooker but no changes for other playing positions.

FUTURE DIRECTIONS

Injury prevention

- ❖ The majority of community rugby injuries are sustained in the lower limb, particularly to the knee, ankle and thigh, and the majority of upper limb injuries occur in the shoulder. In 2015-2016 a sample of community level clubs will be involved in a trial of an injury prevention warm-up programme comprising specific exercises for these body sites in.

THE CRISP PROJECT - RESOURCES

Webpages - <http://go.bath.ac.uk/rfu-crisp> - contain:

- ❖ Project information for new and existing clubs
- ❖ Previous CRISP annual reports and scientific publications
- ❖ Priority areas identified for injury prevention
- ❖ RFU and World Rugby coach education and injury prevention resources

SECTION 2 - INTRODUCTION

An injury surveillance programme for community rugby union...

With the increasing attention on injuries in rugby union in recent years, it has become increasingly important that injuries in the game are appropriately monitored in order that number and type are appropriately reported. While there is a growing understanding of the nature and causes of match injuries which occur in rugby union, historically, much of this information has been derived from the elite game. However it may not be appropriate to assume that injuries in the elite game reflect those in community rugby, mainly due to differences in player skill and physical characteristics and match demands. Furthermore, it is also possible that with the range of playing abilities across all community rugby there will be scope for differing injury patterns. Men's community rugby union in England represents the largest senior male playing population in the world and therefore an injury surveillance programme to accurately report on the number and types of injuries in this diverse range of playing levels was conceived.

The Community Rugby Injury Surveillance and Prevention (CRISP) Project is managed by a team at the University of Bath and funded by the RFU as part of a commitment by the RFU to reduce injuries within rugby. The Project involves the voluntary participation of a large sample of English clubs across RFU playing levels 3-9 who provide information on injuries which occur during 1st XV matches. The primary purpose of this Project is to identify injury patterns within community rugby to understand more about such factors as the number of injuries occurring, the type of injuries, and how they happen.

CRISP: An evolving Project...

The CRISP project has now been running for seven consecutive years and is the longest running large-scale injury surveillance programme of any community sport in the UK. During this period, the Project has continuously monitored the incidence and nature of match play injuries with this accumulated data providing increasingly greater certainty of the injury pattern occurring in the game. In addition, the Project has also progressed to provide additional information on player physical characteristics and how different attributes may affect the risk of injury. Further work is now under way to provide greater insight into how intervention strategies may reduce particularly common or severe injuries.

Providing information to make an impact...

The information generated by the CRISP Project has been used to inform a number of injury management and prevention strategies and provides a comparison of injury risk compared with the Professional game. Now that the Project has run over multiple seasons, data has the potential to detect changes in injury patterns over time, either in response to law changes, education programmes or the evolving progression of the game. Information is used in a number of educational resources within the RFU's RugbySafe player welfare and wellbeing programme, while the academic quality of the Project has been demonstrated through a number of academic publications and conference presentations (see Section 7).

By any measure, the CRISP Project is one of the world's leading research programmes in community sport.

2.1. Methods and definitions

This report provides a summary of the Community Rugby Injury Surveillance Project (CRISP) data for the 2014-15 season. For the purposes of comparisons between different levels of community rugby, playing levels were grouped as follows:

RFU Levels	Number of clubs
3,4	10
5,6	20
7,8,9	28

All clubs participated in this Project voluntarily having responded to advertisement material. Only injuries sustained during match play were reported with medical personnel at each club submitting the following information for each 1st team match:

Time-loss injury information

A time-loss injury was defined as one which caused the injured player to miss at least one match (eight days or greater absence from playing). This injury information is presented in Section 3 of the report.

Injury incidence

Time-loss injury data is presented as the number of injuries per 1000 player-hours of match exposure. This is a standardised method of presenting injury information so that data can be compared between different groups with a different number of matches. It is calculated by:

$$\text{Injury Incidence} = \left(\frac{\text{Number of Injuries}}{\text{Number of matches} \times \text{number of players (15)} \times \text{match duration (1.33 hours)}} \right) \times 1000$$

Injury severity

In this study, the severity of the injury is recorded in terms of the amount of time that the player is absent from match play (number of matches missed). For time-loss injuries in this study, a minimum of one match will have been missed while injuries are also classified as 'moderate' (between one and three matches missed), 'severe' (four or more matches missed) and career ending.

Recurrent injury

A recurrent injury is one of the same site and same type as the original injury and occurs after the player has made a full return to match play following the original injury.

Statistical significance

In this report, a result is deemed to be significant if the probability that the result has happened by chance is less than 5%. The use of 95% confidence intervals (CI) provides an estimate of reliability of the value (i.e. small intervals means a very reliable estimate).

All methods and definitions used in this study comply with those outlined in the consensus statement for injury definitions and data collection procedures for studies of injuries in rugby union (Fuller et al 2007).

SECTION 3 - TIME-LOSS INJURY INFORMATION

3.1. Overall injury rate and severity

For the 2014-15 season, information from 1351 matches was included, in which 496 time-loss injuries were reported (any injury resulting in 8 days or greater absence from match play). The information presented in Table 3.1 and Figure 3.1 demonstrates that the overall injury rate over the five seasons has not changed. Small fluctuations in injury incidence are within the expected natural variation from season to season based on the data over six seasons.

Table 3.1. Match injury incidence and severity for time-loss injuries over multiple seasons.

Season	Player match hours	Match injuries	Injuries per 1000 player hours (95% CI)	Injuries per club per match	Number of matches for one injury	Average matches missed/ injury
2009-10	22540	385	17.1 (15.4-18.8)	0.3	2.9	6.1
2010-11	32820	539	16.4 (15.0-17.8)	0.3	3.0	7.0
2011-12	37100	645	17.4 (16.0-18.7)	0.3	2.9	6.5
2012-13	24040	399	16.6 (15.0-18.2)	0.3	3.0	7.0
2013-14	32180	613	19.0 (17.5-20.6)	0.4	2.6	6.4
2014-15	27020	496	18.4 (16.7-20.0)	0.4	2.7	6.0
2009-15	175700	3077	17.5 (16.9-18.1)	0.4	2.9	6.5

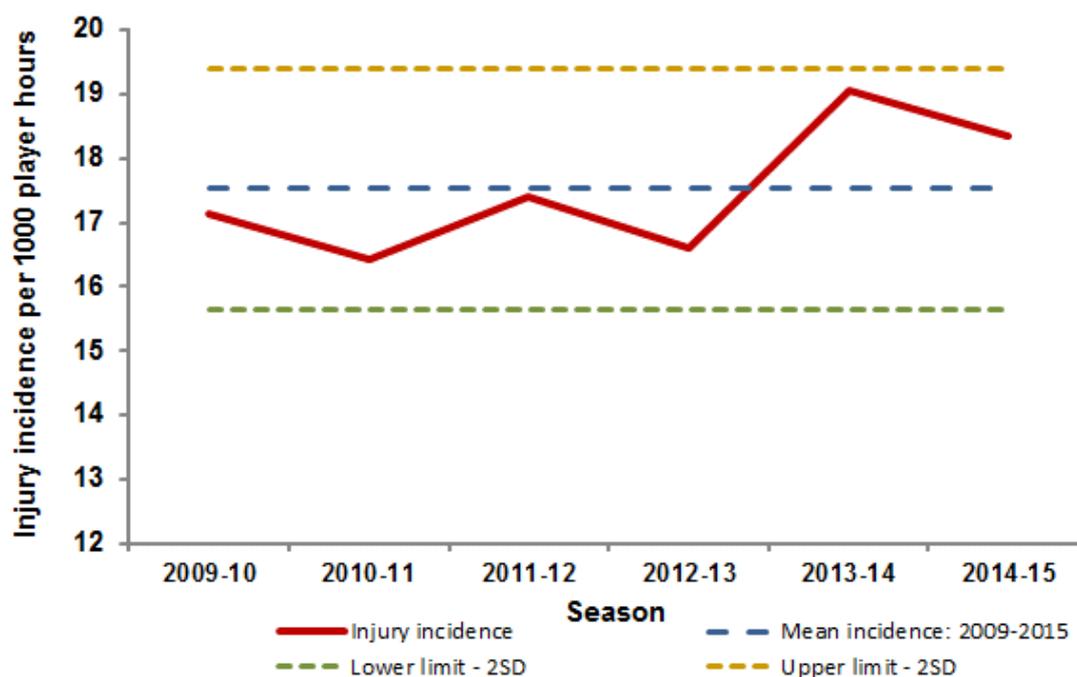


Figure 3.1. Overall injury incidence for CRISP over five seasons. Note: 2 standard deviations (2SD) above and below the mean incidence denote the range within which a natural variation in the data is expected.

Injury rate between playing levels

The injury incidences for clubs in level 3/4 and 5/6 were significantly higher than for level 7/8/9 during season 2014-15 (Table 3.2) but statistically there was no difference between level 3/4 and 5/6. Figure 3.2 also shows the injury incidence over six seasons of CRISP for the different playing levels. When the data for all seasons are combined, there is a significantly higher injury incidence for level 3/4 compared with levels 5/6 and 7/8/9 and also a higher incidence for level 5/6 compared with 7/8/9. There is no difference in the mean severity (number of matches missed) between playing levels over the study period.

Table 3.2. Match injury incidence and severity for time-loss injuries between playing levels in season 2014-15.

Playing level	Total number of player match hours	Total number of match injuries	Injuries per 1000 player hours (95% CI)	Injuries per club per match	Number of matches for one injury	Mean severity (matches missed)	Mean player matches missed
Level 3/4	5280	107	20.3 (16.4-24.1)	0.4	2.5	6.8	73
Level 5/6	9980	200	20.0 (17.3-22.8)	0.4	2.5	6.7	67
Level 7/8/9	11760	189	16.1 (13.8-18.4)*	0.3	3.1	4.9	33

*Significantly lower incidence compared with levels 3/4 and 5/6 ($P < 0.05$)

Table 3.2 also shows the 'Mean player matches missed', expressed in terms of the total number of occasions over the season that a club has players who are unavailable for match play due to injury (number of injuries x matches missed due to these injuries). For example a club with 10 injuries over the season, each of which results in 5 matches absence, would result in a total of 50 'player matches missed' over the season.

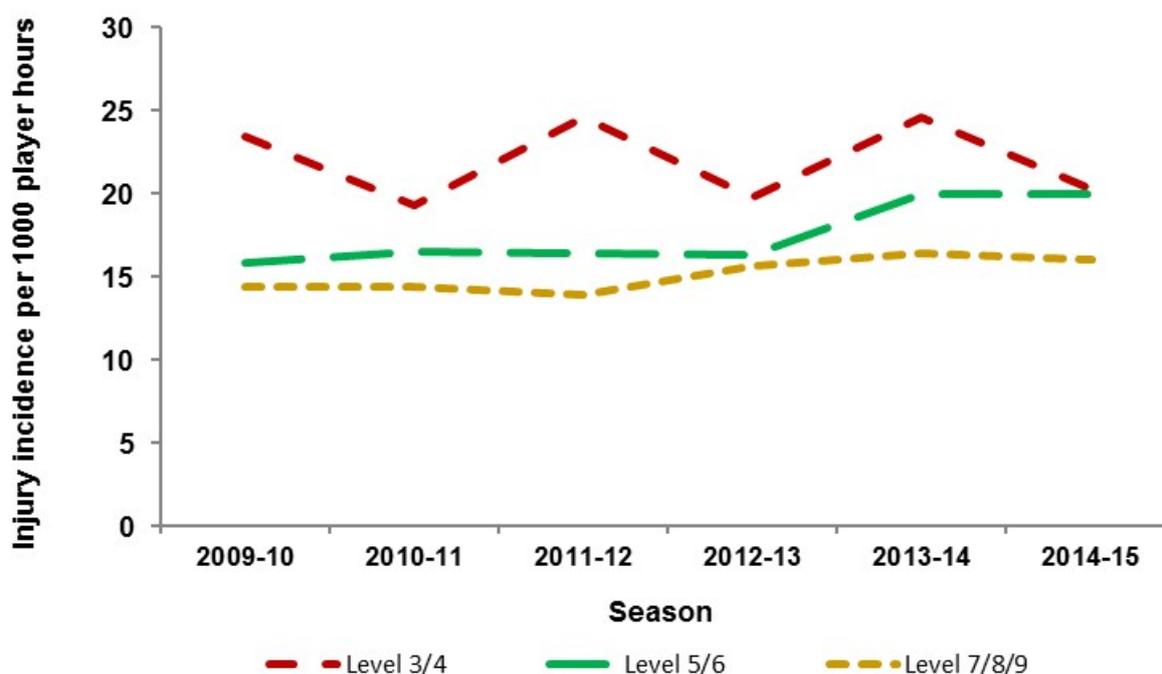


Figure 3.2. Injury incidence for CRISP over multiple seasons by different playing levels

Impact of injury rate and severity on player availability

When the incidence and severity of injuries are considered, clubs in level 7/8/9 are likely to have one to two players unavailable each week due to injury, while clubs in level 3/4 and 5/6 (both due to a higher incidence than level 7/8/9) are likely to have an average of three players unavailable each week due to injury (Table 3.3).

Table 3.3. Possible impact of number and severity of injuries on player availability

Playing level	Average number of injuries per club per season	Average number of matches missed per injury	Average number of players unavailable due to injury each week
Level 3/4	10.7	6.8	3
Level 5/6	10.0	6.7	3
Level 7/8/9	6.8	4.9	2

Management of time-loss injuries:

- The injured player was removed from play for 78% of all time-loss injuries (81% in 2013/14).
- 12 (2%) injuries required an ambulance. Therefore an ambulance was used for one in every 112 team games.
- 160 (32%) injuries were referred to a hospital. This equates to one player being referred to hospital every 8 team games.
- 51 (10%) injuries required surgery, equating to one in every 26 team games.
- 14% of all injuries were recurrences (those of the same site and injury diagnosis).
- There was no significant difference in the severity of injury for recurrent (6.4 matches missed) and non-recurrent (6.0 matches missed).

Community rugby compared with other playing populations

While there are some differences within different levels of community rugby (shown in Figures 3.2 and 3.3), the overall injury rate is considerably lower than that of International and Premiership rugby for injuries which cause the player to be absent from training or match play for 8 days or longer as shown in Figure 3.3.

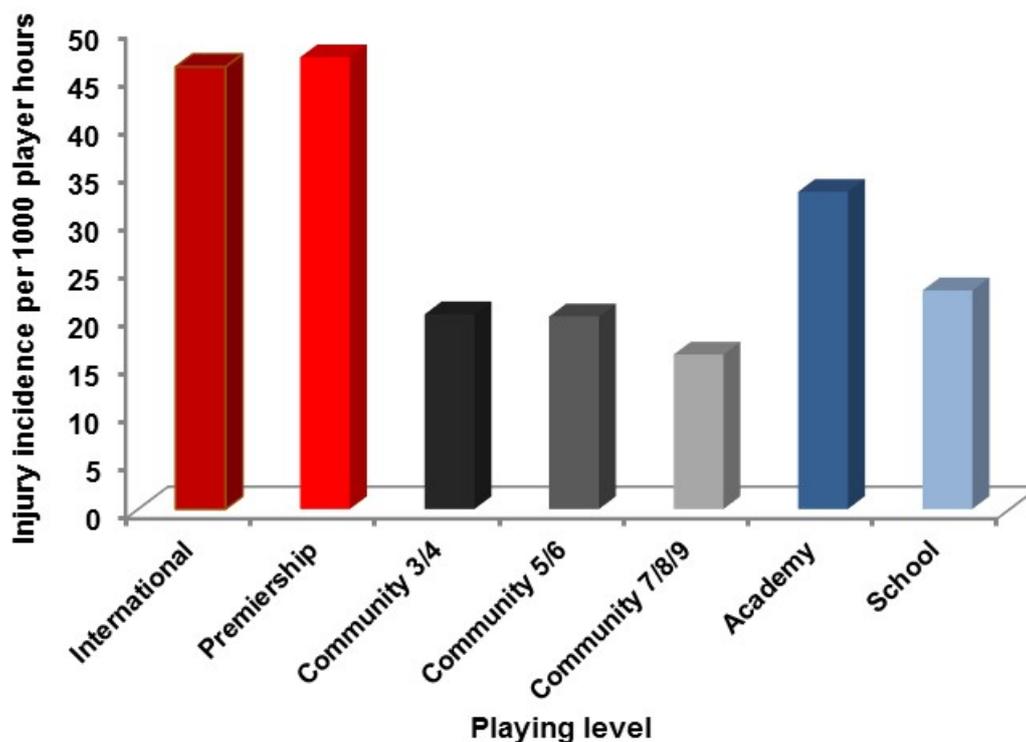


Figure 3.3. A comparison of injury rates for different levels of community rugby with elite level and schools rugby.

Data sources: Community level 3/4, 5/6 and 7/8/9 are taken from the 2014-15 findings of the current report. International and Premiership data are taken from the England Rugby Premiership injury and training audit 2014-2015 Season Report. Information on academies and Schools derives from the Game wide report on injury risk in English youth rugby over seasons 2006-2007 and 2007-2008 (published by the University of Bath/RFU, April 2011).

3.4. Site of injury

The most commonly injured body site is the head, followed by the shoulder, knee, thigh and ankle, (Figure 3.4). Knee injuries also account for the most days lost to injury due to the high severity (matches missed).

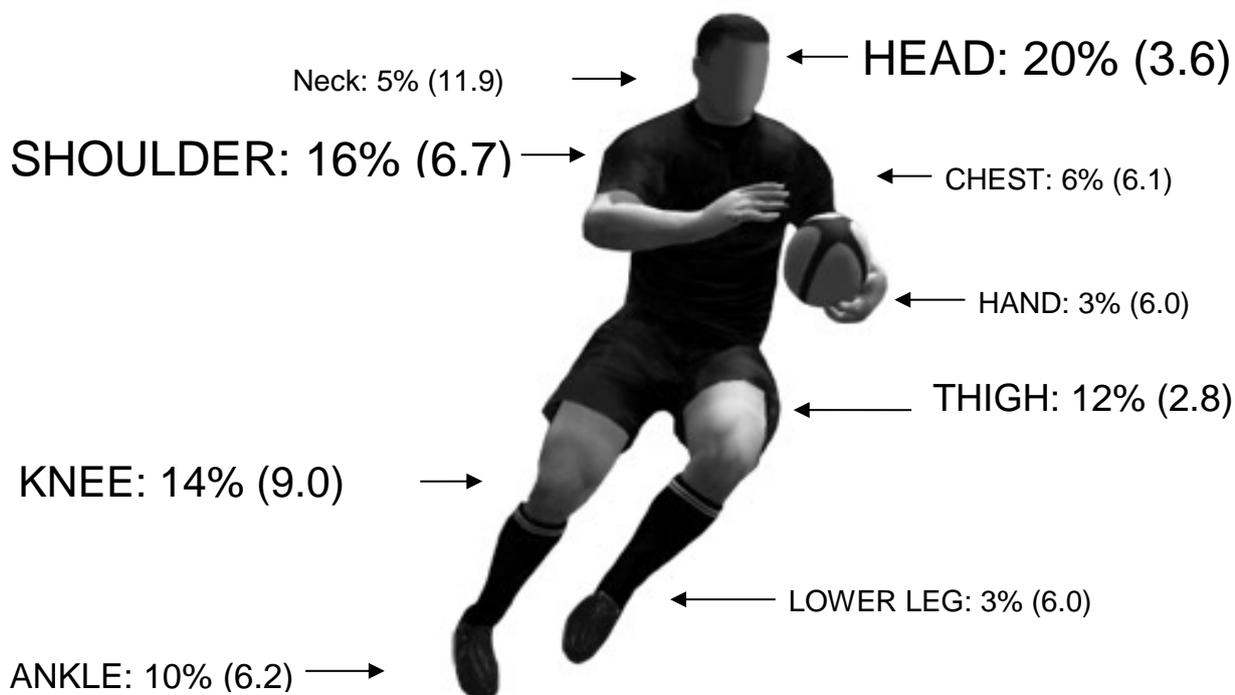


Figure 3.4. The most common injury sites (and matches missed) for time-loss injuries in 2014-15.

When injured body sites are grouped into regions, Figure 3.5 demonstrates that the lower limb accounts for the most injuries. The higher overall injury rate in levels 3/4 compared with 5/6 and 7/8/9 clubs is largely due to a higher rate in head/neck injuries. This may be linked to the previous finding that there are more tackles per match in level 3/4, that the tackle is the main cause of head injury, and that that there is a higher risk of injury per tackle in this level compared with levels 5/6 and 7/8/9. More information on the injury risk for specific contact events was reported in a previous CRISP publication: [Collapsed scrums and collision tackles: what is the injury risk?](#)

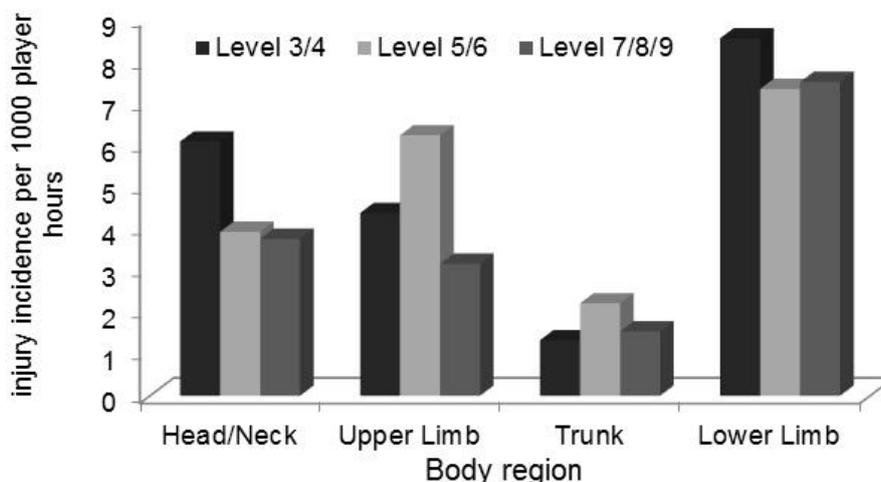


Figure 3.5. Injury incidence according to body region by playing level for all time-loss injuries in 2014-15.

3.5. Type of injury

The most common injury types in community rugby, causing the player to miss at least one match, are those associated with joint/ligament damage (Figure 3.6). There is a higher incidence of nerve and neural injuries type in levels 3/4 compared with levels 5/6 and levels 7/8/9 which is largely accounted for by the higher incidence of concussion in this group (see concussion section for further details).

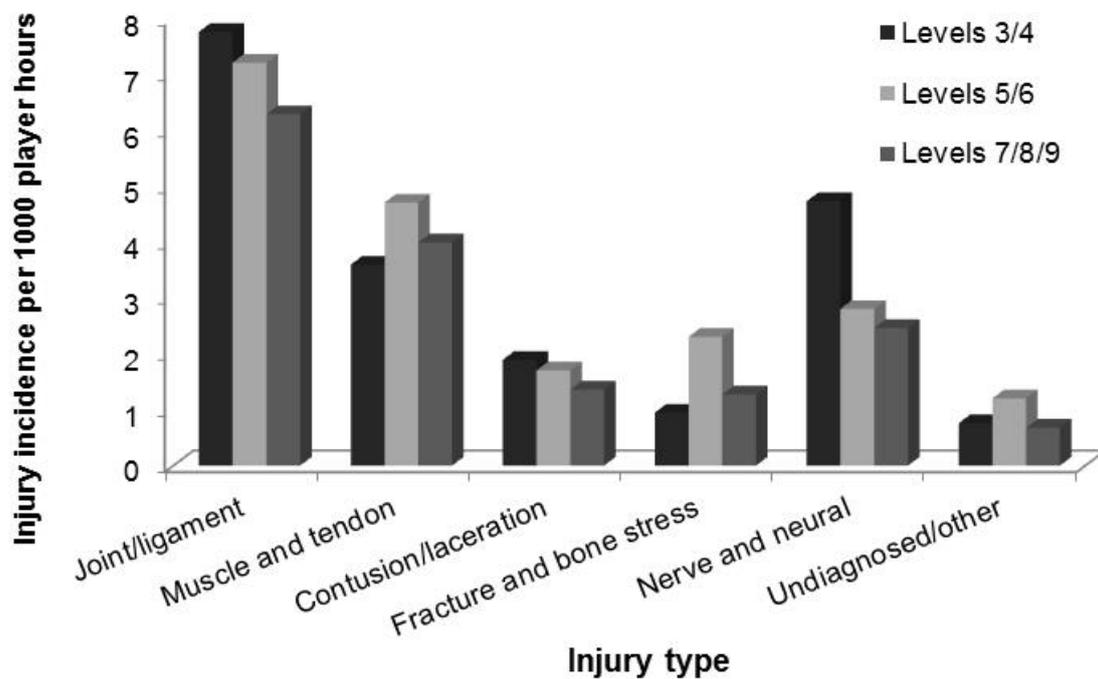


Figure 3.6. Playing level comparison for injuries according to injury type for all time-loss injuries in 2014-15. *Nerve and neural injuries include concussions.

3.6. Injury diagnoses

The top five most common injury diagnoses for all clubs combined are presented in Figure 3.7. As a specific diagnosis, concussion was the most prevalent (14% of all injuries), followed by hamstring strains. Acromioclavicular joint sprains were the most common upper limb injury diagnosis. It should be noted that Figure 3.7 represents only 40% of all injuries and there is a large range of different diagnoses accounting for the remaining 60%.

Specific diagnoses for the three different community playing level groups are shown below in Figure 3.8. Of particular note is that concussion accounts for the highest proportion of diagnoses at all levels.

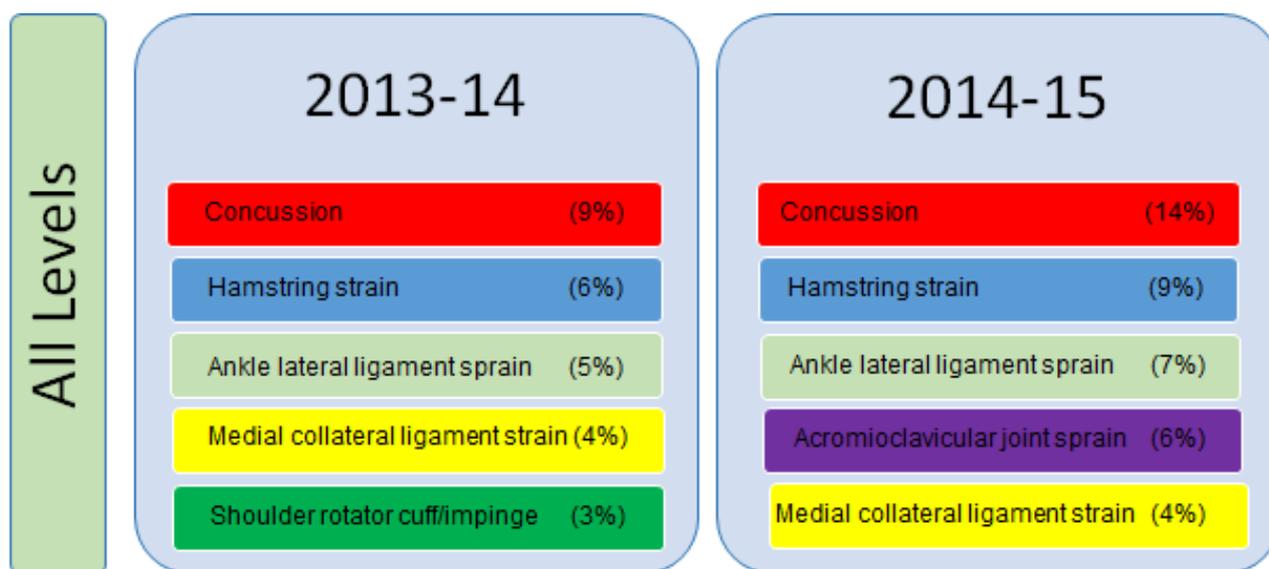


Figure 3.7. Top 5 specific injury diagnoses in rank order for all playing levels combined over season 2014-15 compared with season 2013-14. Numbers within brackets denote percentage of all injuries in each level.



Figure 3.8. Top 5 specific injury diagnoses in rank order for the three different playing levels, for season 2014-15 compared with season 2013-14. Numbers within brackets denote percentage of all injuries in each level.

Concussion

Concussion incidence and severity

Concussion was the most common injury diagnosis, accounting for 14% of all time-loss injuries (9 in 2013-14 and 7% in 2012-13). This equates to 1 concussion in every 19 team games (Table 3.4) that a team plays or 1 in every 10 matches (involving two teams) although the rate of injury is higher at level 3/4 (1 in every 12 team games) compared with 5/6 (1 in every 24 team games) and 7/8/9 (1 in every 21 team games). Approximately 900 teams play each week within levels 3-9, which likely results in around 47 concussions each week across these levels and over 1182 in total per season.

Table 3.4. Concussion incidence and severity between playing levels in season 2014-15.

Playing level	Total number of matches	Total number of concussions	Concussions per 1000 player hours (95% CI)	Number of team games for one concussion	Mean severity (matches missed)
Level 3/4	264	22	4.1 (2.4-5.9)	12	2.8
Level 5/6	499	21	2.1 (1.2-3.0)	24	2.4
Level 7/8/9	488	28	2.4 (1.5-3.3)	21	3.0
All Levels	1351	71	2.6 (2.0-3.2)	19	2.8

Concussion management and treatment

Table 3.5 shows how concussions were managed following a match, according to referrals. It appears that players within level 7/8/9 are more likely to be referred to hospital and less likely to be treated by sports therapy and physiotherapy staff. There is also a trend for more players to attend hospital and/or their GP in season 2014-15 compared with 2013-14.

Table 3.5. Percentage of concussions referred to practitioners including a comparison with 2013-14

Playing level	Percentage of players referred to....				
	Sports Therapist	Physiotherapist	Hospital	GP	Specialist
2014-15					
Level 3/4	23	45	23	45	0
Level 5/6	14	29	33	33	5
Level 7/8/9	7	7	43	21	4
All Levels	14	25	34	32	3
2013-14					
All Levels	25	33	27	15	3

Note: A concussed player may have received treatment from more than one of the above practitioners.

Concussions over multiple seasons

Figure 3.9 shows an increase in the incidence for 2014-15 compared with 2013-14 which is largely due to increases in incidence for levels 3/4 and 7/8/9 as shown in Figure 3.10. This may represent a real increase in injury risk but may also be due to the raised awareness and diagnosis of this type of injury through the RFU 'Headcase' initiative which has been promoted extensively through the community game since January 2013. There is also the possibility that the high profile of concussion in the media may have also been a factor in raising awareness for both players and club staff. Considering that the overall risk of injury has remained stable it is likely that increased awareness and education is the primary reason for the increase in reported concussions. The increase incidence for concussion in this report is also in line with recent increases in reported concussions in Premiership rugby.

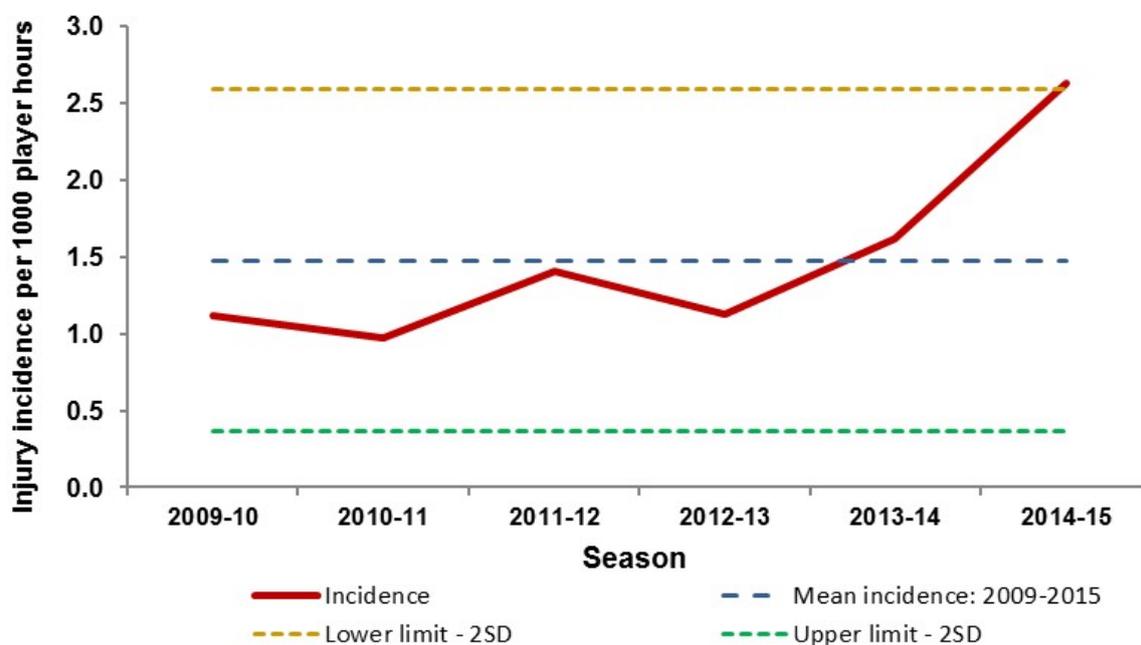


Figure 3.9. Incidence of reported concussions over five seasons for all playing levels combined, including the mean incidence over this period with upper and lower limits of 2 standard deviations.

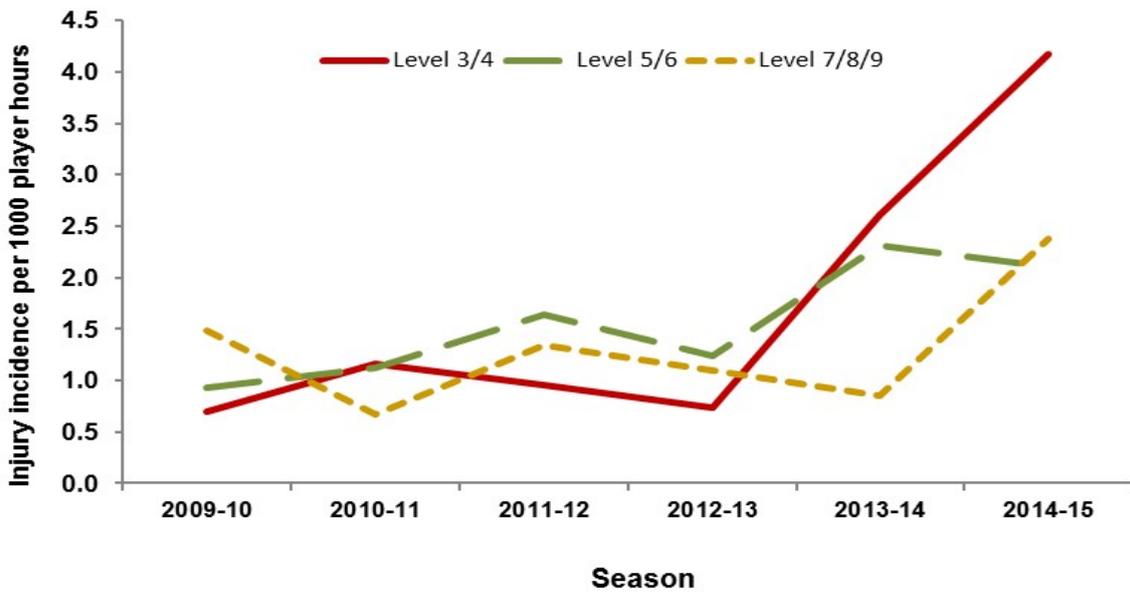


Figure 3.10. Incidence of reported concussions over five seasons for each playing level.

Match events associated with concussion

For season 2014-15, the tackle was reported as the injury event for 67% of all concussions (Tackled: 32% and Tackling: 35%).

Table 3.6. Percentage of concussions relating to match events for 2014-15 season

Event	Tackled	Tackling	Ruck	Collison (accidental)	Foul play	Unknown
Proportion of concussions	32	35	18	3	6	6

Concussion incidence by positional group

The incidence of concussion in forwards was 3.1 per 1000 player match hours, 95% CI 2.2-4.0 compared with 2.1 per 1000 player match hours, 95% CI 1.2-2.8 for backs. However, this was not a statistically significant difference and therefore it is not possible to state whether there is a different concussion risk for these positional groups.

Concussion and returning to play

There was an average of 2.8 matches missed per concussion injury. The proportion of concussions according to the number of matches missed is shown in Figure 3.11. New regulations introduced in March 2014, permit the concussed player to return after 19 days (missing at least two matches), when the enhanced care setting (criteria are described on the following page) is not available. This would result in concussed players missing a minimum of 2 matches (assuming there is one match each week). With 18% of all concussed players missing only one match, it would appear that some players were returning too early.

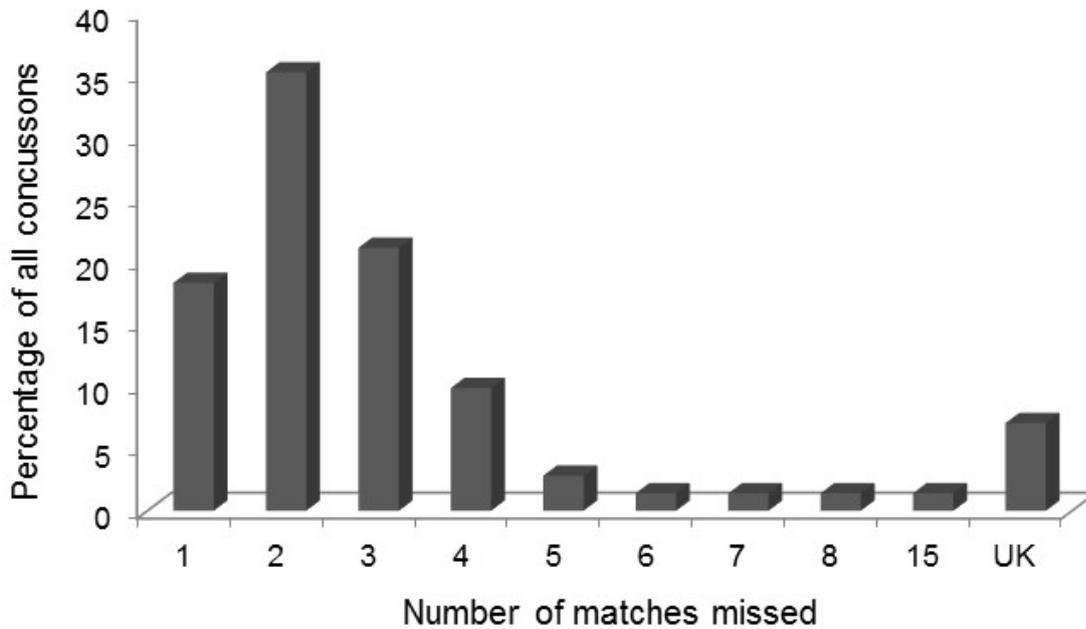


Figure 3.11. The percentage of concussions for different numbers of matches missed. 'UK': Return to play date not reported.

The routine return to play pathway for adult players who do not have access to the enhanced care setting is shown in Figure 3.12. Specific guidelines on the pathways for concussed adult players returning to play can be accessed via the RFU's Headcase resource: http://www.englandrugby.com/mm/Document/MyRugby/Headcase/01/30/49/57/returntoplayafterconcussion_Neutral.pdf

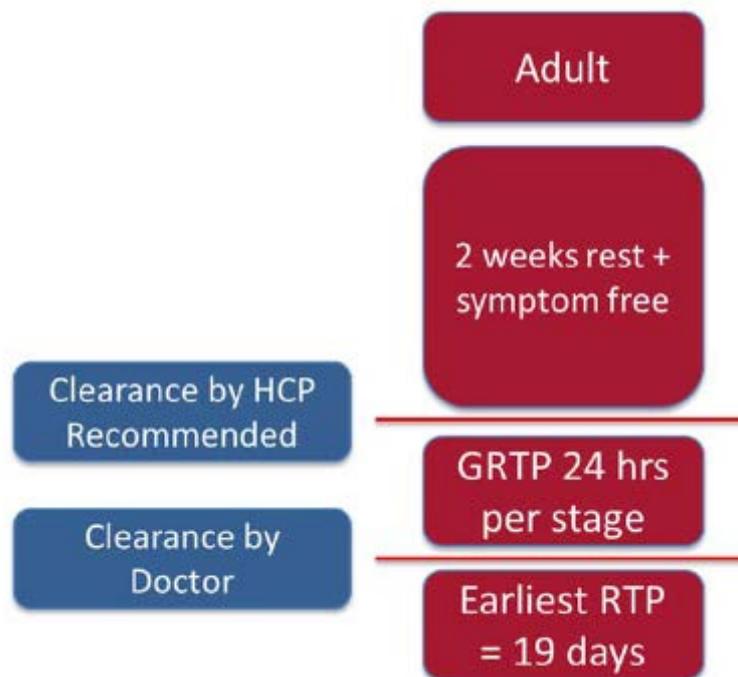


Figure 3.12. Return to play pathway for concussed adult players not in an enhanced care setting.

Criteria for the enhanced care setting:

1. There is a doctor with training and experience in the management of concussion/traumatic brain injury available to closely supervise the player's care and GRTP, and clear the player prior to return to play

and
2. There is a structured concussion management programme in place including:
 - a. Baseline SCAT 3/or Computerised Psychometric/Cognitive testing of players.
 - b. Clinical serial multimodal concussion assessment of players post head impact event
 - c. Formalised GRTP programme with regular SCAT 3 or equivalent assessments recorded in players' medical records.
 - d. Access to neuropsychology/neurology/neurosurgery specialists if required.

Catastrophic injury

No catastrophic injuries were reported by any participating clubs over the 2014-15 season. Historically only one 'near miss' catastrophic injury (cervical fracture) has been reported (2013-14 season) by participating clubs since the inception of the CRISP Project. While this injury was potentially catastrophic, excellent on-pitch and hospital treatment has allowed the injured player to make an almost full recovery. As such, the incidence of this type of severe injury has been shown to be low, with an incidence of 0.006 injuries per 1000 player hours or one injury per 8785 team games.

Injured player welfare

In cases where these injuries are serious enough to significantly change the lives of players or their families, the RFU provides support and assistance. Any reported injuries that may cause permanent and total disability will be followed up by the RFU who will offer the following support:

- Visit to the injured player in hospital
- Meet with representatives of the club or school to provide advice and assistance on how best to help the player and family
- Advise about issues such as family communication, fundraising, and accessing local support
- A partnership of player, family, club and the RFU will be created and this should help relieve the family of some of its immediate worries as well as helping to ensure the player is eventually able to enjoy a good quality of life.

RFU Injured Players Foundation

The RFU [Injured Players Foundation](#) (IPF) supports people who sustain a catastrophic injury while playing rugby. The charity provides help and support for both players and their families in the months following of these injuries as well as in the long term. It also incorporates the former SPIRE Rugby Trust charity.

Reporting serious injuries to the RFU

Any club playing within the RFU structure should report the following types of injury to the RFU sports injury administrator.

1. *An individual who sustains an injury which results in their being admitted to a hospital. This does not include those taken to an Accident or Emergency Department and allowed home from there.*
2. *Deaths occurring during or within 6 hours of the game finishing.*

The injury report form for the above can be accessed via:

<http://www.englandrugby.com/news/injury-reporting-1289995/>

3.6. Events associated with injury

For the 2014-15 season, 79% of all time-loss injuries were sustained during contact events (Figure 3.13). This finding has been consistent over each year of the Project and in the different group levels. Specific sections below provide further information on injury events of particular interest.

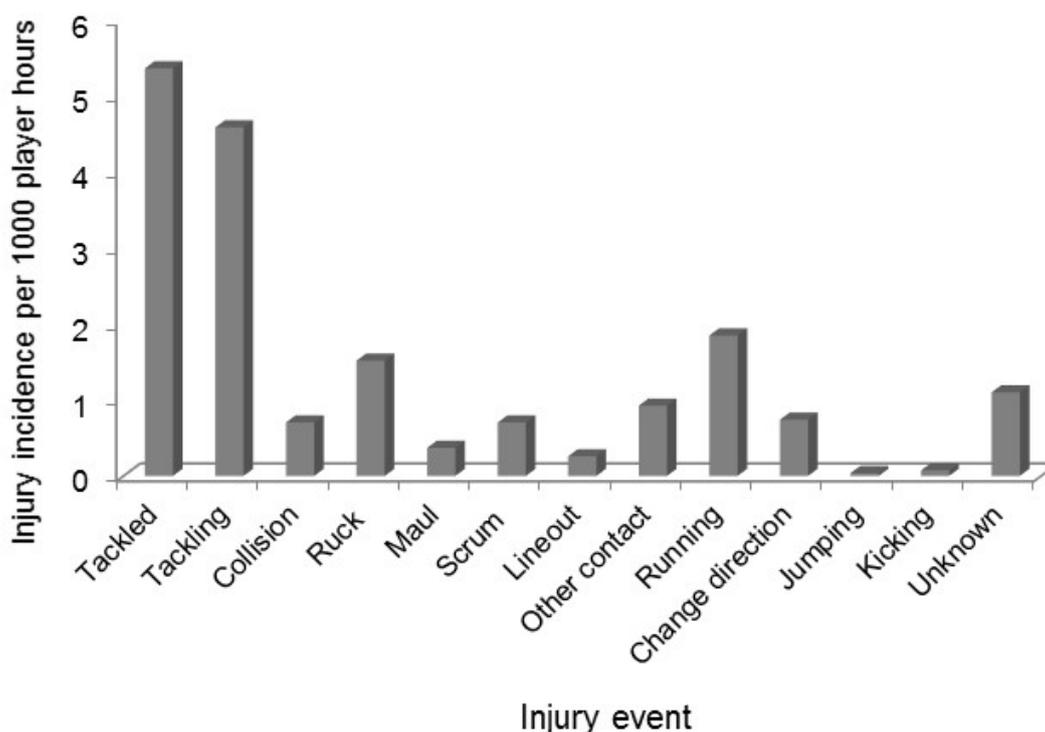


Figure 3.13. The incidence of injuries for specific match events for all playing levels combined

The Tackle

- The tackle (both being tackled and tackling) was the most common injury event accounting for 54% of all injuries (29% through being tackled; 25% through tackling). This finding is consistent over seasons and throughout levels 3/4, 5/6 and 7/8/9.
- The shoulder was the body site most commonly injured in the tackle (21% of all tackle injuries), followed by the head (18%), knee (16%) and ankle (10%).
- Figure 3.14 shows that while the upper limb was more susceptible to injury when the player was tackling, the tackled player sustained more injuries to the lower limb.
- Figure 3.15 provides a further breakdown of the 5 most common specific diagnoses when the player is tackled and when tackling.
- Tackle injuries resulted in an average of 6.9 matches absence (Tackled: 6.0 matches and Tackling: 8.0 matches missed) compared with a mean severity of 6.0 matches missed for all injuries.

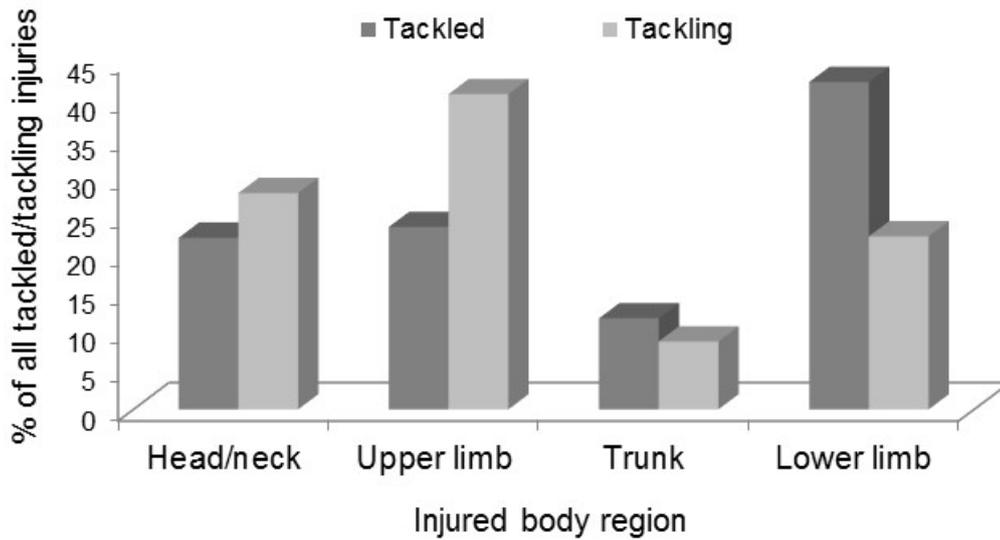


Figure 3.14. Percentage distribution by body regions for time-loss injuries sustained when being tackled and when tackling.

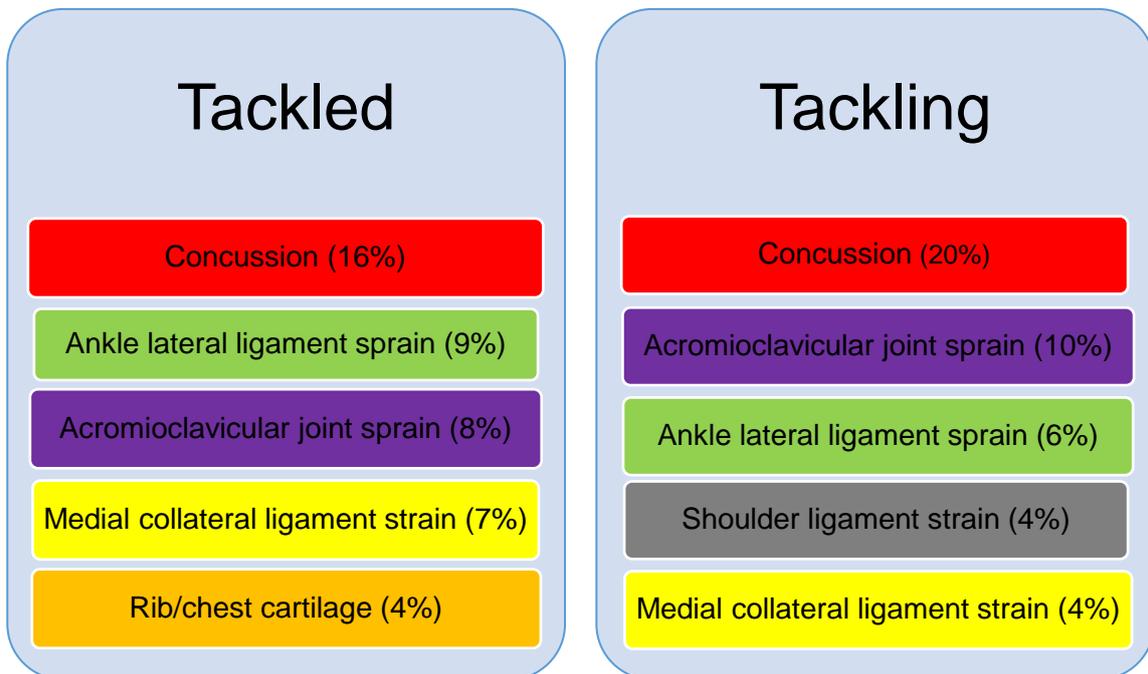


Figure 3.15. Top five most common injury diagnoses for the player being tackled and the player tackling. Numbers in brackets denotes the percentage of all tackled or tackling injuries.

The Scrum

Scrum injuries for the 2014-15 season, accounted for only 4% (19 injuries) of the total number. The new scrum engagement laws which were introduced for the season 2013-14, provide an interesting back drop to the injuries sustained in the scrum over seasons 2013-14 and 2014-15 in comparison with previous seasons. Figure 3.16 shows the scrum injury incidence over 5 seasons and while there some fluctuations, the incidence is statistically stable over the five-season period. Furthermore, there is no statistical difference between the incidence of scrum injuries when mean data for seasons before new engagement laws (2009-13: 0.61 injuries per 1000 player hours) are compared with the seasons following (2013-15: 0.71 injuries per 1000 player hours).

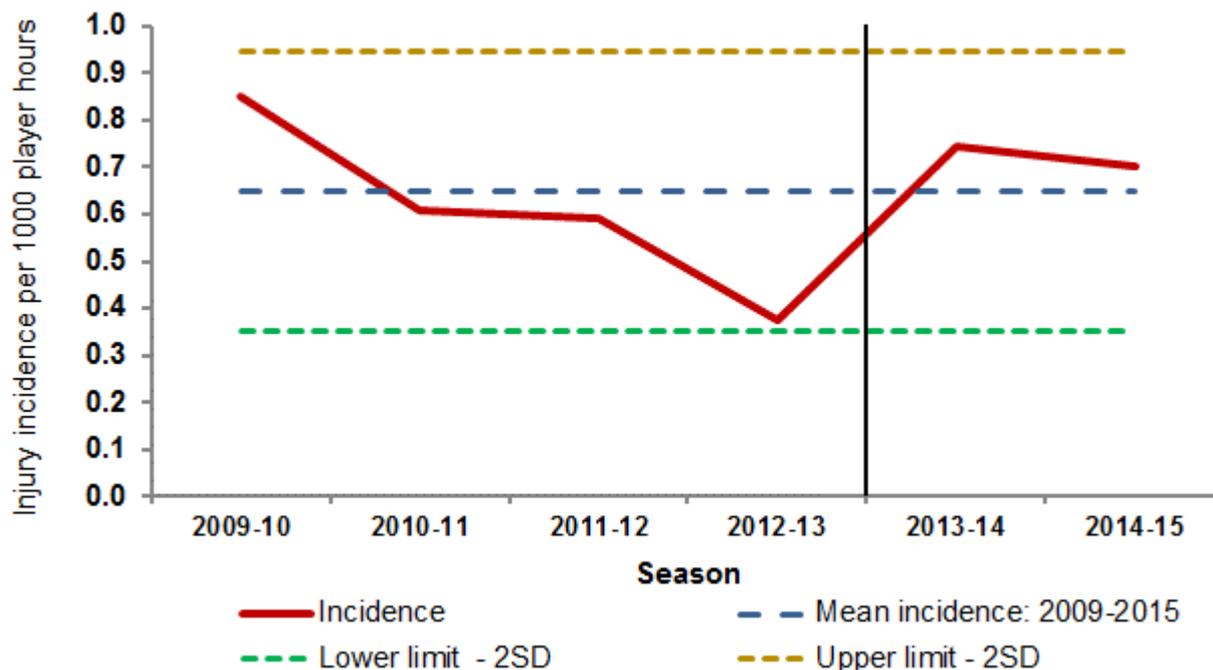


Figure 3.16. Incidence of scrum injuries reported over five seasons. Note: 2 standard deviations (2SD) above and below the mean incidence denote the range within which a natural variation in the data is expected. The vertical line denotes the change in scrum engagement laws.

Further information scrum injuries

- There were 11 scrum injuries reported for level 3/4 (collapsed scrum), with 5 for level 5/6 and 3 for level 7/8/9. The reverse trend was reported for season 2014-15 with 1 injury for level 3/4, 9 for level 5/6 and 13 for level 7/8/9.
- The severity of scrum injuries was a mean of 5.3 matches absence (less than the mean absence for all injuries). Collapsed scrums, resulted in 5.5 and non-collapsed scrums 5.2 matches missed.
- 15 injuries (including all six collapsed scrum injuries) occurred to front row players (loose head prop: 5 injuries, hooker: 5 injuries, tight head prop: 5 injuries) with the second rows sustaining 3 injuries).
- There was a range of types of injury sustained in the scrum distributed between the shoulder (1 injury), neck (8 injuries), chest (4 injuries), upper arm/elbow (2 injuries) knee (2 injuries) and lower back (2 injuries).

- Collapsed scrums resulted in injuries to the chest (2 injuries), neck (2 injuries), knee and shoulder (each 1 injury).

Comparing scrum injuries before and after new scrum engagement laws.

Figure 3.17 compares the incidence of scrum injuries sustained by each forward position combined for seasons 2013-14 and 2014-15 compared with the mean for seasons 2009-10 to 2012-13. Although there were no differences in the overall incidence for scrum injuries following the new scrum laws introduced in season 2013-14, there is a statistically higher injury incidence of injuries sustained by the hooker when the combined incidence for seasons 2013-14 and 2014-15 are compared with the combined incidence from previous seasons (2009-2013).

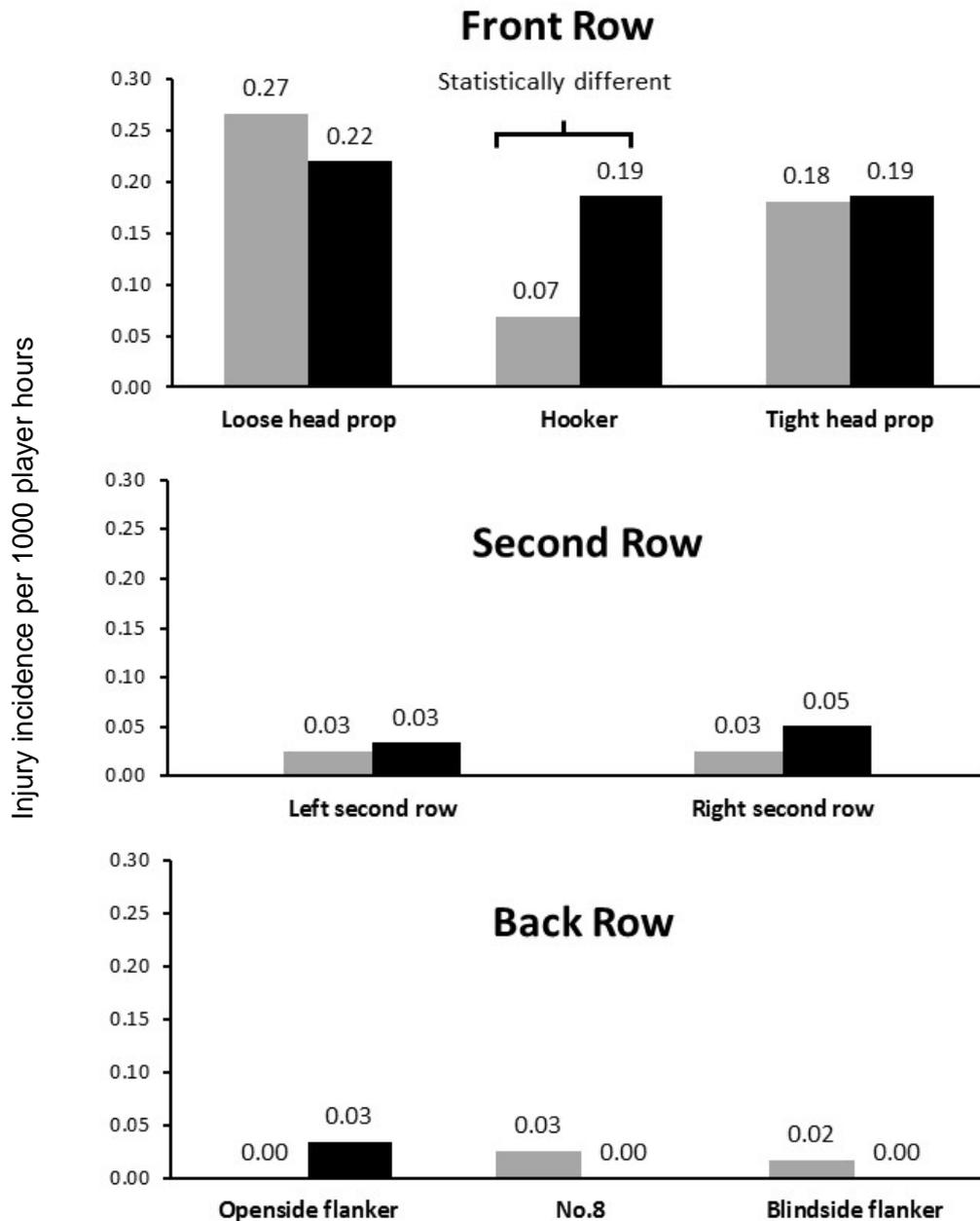


Figure 3.17. The injury incidence for each forward position in the scrum. Data is combined for seasons 2009-10 to 2012-13 (light grey bars) and for seasons 2013-14 and 2014-15 (black bars).

Non-contact injuries

- Overall, non-contact injuries accounted for 15% of all injuries
- Of non-contact events, running was found to be the most common injury event (10% of all injuries).
- Hamstring injuries accounted for 9% of all injuries. This is a consistent finding over the five seasons of the project.
- Section 8 contains more information on hamstring injury prevention strategies.

3.7. Effect of playing position on injury

When the injuries for all playing level groups were combined, there was a statistically higher incidence of time-loss injuries in forwards (20.5 injuries per 1000 player hours) compared with backs (15.6 injuries per 1000 player hours). When forwards and backs were split down into more specific positional groups there was a significantly higher injury rate for back row forwards compared with inside backs and outside backs (Figure 3.18).

The mean number of matches missed for an injury to a forward is 5.7, compared with 6.5 for a back.

Forwards and backs sustained 92% and 73%, respectively of all injuries in contact events. It is likely that these findings are due to forwards competing in more contact events during a match compared with backs and therefore the risk of injury per event may not be different for forwards and backs.

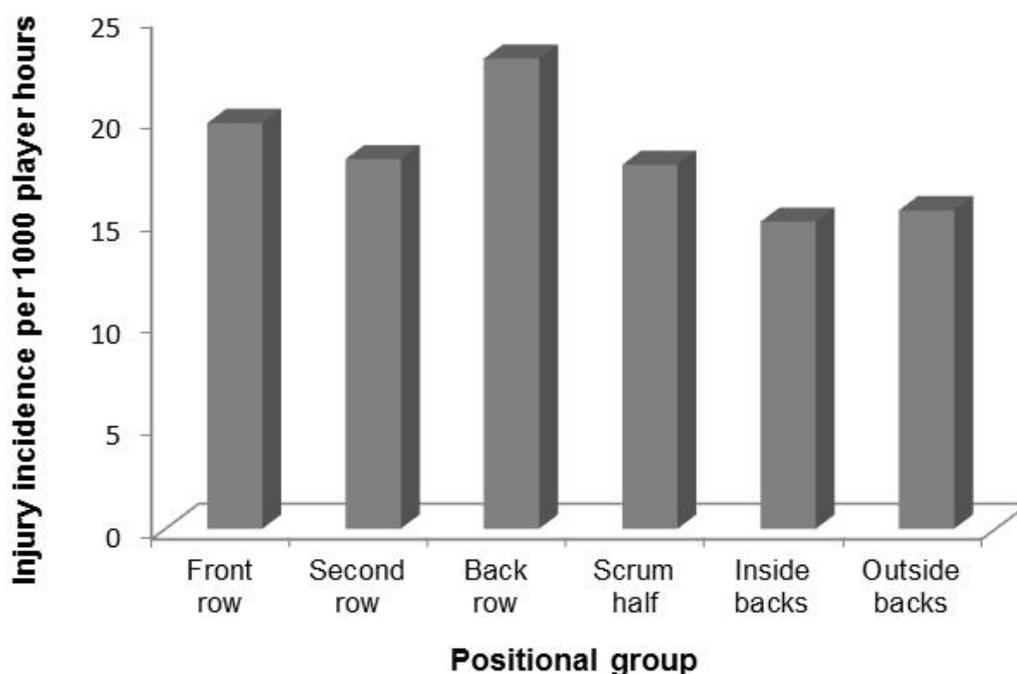


Figure 3.18. Comparison between positional groups for injury incidence. Forwards: Front row: loose head and tight head props, hooker, Second row: left and right locks; Back row: open side and blind side flankers, No. 8; Backs: Inside backs: outside half, inside centre, outside centre; outside backs: left and right wings, full back.

Playing position and Injured body region

Differences between forwards and backs are further highlighted in Figure 3.19 which shows that the higher overall injury incidence for forwards is due to more injuries to the head/neck and upper limb compared with backs.

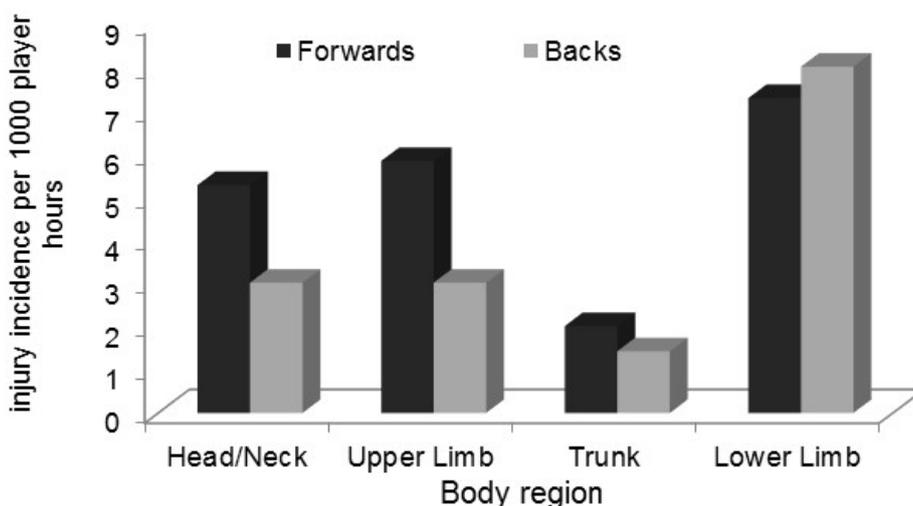


Figure 3.19. Comparison between forwards and backs for injury incidence by different body regions.

Playing position and injury diagnosis

The differences in injury diagnosis for forwards and backs are shown in Figure 3.20. The main difference appears to be in hamstring injuries and likely to be due to the greater running demands for these players.

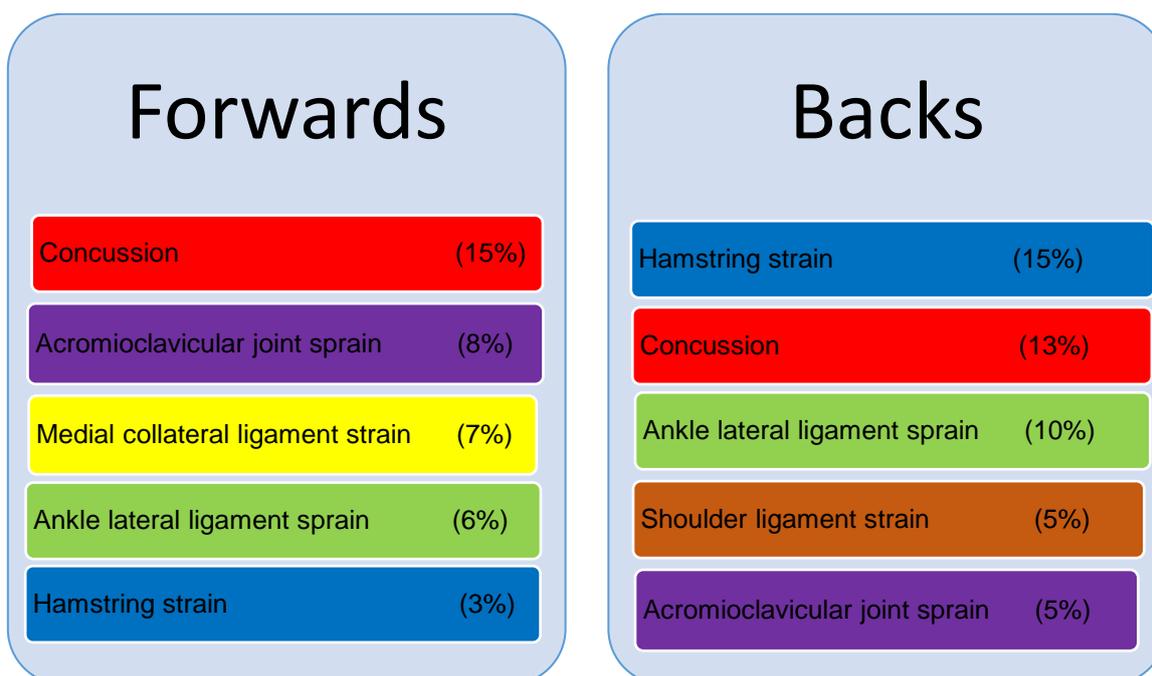


Figure 3.20. The top five specific injury diagnoses for forwards and backs (numbers in brackets denote percentages of total injuries for forwards and backs).

3.8. Timing of injuries

Figure 3.21 demonstrates that more injuries occur in the second half of the match. This is a consistent finding across all playing levels and over previous seasons of the Project. Furthermore this injury pattern is consistent in both contact and non-contact injuries and more specifically for tackle and running events.

The exact reason for this higher injury incidence later in the match is unknown but might be due to player fatigue which may manifest in terms of muscular fatigue (most likely in running events) but also mental fatigue, affecting the ability of players to carry out match events with appropriate technique (most likely in tackles and other contact events).

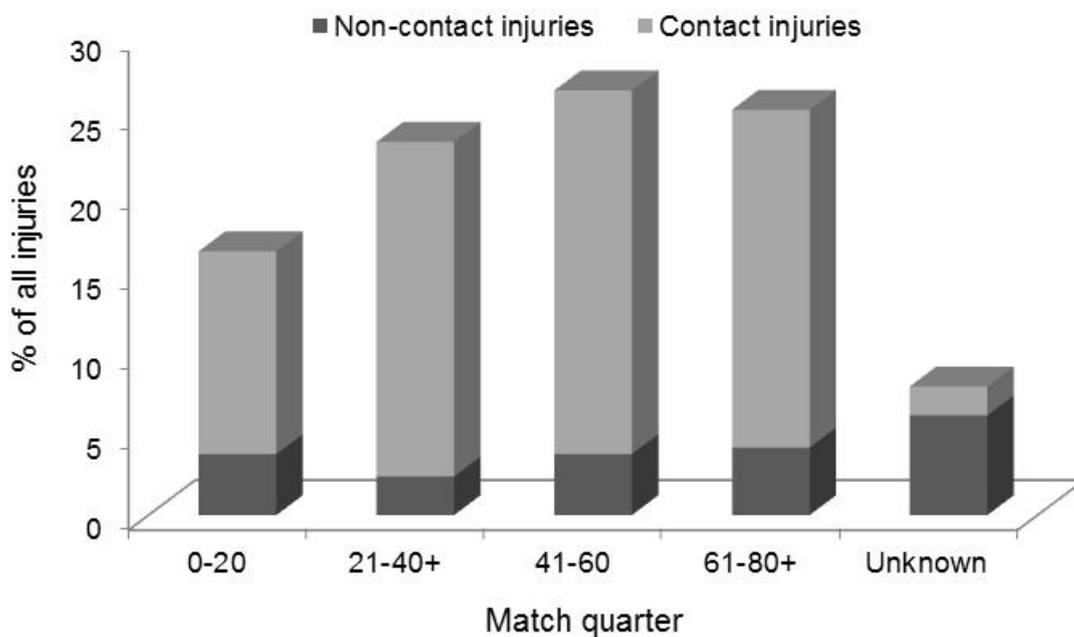


Figure 3.21. Percentage of time-loss injuries in each match quarter for non-contact and contact injuries.

SECTION 4 - PHYSICAL CHARACTERISTICS OF COMMUNITY RUGBY UNION PLAYERS

Each participating club provides anthropometric characteristics for their squad players. Table 4.1 shows the age, height and mass for community club players of different playing levels, compared with similar information reported previously for Premiership players*. The data demonstrates a trend for players to be taller and heavier as the playing level increases.

	Forwards	Backs
Age		
Premiership	25.6	24.8
Level 3/4	27.0	26.2
Level 5/6	27.0	25.6
Level 7/8/9	28.0	25.7
Height (cm)		
Premiership	189	182
Level 3/4	186	181
Level 5/6	184	180
Level 7/8/9	183	180
Mass (Kg)		
Premiership	111	91
Level 3/4	104	87
Level 5/6	102	87
Level 7/8/9	99	85

Figure 4.1. Player anthropometric characteristics for different levels of community rugby and compared with data previously reported for Premiership rugby players*.

* Fuller, C.W., Taylor, A.E., Brooks, J.M., Kemp, S.P.T. (2013). Changes in the stature, body mass and age of English professional rugby players: A 10-year review, *Journal of Sports Sciences*, 31(7):795-802.

SECTION 5 - FUTURE DIRECTIONS OF COMMUNITY RUGBY INJURY SURVEILLANCE

Continued injury surveillance

The community rugby injury surveillance project has now been established over multiple seasons. This information provides an increasingly large number of injuries to further our confidence of injury patterns at this level of rugby. Additionally, this information provides the opportunity to compare injury trends over consecutive seasons. In this way, it is possible to examine the potential influence of law changes or the effects of any other methods of intervention on injury patterns.

Injury prevention

The CRISP Project has demonstrated each season that the majority of community rugby injuries are sustained in the lower limb, particularly to the knee, ankle and thigh and the majority of upper limb injuries occur in the shoulder. Season 2015-2016 will see the introduction and evaluation of a large scale injury prevention warm-up programme comprising specific exercises for these body sites in a sample of community level clubs.

SECTION 6 - GUIDANCE AND RESOURCES

This section of the report includes some guidance towards injury prevention strategies based on the findings presented in this report. These have been approached in terms of how injury may be minimised through:

- 6.1. Physical preparation**
- 6.2. Injury prevention**
- 6.3. Injury management**

Useful online resources:

Rugby Football Union (RFU) RugbySafe

General information on player safety and wellbeing is available via the RFU's RugbySafe website: <http://www.englandrugby.com/rugbysafe/>

World Rugby

The worldwide governing body for rugby union, 'World Rugby' have also devised the 'Rugby Ready' programme which includes information on physical preparation and injury prevention measures:

<http://rugbyready.worldrugby.org/>

Online RFU Coaching academy

This coaching resource is available to England's many qualified coaches. The RFU Coaching Academy (www.rfuca.com) contains materials for the RFU's three major qualification courses.

Rugby coaching drills

In addition the RFU is working in partnership with Global Sports Coaching and its www.rugbycoachingdrills.com website. This website contains a wealth of resources on coaching and aspects of player preparation for the game.

6.1. Injury prevention - Physical preparation

Lower limb injury prevention exercises

Knee and ankle injuries combined account for 56% of all lower limb time-loss injuries. More information on preparation exercises devised for these high risk sites (and the neck, upper limb and trunk) is available in the 'Injury Prevention' section within 'Player Health' on the RFU web pages:

<http://www.englandrugby.com/my-rugby/players/player-health/injury-prevention/>

Preventing hamstring injuries

Hamstring strains account for 8% of all time-loss injuries. Nordic hamstring exercises may be beneficial in preventing this type of injury (Brooks *et al.*, 2006*). This exercise can be easily integrated into a training programme with minimal time and equipment requirements. More information on how to perform Nordic hamstring exercises can be found on in the 'related links' section on:

<http://www.bath.ac.uk/health/projects/rfu-rugby-injury/injury-prevention/player-preparation/index.html>

*Brooks, J.M., Fuller, C.W., Kemp, S.P.T. and Reddin, D.B. (2006). *Incidence, Risk, and Prevention of Hamstring Muscle Injuries in Professional Rugby Union. American Journal of Sports Medicine*, 34:1297-1306.

6.2. Injury prevention - Technique

This report demonstrates that 79% of all time-loss injuries are sustained in contact events, most notably the tackle. While contact is an essential part of rugby union, correct technique in contact situations may help to minimise the potential for injury. The RFU provide extensive resources for coach development which reinforce development of technique.

<http://www.englandrugby.com/my-rugby/coaches/>

The tackle and injury prevention

The information in this report suggests that both tackling and being tackled is a particular injury risk. It is therefore suggested that there should be a focus on the tackle in training. Although this would increase the overall player exposure to the tackle, it should be noted that a previous study (Brooks *et al.*, 2005*) has found a significantly lower injury risk during training activities than during match play and therefore tackle training is unlikely to result in a significant increase in injuries.

The tackle has also been identified as an injury risk factor in other rugby injury surveillance studies. As such, there is a growing body of educational resources dedicated to coaching the tackle from the perspective of both the tackler and the ball carrier. More information about the tackle and safe technique in contact can be found on World Rugby's 'Rugby Ready' website:

<http://rugbyready.worldrugby.org/>

*Brooks, J.M., Fuller, C.W., Kemp, S.P.T. and Reddin, D.B. (2005). *Epidemiology of injuries in English professional rugby union: part 2 training injuries. British Journal of Sports Medicine*, 39:767-775.

6.3. Injury management

Clinical governance

This describes the process of ensuring that clubs ensure the highest quality of care for their players. More information on implementing this process can be found on:

<http://www.englandrugby.com/news/clinical-governance-1290000/>

Reporting injuries to the RFU

Independent of participation in the community rugby injury surveillance project, any club playing within the RFU structure should report the following types of injury to the RFU sports injury administrator.

3. *An individual who sustains an injury which results in their being admitted to a hospital. This does not include those taken to an Accident or Emergency Department and allowed home from there.*
4. *Deaths occurring during or within 6 hours of the game finishing.*

The injury report form for the above can be accessed via:

<http://www.englandrugby.com/news/injury-reporting-1289995/>

The RFU have produced guidelines which help clubs to consider their medical provision, including a list of equipment which should be included in a pitch side first aid kit:

Courses

There is a range of first aid courses available for club staff. The **RFU emergency first aid course** is a recognised emergency first aid at work (EFAW) course with additional emphasis on aspects relating to rugby:

<http://www.englandrugby.com/mm/Document/General/General/01/30/10/11/RFUFirstAidProvisionGuidance.pdf>

The **Immediate Care in Sport Course** (ICIS) is an advanced, rugby union specific course aimed at the pitch side treatment of potentially catastrophic and life or limb threatening injuries by qualified Physiotherapists and Medical Doctors:

<http://www.englandrugby.com/news/immediate-care-sport-course-1290004/>

Injury rehabilitation

This report shows that recurrent injuries account for 14% of all injuries. This suggests that on occasions, players may not have undergone a full rehabilitation prior to return to play.

Injured players should only return to play or full training from a moderate/severe injury after they have been assessed to ensure that they are ready to do so by a suitably qualified coach, doctor or therapist. The rehabilitation of the player should follow a graduated process and incorporate:

1. Restoration of a full range of movement in the joint
2. Recovery of co-ordination and balance
3. The maintenance of fitness by alternative activities such as cycling and swimming
4. The recovery of muscle strength
5. Gradual introduction of rugby specific skills
6. Contact drills followed by full contact

7. Return to full training and match play once the above stages have been achieved.

More information on rehabilitation and returning to play can be found on the RFU website:
<http://www.englandrugby.com/news/physiotherapy-sports-therapy-and-rehabilitation-1289873/>

Concussion

RFU 'HEADCASE'

HEADCASE is an RFU resource to raise awareness of best practice with respect to concussion. HEADCASE resources highlight how to recognise the signs and symptoms of concussion with guidelines referring to the prevention and management of concussion. HEADCASE resources outlining the roles and responsibilities of individuals involved in rugby union including coaches, match officials, healthcare professionals and for players are available via the following link:
<http://www.englandrugby.com/my-rugby/players/player-health/concussion-headcase/>

Concussion and returning to play

Suspected concussion injuries should be taken very seriously. Within the last two seasons, World Rugby has revised guidelines for concussion diagnosis and management. The concussed player must be assessed by a medical practitioner, either at the time of injury or by referral, then have two weeks rest, after which time they must be symptom free. The player must then undergo a Graduated return to play protocol whereby through the re-introduction of training without any further concussion symptoms, the player may return to match play after six days. Therefore, the earliest sanctioned return to play for a community level player is 19 days after to the injury.

The definitive World Rugby concussion guidelines can be accessed via the following link:
<http://playerwelfare.worldrugby.org/concussion>

SECTION 7 - PUBLICATIONS AND REPORTS

The information collected by the community rugby injury surveillance project has resulted in a number of Journal publications and conference communications.

Journal publications

Roberts, S.P., Trewartha, G., England, M. & Stokes, K.A. (2014). Incidence and nature of medical attention injuries in English community rugby union. *Orthopaedic Journal of Sports Medicine*, 2,(12), 2325967114562781, DOI: 10.1177/2325967114562781

Roberts, S.P., Trewartha, G., England, M. & Stokes, K.A. (2014). Collapsed scrums and collision tackles: what is the injury risk? *British Journal of Sports Medicine*, 10 February 2014doi:10.1136/bjsports-2013-092988.

Roberts, S.P., Trewartha, G., England, M., Shaddick, G. & Stokes, K.A. (2013). Epidemiology of time-loss injuries in English community-level rugby union. *BMJ Open*, 2013. 3(11): p. e003998.

Conference communications:

Attwood, M.J., Roberts, S.P., Stokes, K.A., England, M. and Trewartha, G. (2015). Functional movement: poor relation with athletic performance. 8th World Congress of Science and Football, Copenhagen.

Roberts, S.P. (2014). Injury reduction in rugby union: Functional movement. University of Bath, Injury prevention conference, Bath.

Roberts, S.P., Trewartha, G., England, M., Goodison, W., Stokes, K.A. (2014). Epidemiology of head injuries in English community level rugby union. *British Journal of Sports Medicine*, 48 (7) 654. IOC World Conference on prevention of injury and illness in Sport, Monaco.

Perkin, O.J., Roberts, S.P., Trewartha, G., England, M., Stokes, K.A. (2014). Anthropometry and lifestyle characteristics of English community level rugby union players. European College of Sport Science, Annual congress, Barcelona.

Roberts, S.P., Trewartha, G., England, M., Stokes, K.A. (2013). Epidemiology of time-loss injuries in English community level rugby union. European College of Sport Science, Annual congress, Barcelona.

Sauven, E.C., Roberts, S.P., Trewartha, G. & Stokes, K.A. (2009). Analysis of contact events and injuries in English community rugby union matches. *British Journal of Sports Medicine*, 43 (11), e2, p. 2

SECTION 8 - ACKNOWLEDGEMENTS

Many thanks to the coaches and sports injury staff at all participating clubs in the Community Rugby Injury Surveillance Project for 2014-15.

Level 3/4:

Bishops Stortford, Cambridge, Chester, Ding Crusaders, Dorking, Esher, Fylde, Hartpury College, Macclesfield, Preston Grasshoppers.

Level 5/6:

Barnstaple, Berkswell and Balsall, Cobham, Hinckley, Hornets, Kendal, Kettering, Longton, Newbury Blues, Newark, Malton and Norton, Pocklington, Reading, Romford and Gidea Park, Scunthorpe, Stoke on Trent, Sutton Coldfield, Windsor, Witney, Worcester Wanderers

Level 7/8/9:

Acklam, Aldwinians, Atherstone, Baildon, Cheshunt, Chesterfield, Didcot, Effingham and Leatherhead, Ellingham and Ringwood, Farnham, Fleetwood, Frome, Kingsbridge, Leighton Buzzard, Leamington, Lincoln, Manchester, New Milton, Royston, Old Laurentians, Paignton, Stafford, Swanage and Wareham, Tewkesbury, Trafford MV, Wallingford, Warminster, Welwyn, Withycombe.

Community Rugby Injury Surveillance Team

- Dr Simon Roberts - Research Associate, Department for Health, University of Bath
Mr Matthew Attwood - Postgraduate Research Student, Department for Health, University of Bath
Dr Keith Stokes - Department for Health, University of Bath (Lead Investigator)
Dr Grant Trewartha - Department for Health, University of Bath
Dr Mike England - RFU Community Rugby Medical Director
Dr Karen Hood - RFU Community Rugby Medical Manager

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