

Community Rugby Injury Surveillance and Prevention Project

Men's 1st team injuries across playing levels 3-9 in England

Season Report 2019-2020

Authored by the Community Rugby Injury Surveillance Project steering group

RFU:

Simon Kemp (Medical Services Director)
Rachel Faull-Brown (Player Welfare Manager)
Karen Hood (Head of RFU Injured Players Foundation)

University of Bath:

Keith Stokes
Carly McKay
Simon Roberts

The authors would like to thank the coaches and sports injury staff at all participating teams in the Community Rugby Injury Surveillance and Prevention Project for 2019-20.



RFU INJURY SURVEILLANCE PROJECTS

Professional Rugby Injury Surveillance Project (PRISP) 
Gallagher Premiership and England Senior Men

Women's Rugby Injury Surveillance Project (WRISP) 
Allianz Premier 15s and Red Roses

Championship Rugby Injury Surveillance Project 
Greene King Championship

BUCS Super Rugby Injury Surveillance Project 
Elite men's University Rugby

Community Rugby Injury Surveillance and Prevention (CRISP) Project 
Levels 3-9 of adult men's community rugby

Youth Rugby Injury Surveillance Project (YRISP) 
Schoolboy rugby in under-13, under-15 and under-18 age groups

KEY FINDINGS

COMMUNITY MATCH INJURIES FOR MEN'S 1ST TEAMS – LEVELS 3-9

Overall match injury incidence rate:

26.1 per 1000 player match-hours

or

Overall: 1 injury 1.9 every matches

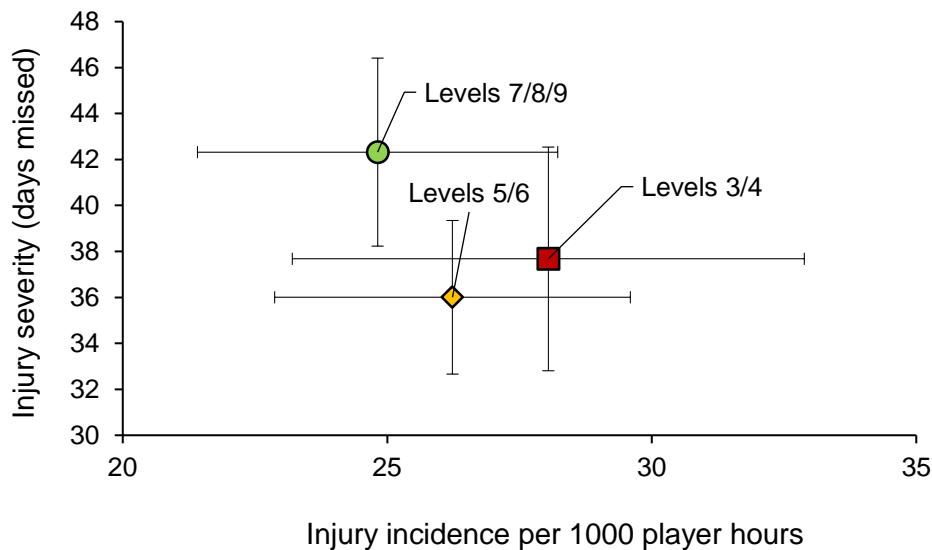
Levels 3/4: 1 injury every 1.8 matches; Levels 5/6: 1 every 1.9 matches;

7/8/9: 1 every 2.0 matches

Mean severity per injury:

39 days missed (4.6 matches)

On the graph below, how common an injury is (incidence) increases from left to right and how many days are lost per injury (severity) increases from bottom to top. If the lines that extend from each point (representing a playing level) do not overlap with those for other points, then there is a difference between levels.



Injury event:

61% in the tackle

Most common injury diagnosis

Concussion (16% of all injuries)

Injuries accounting for most days lost

Knee ligament/joint injuries (14% of all days lost)

Concussion (14% of all days lost)

EXECUTIVE SUMMARY

Season 2019-20 represents the eleventh consecutive season for the Community rugby injury surveillance and prevention (CRISP) project which monitors the risk and types of injury in a cross-section of men's community 1st teams across playing levels 3-9 in England. Only Injuries causing the player to be absent for more than seven days are reported.

OVERALL FINDINGS

- ❖ The overall rate of injuries causing a player to miss more than seven days from training and match play in community rugby in 2019-20 was 26.1 injuries per 1000 player match hours. While this is similar compared with 2018-19 (25.7 injuries per 1000 player match hours), there has been an increase over the last 10 years and in both 2018-19 and 2019-20, incidence was slightly higher than the expected normal variation in the data.
- ❖ On average, a team can expect approximately one injury every 1.9 matches played.
- ❖ On average, between 2 to 3 players per team will be unavailable for match play each week throughout the season due to injury.
- ❖ This injury rate is approximately half that of professional rugby and similar to under 18 schoolboy rugby.
- ❖ Due to Covid-19, teams played an average of five fewer games in season 2019-20, compared with previous seasons but this is unlikely to have affected the over injury incidence.

Concussion – Most common injury diagnosis

- ❖ The incidence of reported concussion during season 2019-20 was 4.1 per 1000 player match hours (16% of all injuries), compared with 4.4 injuries per 1000 player match hours in season 2018-19 (14% of all injuries).
- ❖ A team can expect one concussion every 12.1 games. Therefore, a team playing 25 games in one season might expect at least two concussions during that season.
- ❖ The incidence of concussion in community rugby did not increase in 2019-20 for the first time in five seasons.
- ❖ 74% of all concussions were sustained in the tackle with 32% of all concussions to the ball carrier and 42% to the tackler.

The Tackle – Most common injury event

- ❖ The tackle was associated with approximately 61% of all injuries.
- ❖ When the player was tackling, the most commonly injured sites were the upper limb (49% of all injuries). Good tackling technique has the potential to reduce injuries to these areas.
- ❖ The most commonly injured sites to the ball carrier were in the lower limb (49% of all injuries).
- ❖ Head/neck injuries accounted for 35% of all injuries to the tackling player and 20% for the ball carrier. Of all injuries recorded for the season, 17% were to the head/neck region in the tackle.

Injury burden (number of injuries x time lost per injury)

- ❖ Knee ligament/joint injuries and concussion both accounted for 14% of the total number of days lost to injury (together accounting for 28% of all days lost).

Artificial Grass Pitches (AGPs) - Injuries

- ❖ When injuries sustained on artificial and natural grass pitches were compared in the same teams, there was no statistical difference in the incidence (Grass: 21.2 vs AGP: 23.7 injuries per 1000 player match hours) or severity (Grass: 36 vs AGP 40 days missed per injury).

Contents

Key findings	1
Executive Summary	2
OVERALL FINDINGS	2
Concussion – Most common injury diagnosis	2
The Tackle – Most common injury event	2
Injury burden (number of injuries x time lost per injury)	2
Artificial Grass Pitches (AGPs) - Injuries	3
Introduction	5
Definitions	6
Match Injury Information.....	7
Overall injury incidence and severity	7
Injury event	11
Injury location.....	12
Injury diagnoses.....	13
Concussion	15
Playing position.....	20
Timing of injuries.....	21
Pitch Surface: Artificial Grass Pitches	22
Future directions for the Project	25
Project methods.....	26
Publications and Reports	28
Acknowledgements.....	29
Supplementary data.....	30

INTRODUCTION

The men's community rugby playing population in England represents the largest adult playing population in the world. It is important that injuries are monitored through a surveillance programme which can determine the risk and type of injuries. The Community Rugby Injury Surveillance and Prevention (CRISP) Project has run continuously since the 2009-10 season to help players, coaches and policy-makers understand the risk of injury in the game and guide injury reduction strategies.

The methods used in the Community rugby injury surveillance project are aligned with those used in injury surveillance projects for the men's Premiership (PRISP), the women's elite game (WRISP), the men's Championship, University Super Rugby and Schools Rugby (YRISP) so that where possible, data is comparable. However, it should be noted that all other studies apart from CRISP use an injury definition of greater than 24 hours time-loss, whereas CRISP comprises only injuries of greater than 7 days time-loss. Previous season reports for CRISP and associated injury surveillance project can be found on the England rugby player welfare/RugbySafe website:

<https://www.englandrugby.com/participation/playing/player-welfare-rugby-safe/rugbysafe-research>

The information generated by the CRISP Project provides has been used to inform a number of injury management and prevention strategies and provides a comparison of injury risk compared with other levels of the game. It also informs the risk assessment used to determine the level of first aid/immediate care provision required as set out in RFU Regulation 9 (Player Safety) and accompanying guidelines as well as providing information on the injury risk of playing on artificial grass pitches. With data over multiple seasons, it is possible to detect changes in injury patterns over time, either in response to law changes, education programmes or the evolution of the game. Information is used in a number of educational resources within the RFU's RugbySafe player welfare and wellbeing programme. This project has demonstrated that a rugby specific warm-up programme could reduce targeted injuries in match play. This study culminated in the Activate warm-up programme which is now freely accessible. Further details are available at:

<https://www.englandrugby.com/participation/coaching/activate>

DEFINITIONS

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).

Time-loss injury

A time-loss injury was defined as 'any injury that causes a player to be absent from training and match play for greater than seven days'. For example, if a player was injured during a match on Saturday and he was not fit to participate in the following Saturday's match, the incident would be classed as a time-loss injury and reported.

Days absent from rugby (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/days missed). For time-loss injuries in this study, a minimum of one match will have been missed. A player was deemed to have regained full fitness when he was 'able to take a part in training activities (typically planned for that day) and was available for match selection.' Severity is subdivided into the following categories: 8-28 days, 29-84 days and greater than 84 days.

Injury incidence

The likelihood of sustaining an injury during match play or training is reported as the 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:

Injury incidence =

$$\text{number of Injuries} / \left(\text{number of matches} \times \text{number of players (15)} \times \text{match duration (1.33 hours)} \right) / 1000$$

Confidence interval (CI)

The confidence interval shows, with 95% certainty, the likely range of the true value for a given statistic.

Burden

The burden of injury is a measure which takes into account both the frequency and severity of injuries. Burden is measured as the number of days absence per 1,000 player-hours of exposure.

Statistical significance

A result is considered to be statistically significant if the probability that it has arisen by chance is less than 5% or 1 in 20. In this report, statistical analysis has been performed for the match incidence and days absence.

MATCH INJURY INFORMATION

Overall injury incidence and severity

In the 2019-20 season, 567 match injuries were reported over 1087 matches. This resulted in an overall match time-loss injury incidence of 26.1 injuries per 1000 player match hours. Table 1 provides further information on the incidence and average number of days absence per injury for different playing levels. On average, there is approximately one injury for every two team games.

Figure 1 shows injury incidence over multiple seasons and the expected natural variation from season-to-season. While there has been a consistent increase in injury incidence in the last three seasons, the incidence for season 2019-20 is not different compared with 2018-19. The average number of days missed from rugby was below the lower limit of normal variation (Figure 2) and injury burden (days absence per 1000 hours) was at the same level as the average for previous seasons (Figure 3). Table 2 shows that for most injuries, the player returns within 8-28 days.

Due to Covid-19, the 2019-20 season was truncated with teams playing approximately five fewer matches over the season. It is unlikely that this shortened season will have impacted on the overall incidence of injury, given that this is based on injuries per number of match hours played.

Table 1. Match injury incidence and severity for time-loss injuries over multiple seasons.

Playing level	Injuries	Match hours	Incidence	Average days absence	Average matches per injury
Levels 3/4	129	4600	28.0	38	1.8
Levels 5/6	234	8920	26.2	36	1.9
Levels 7/8/9	204	8220	24.8	42	2.0
Overall	567	21740	26.1	39	1.9

Table 2. Match injury incidence for each severity classification.

Days missed	Incidence	Percentage of all injuries
8-28 days	11.6	44
29-84 days	7.1	27
>84 days	1.8	7
Unknown	5.6	21

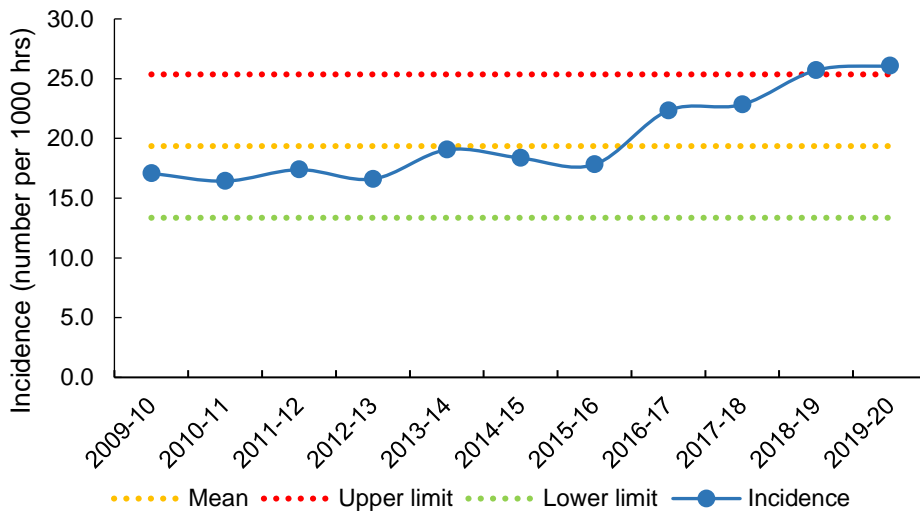


Figure 1. Injury incidence for over 11 seasons. 2 standard deviations (2SD) above and below the mean incidence denote the range within which a natural variation in the data is expected.

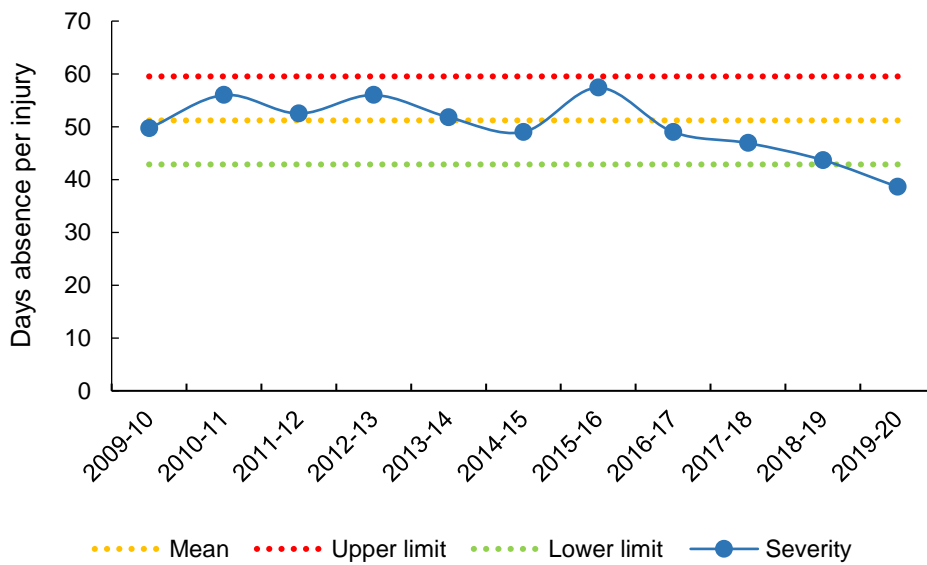


Figure 2. Mean days absence per injury for over 11 seasons. 2 standard deviations (2SD) above and below the mean incidence denote the range within which a natural variation in the data is expected.

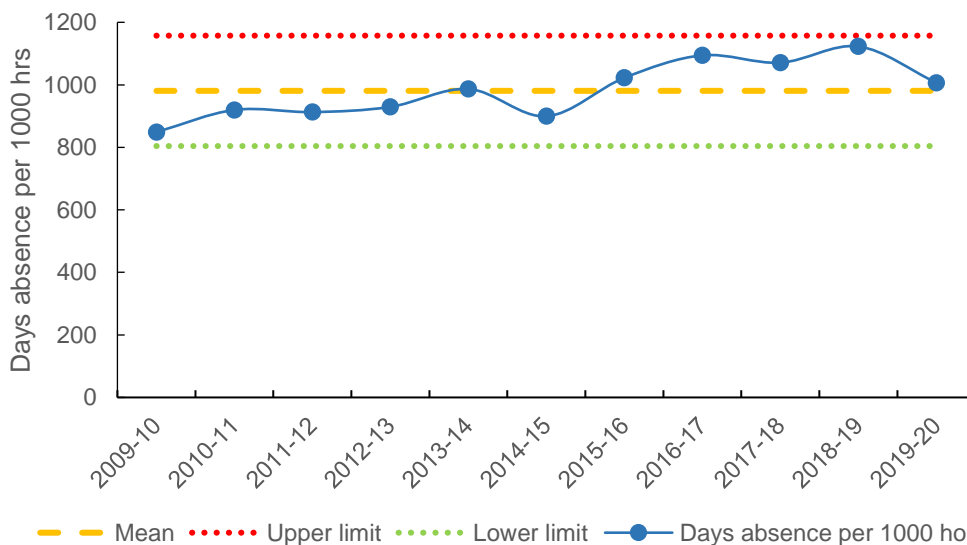


Figure 3. Injury burden over 11 seasons. 2 standard deviations (2SD) above and below the mean incidence denote the range within which a natural variation in the data is expected.

Injury incidence and severity at different playing levels

The injury incidence and severity for each playing level in season 2019-20 is shown in Figure 4, demonstrating that any differences between levels are not statistically significant. The trend at different playing levels over 11 seasons is shown in Figure 5 and demonstrates a general trend for the last two-to-three seasons across each playing level to have the highest reported incidence.

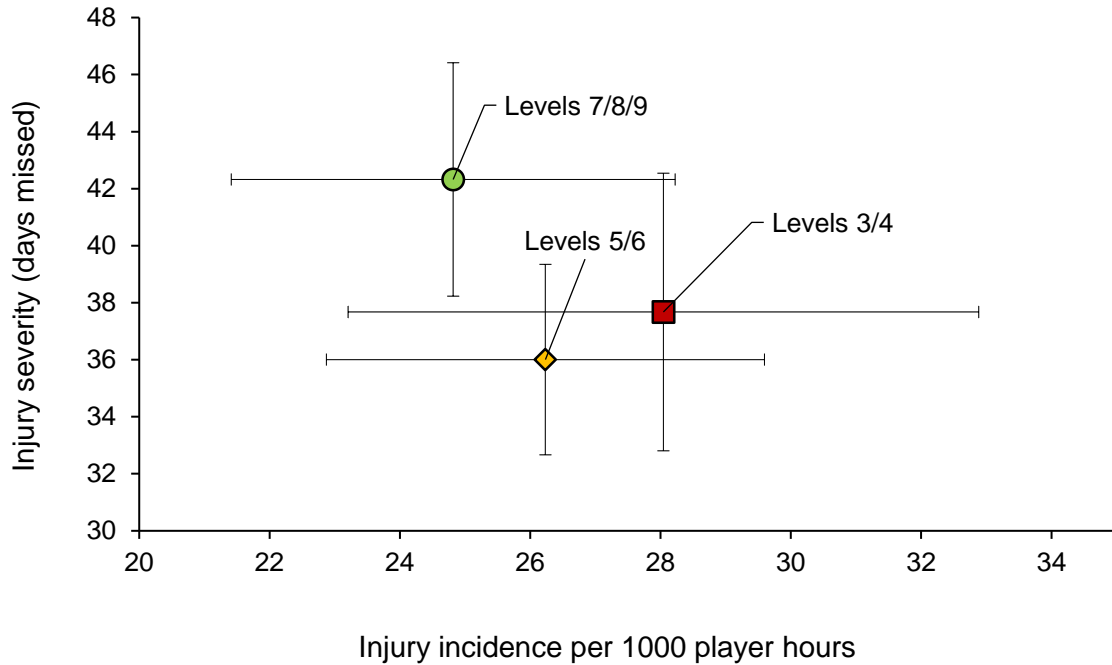


Figure 4. Injury incidence and severity for each playing level.

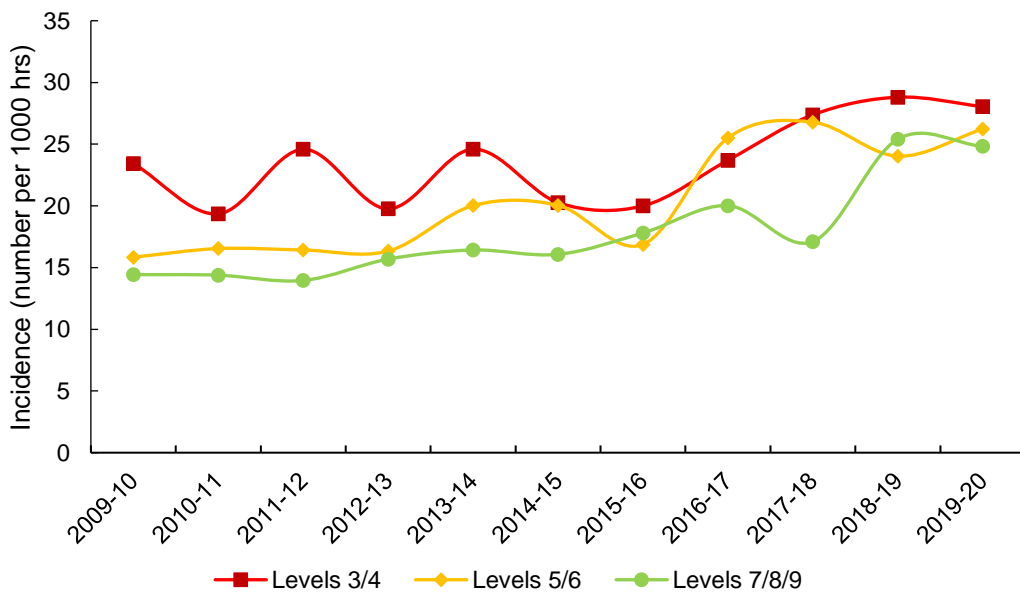


Figure 5. Injury incidence over multiple seasons by different playing levels.

Likelihood of match injury when playing compared with other playing levels

The data collection methods used in this project are standardised across other related projects at other levels of the English game. This allows a comparison of all injuries of greater than 7 days time-loss. Figure 6 demonstrates a general trend of increasing incidence of injury as the level of player increases across age groups and playing levels.

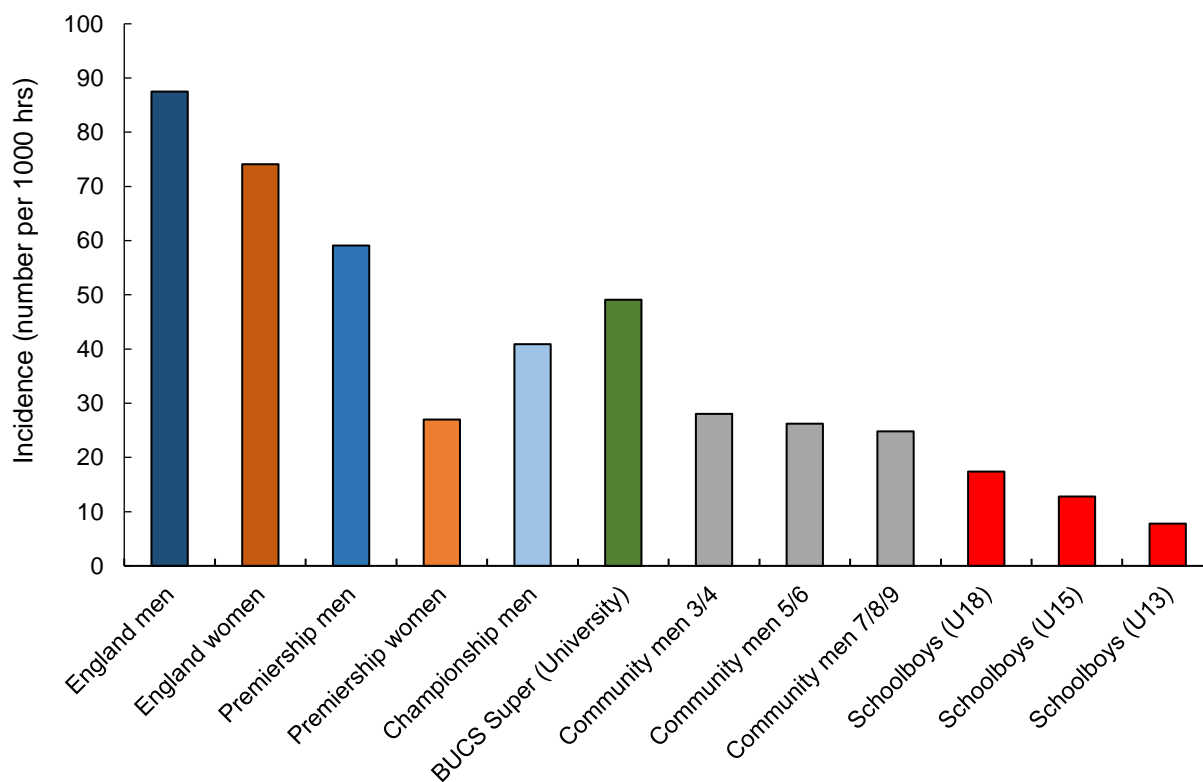


Figure 6. A comparison of greater than 7-day time-loss injury rates for different levels of community rugby with professional, university level and schools rugby.
Data sources: Community level 3/4, 5/6 and 7/8/9 are taken from the 2019-20 findings of this current report. Data from all other playing levels are derived from respective season reports for the 2019-20 season.

Injury event

The events associated with injury are shown in Figure 7. The tackle was the most common event associated with injury, collectively accounting for 61% of match injuries. This finding is common across other injury surveillance studies and previous seasons of the CRISP project (Figure 7). Within the tackle, there is a relatively even split between the percentage of injuries to the tackled player (ball carrier) and the tackling player. The most commonly injured region for the tackling player is the upper limb (49% of all tackle injuries), followed by the head/neck (35%). For the ball carrier the lower limb is the most commonly injured region (49%) (see Supplementary data, Figure S1 for more information). Figure 8 provides information which combines both the incidence and the average severity (days absence) for each injury event. This shows that the tackle is associated with most injuries, but the mean severity is similar to most of the injury events.

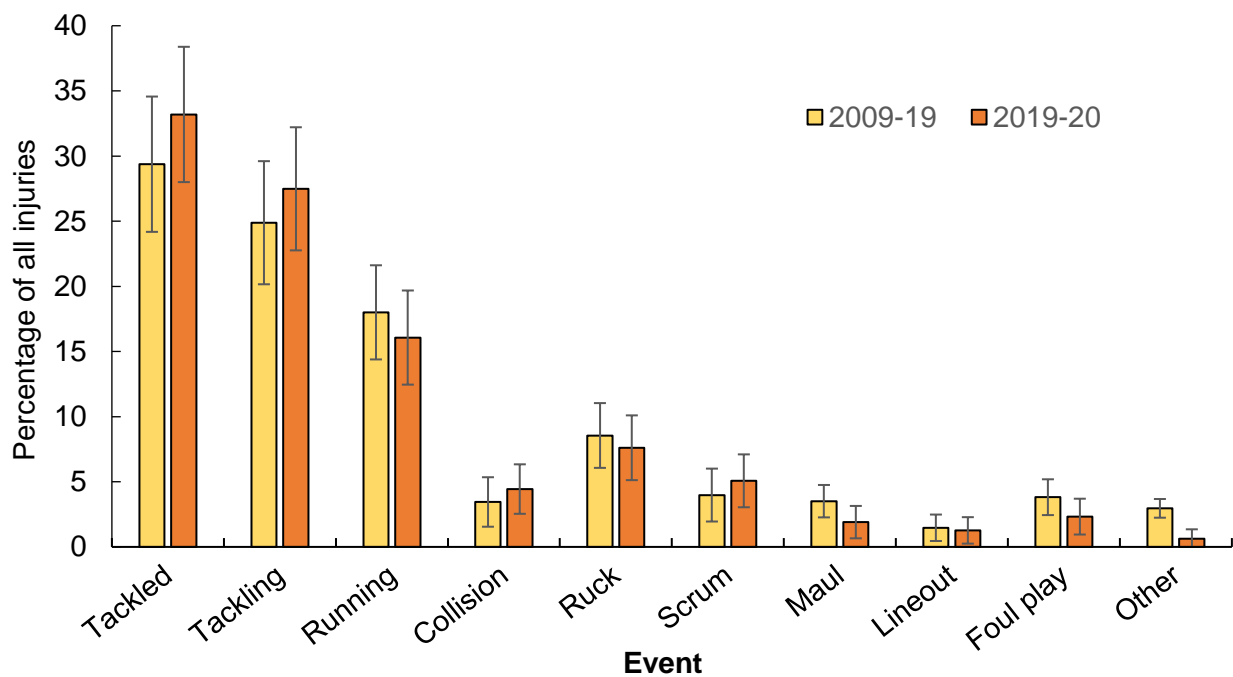


Figure 7. The incidence of injuries for specific match events for all playing levels combined for the average over seasons 2009-19 and 2019-20.

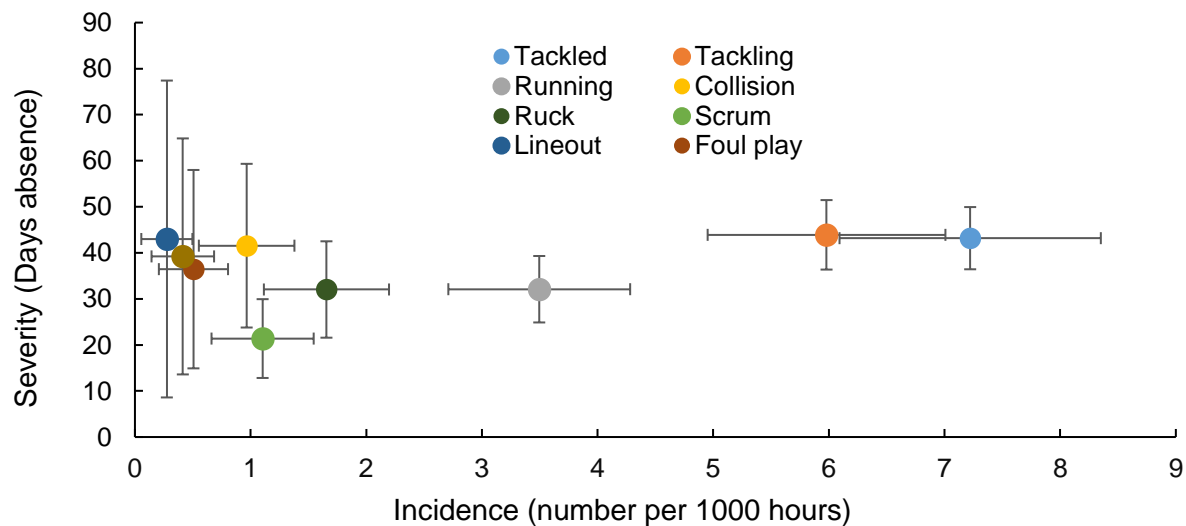


Figure 8. Injury event by incidence and severity for all playing levels combined.

Injury location

The most commonly injured body region is the lower limb (Figure 9), accounting for 43% of all injuries. Table 3 shows more information on the incidence and burden for specific body locations. This distribution of injuries is similar to previous seasons.

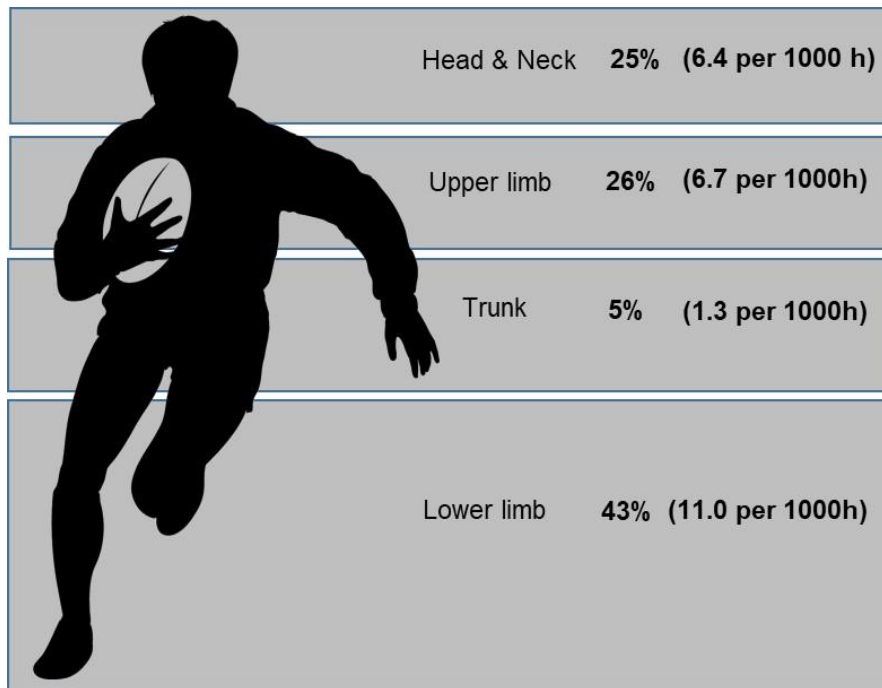


Figure 9. The distribution of match injuries by body region by percentage and incidence.

Table 3. Incidence, mean severity and burden by body location (ranked within regions from highest to lowest burden). For incidence, mean severity and burden, values are colour coded (red: highest value; green: lowest value).

Body region	Location of injury	Number of injuries	Incidence	Mean severity	Burden
Head/neck	Head/face	130	6.0	32.5	195
	Neck	9	0.4	23.3	10
Upper limb	Shoulder	94	4.3	45.5	197
	Hand	31	1.4	47.2	67
	Elbow	7	0.3	76.6	25
	Forearm	4	0.2	98.0	18
	Wrist	3	0.1	91.0	13
	Up arm	6	0.3	21.4	6
Trunk	Chest	12	0.6	37.5	21
	Low back	16	0.7	23.3	17
	Up back	1	0.0	14.0	1
	Stomach	0	0.0	0.0	0
Lower limb	Knee	75	3.4	45.1	155
	Ankle	64	2.9	36.8	108
	Thigh	54	2.5	30.5	76
	Low leg	23	1.1	48.8	52
	Foot	11	0.5	34.8	18
	Groin	11	0.5	25.1	13

Injury diagnoses

The top five most common injury diagnoses (determined by the site and general injury type) for all playing levels over the current and previous four seasons have remained similar, with concussion being the most common injury in recent seasons (Figure 10).

The top five injuries defined by the total amount of time that the injury keeps players out of match play and training (injury burden) are shown in Figure 11. Knee/joint ligament injuries consistently account for the most days absence (14% of all days absence) which is mainly as result of a higher average injury severity compared with most other injuries. This is demonstrated in Figure 12, which also shows that the high injury burden of concussion (also accounting for 14% of all days absence) is largely due to a much higher incidence rather than severity compared with other injuries.

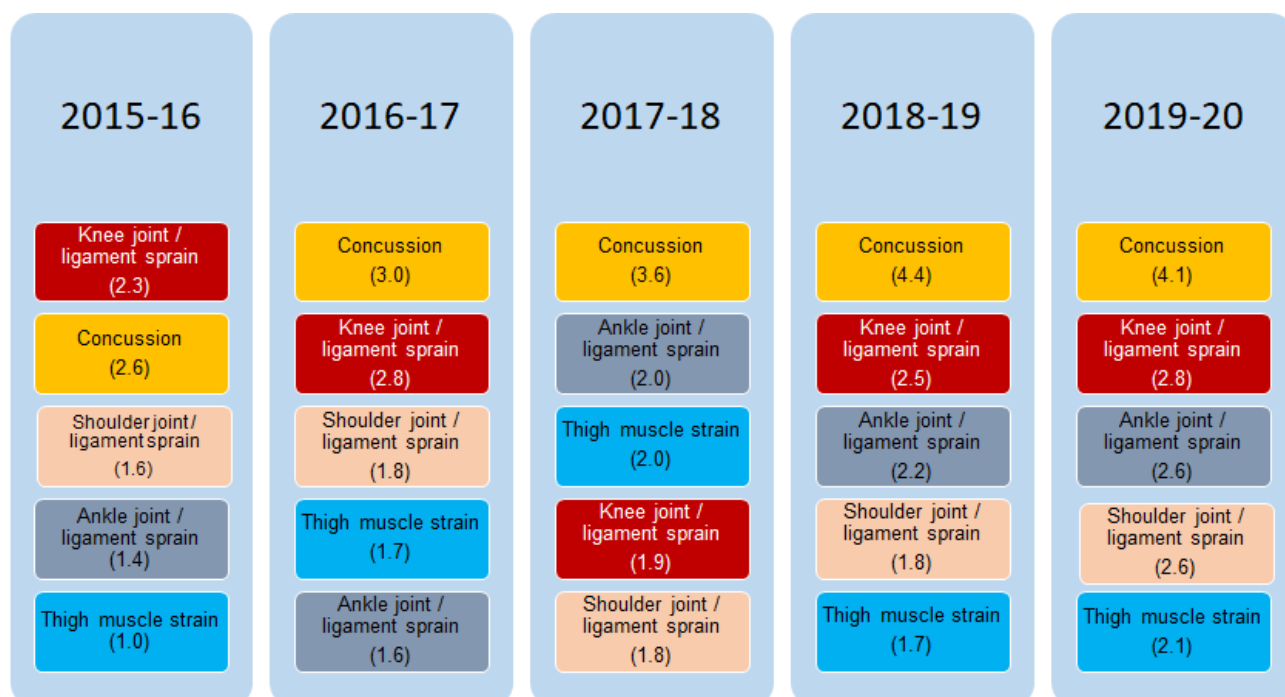


Figure 10. Top five injury diagnoses in rank order for **incidence** for all playing levels combined over seasons 2014-15 to 2019-20. Numbers within brackets denote incidences (injuries per 1000 player match hours).

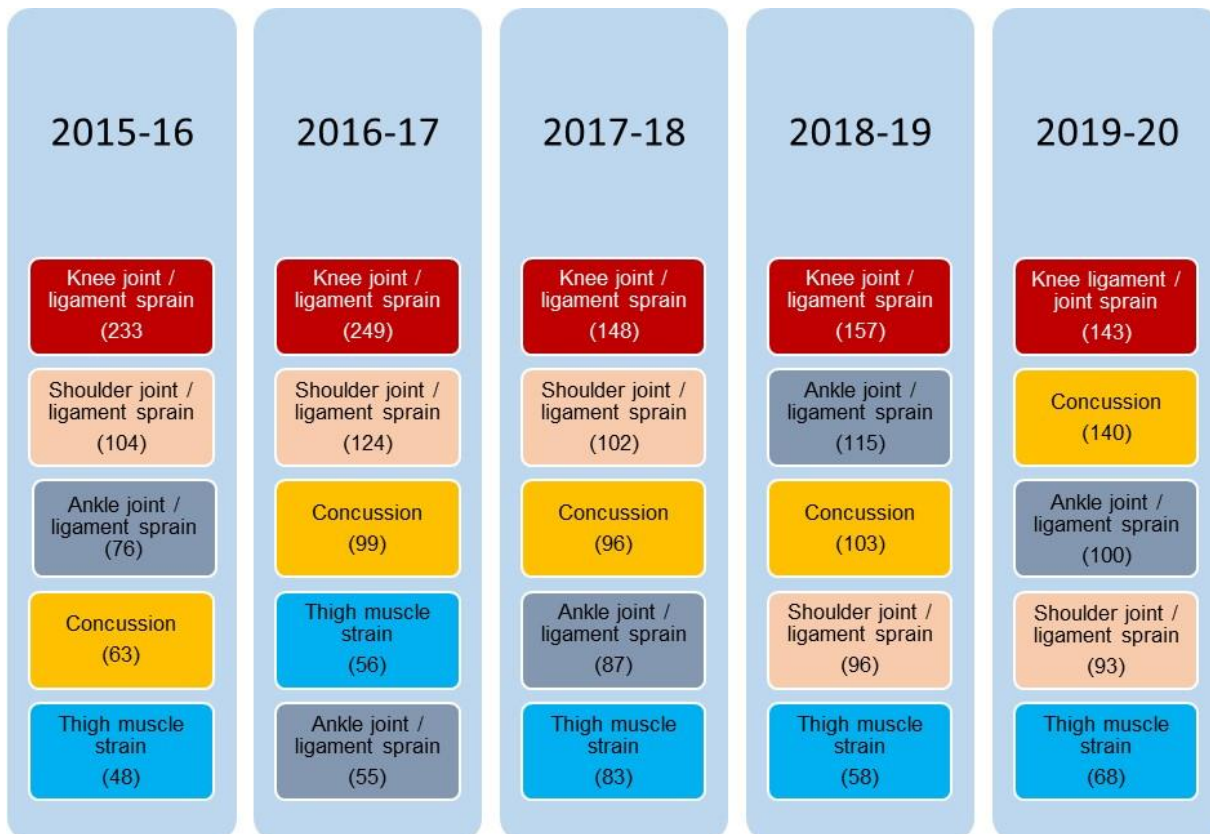


Figure 11. Top five injury diagnoses in rank order of **burden** for all playing levels combined over seasons 2015-16 to 2019-20. Numbers within brackets denote (number of days missed per 1000 player match hours).

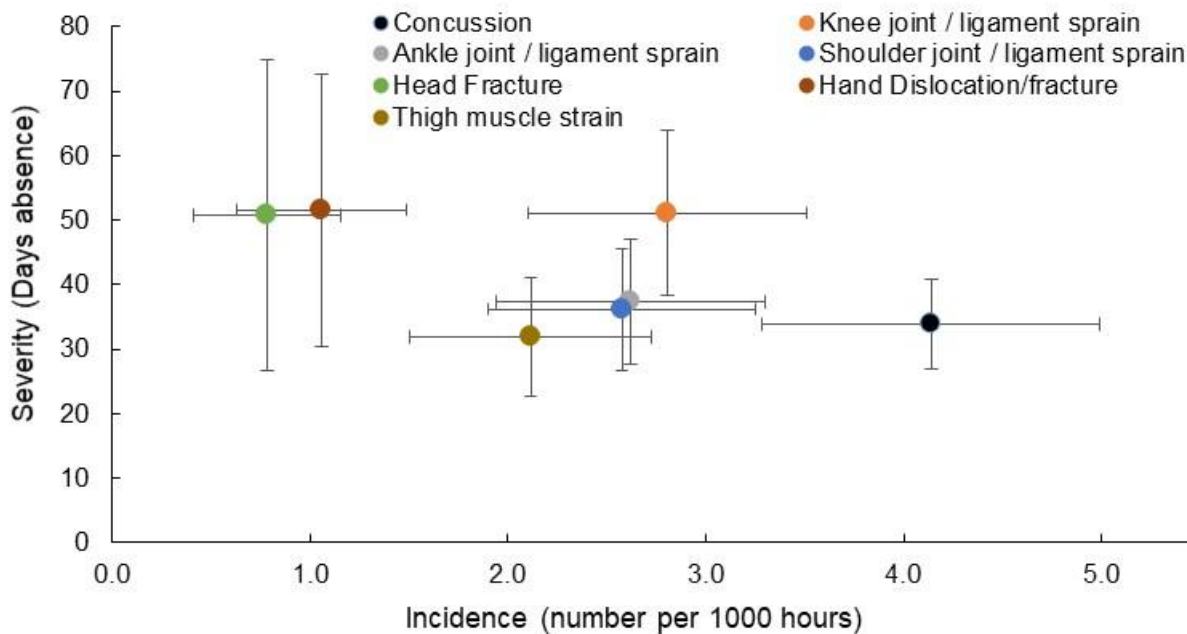


Figure 12. Injury event by incidence and severity for all playing levels combined for season 2019-20.

Concussion

Concussion incidence and severity

Overall concussion incidence was 4.1 per 1000 player match hours, equating to 1 concussion in every 12.1 team games (i.e., 2 per team per season), and accounted for 16% of all time-loss injuries (Table 4). The mean number of days missed per concussion was 33 (3.8 matches missed) and the median was 21 days.

Table 4. Match injury incidence and severity for concussion by playing levels.

Playing Level	Number of matches	Number of concussions	Concussions per 1000 hours (95% CI)	Number of team games for one concussion	Mean severity (missed matches)	Median severity (missed matches)
Level 3/4	230	27	5.9 (3.7-8.1)	8.5	3.9	2
Level 5/6	446	34	3.8 (2.5-5.1)	13.1	3.9	2
Level 7/8/9	411	29	3.5 (2.5-5.1)	14.2	3.6	2
All Levels	1087	90	4.1 (3.3-5.0)	12.1	3.8	2

Concussion trends over time

There has been a consistent increase in reported concussion incidence since 2013-14 (Figure 12). In 2019-20 concussion incidence did not increase compared with 2018-19. It is not possible to provide a specific reason for the increase over time, but potential explanations may include a greater awareness in community medical staff, coaches and players through changes in guidance or public campaigns (Headcase) and increased media activity. There may also be a greater real risk in match play, but data regarding match characteristics is needed to determine this.

The longitudinal concussion trends for different playing levels are shown in Figure 13. There is an overall trend towards a higher incidence for National league clubs (Levels 3/4) which is again evident for season 2019-20. This is in line with findings from other surveillance projects which show a greater incidence at higher playing levels, for example in Premiership, Championship and University Super rugby.



Figure 12. Incidence of reported concussions over 11 seasons for all playing levels combined, including the mean incidence over this period with upper and lower limits of two standard deviations.

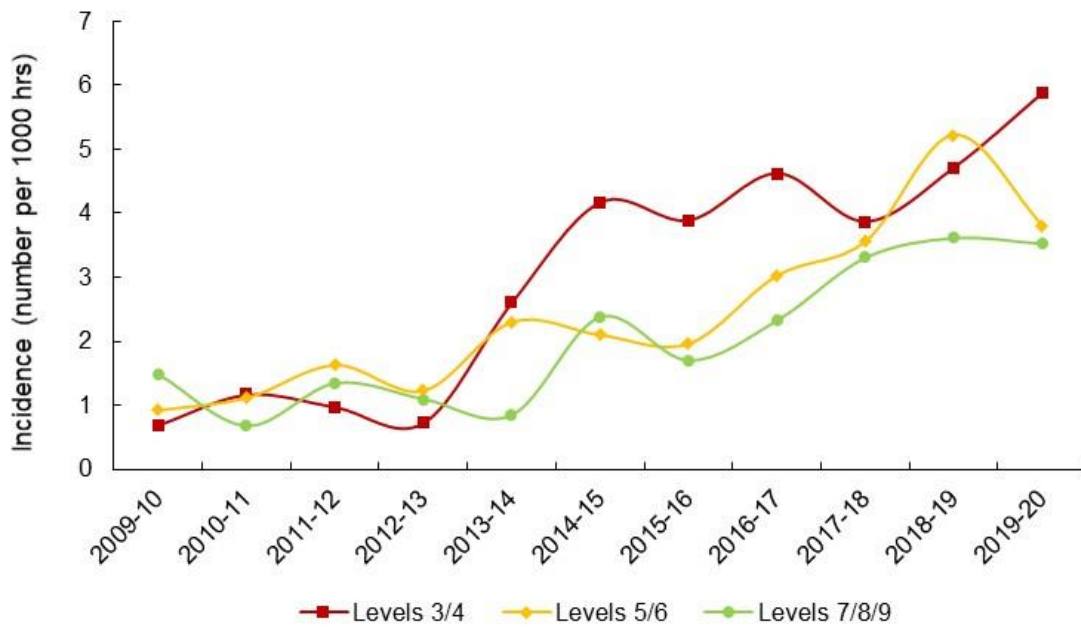


Figure 13. Incidence of reported concussions over 11 seasons for each playing level.

Match events associated with concussion

In 2019-20, the tackle was reported as the injury event for 74% of all concussions with 32% of all concussions to the ball carrier and 42% to the tackling player (Figure 14). This is a common finding across previous seasons and other levels of play. Further work is required to understand the specific characteristics of tackles which result in injury.

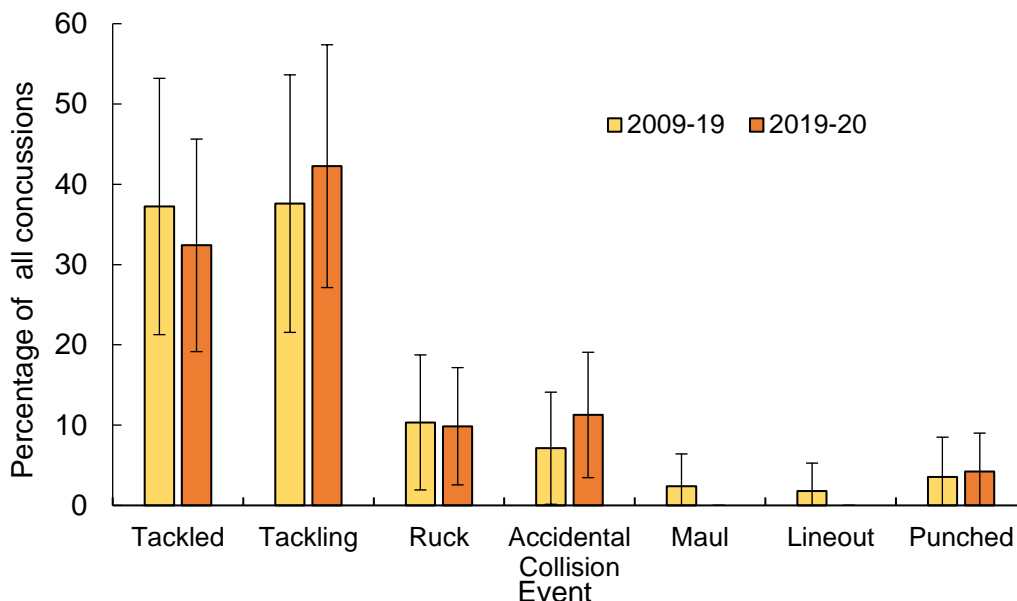


Figure 14. Percentage of reported concussions by match event for season 2019-20 compared with the average across all previous seasons (2009-2019).

Concussion and Return to Play

There was an average of 34 days (3.8 matches) missed per concussion. Figure 15 shows the accumulated percentage of concussions which were resolved by the number of days missed. An RFU Regulation introduced in March 2014 permits the concussed player to return at the earliest after 19 days (denoted by the red area in the figure). This would result in concussed players missing a minimum of 2 matches (assuming there is one match each week). Figure 15 shows that in almost all cases this was the case, but for six concussions (7% of cases), the concussed player returned to play following an absence of 18 days or less, which suggests that some players are still returning to match play prematurely.

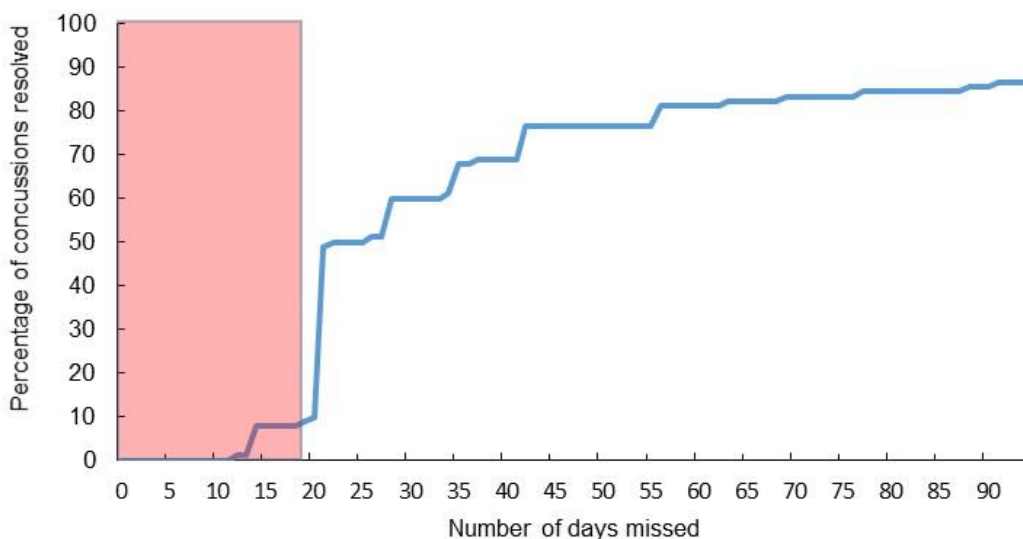


Figure 15. Percentage of concussion injuries for number of days missed for season 2019-20. A return to play date was not available for all concussions and therefore the percentage of concussions resolved is less than 100%.

Concussion and playing position

Figure 16 presents the average concussion incidence by playing positional groups for combined data from all seasons of the CRISP project (2009-10 to 2019-20). This figure shows a significantly higher incidence for back row players compared with all other positional groups. It is difficult to ascertain the exact reason for this, but it is likely that the positional requirements involving a high number of tackles and balls carries is a contributory factor.

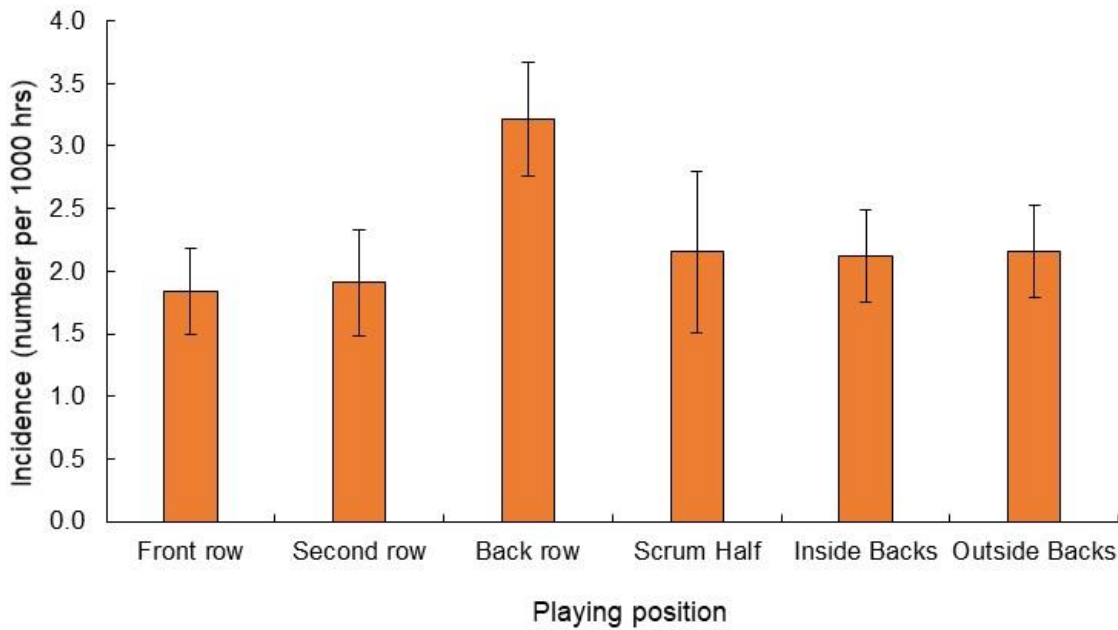


Figure 16. Comparison between positional groups for concussion incidence over seasons 2009-20
Forwards: Front row: loose head and tight head props, hooker, Second row: left and right locks; Back row: open side and blind side flankers, No. 8; Backs: Inside backs: outside half, inside centre, outside centre; outside backs: left and right wings, full back.

Recognising concussion

In community rugby, all teams should adhere to the principle of recognising the signs and symptoms of concussion and subsequently removing the player from play immediately. This player should not then return to the field during that match. More detailed information can be found on:

<https://www.englandrugby.com/participation/playing/headcase>

Return to play guidelines

The routine return to play pathway for adult players (aged 19 years or older) who do not have access to the enhanced care setting (which is normally only available in professional rugby) is shown in Figure 17. Specific guidelines on the pathways for concussed adult players returning to play can be found in the RFU's HEADCASE Extended Guidelines available at:

<https://www.englandrugby.com/participation/playing/headcase>

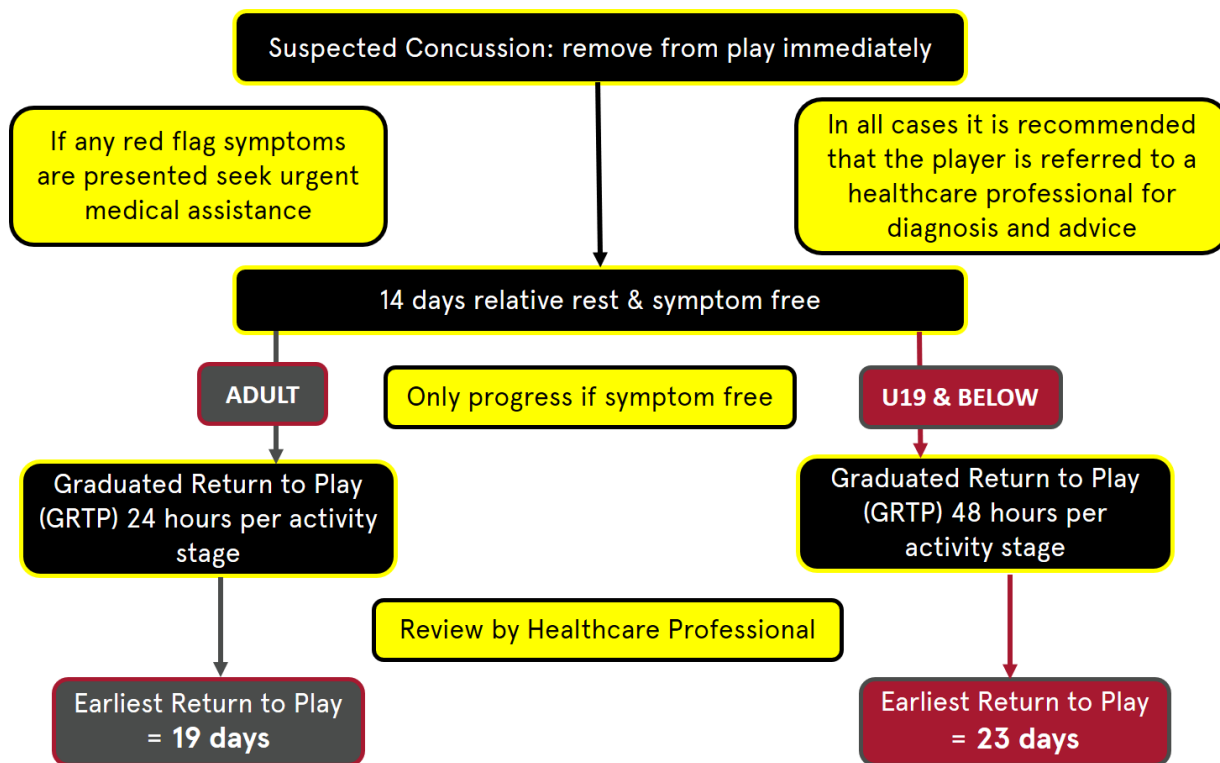


Figure 17. Return to play pathway for concussed adult players not in an enhanced care setting.

Catastrophic injury

No catastrophic injuries were reported by any participating clubs over the 2019-20 season but it is important to note that only a sample of community clubs participate and that catastrophic injuries are relatively rare. Regardless of participation in CRISP, the reporting of catastrophic injuries to the RFU is mandatory for all clubs and schools based on the definition of:

- An injury which results in the player being admitted to a hospital (this does not include those that attend an Accident or Emergency Department and are allowed home from there).
- Deaths which occur during or within six hours of a game finishing.

More information on injury report can be found on:

<https://www.englandrugby.com/participation/playing/player-welfare-rugby-safe/injury-reporting>

Support available for catastrophic injuries and the research taking place can be found on the RFU Injured Players Foundation (IPF) website: <http://www.rfuipf.org.uk/>.

Playing position

When injuries for all playing level groups were combined, the incidence of time-loss injuries in forwards was 26.6 injuries per 1000 player hours compared with 21.5 injuries per 1000 player hours for backs. Figure 18 shows that the injury incidence for positional groups for season 2019-20 follows a similar pattern to combined data from previous seasons. The higher incidence for most positional groups in season 2019-20, reflects the higher overall incidence for the current season compared with the historical mean.

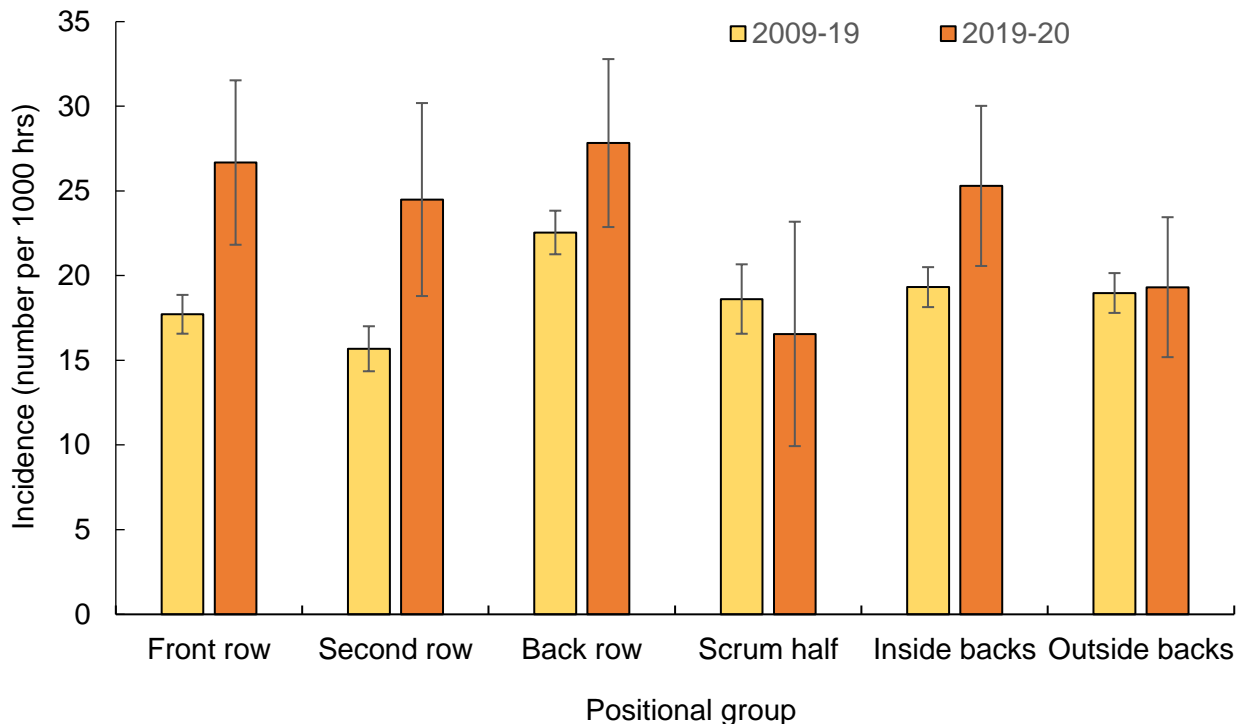


Figure 18. Comparison between positional groups for injury incidence in season 2019-20 compared with the average for seasons 2009-2019.

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 severity

The mean number of days missed for an injury to a forward was 36 (4.2 matches missed), and 42 (5.2 matches missed) for a back.

Timing of injuries

Season month and incidence

Typically, there is a slightly higher injury incidence in September than other months of the season (Figure 19), which is evident for both the historical average and for season 2019-20. It should be noted that season 2019-20 was curtailed due to Covid-19 and therefore information was available for fewer matches in March and none for April.

The exact reason for higher injury incidences at the beginning of the season is unknown but the following factors should be considered:

- Harder pitches at the start of the season resulting in higher ground impacts.
- Those players who sustain injuries at the start of the season may be those who are more susceptible to injury and therefore are removed from the pool of players exposed to the risk of injury for subsequent matches.
- A lack of appropriate pre-season training.

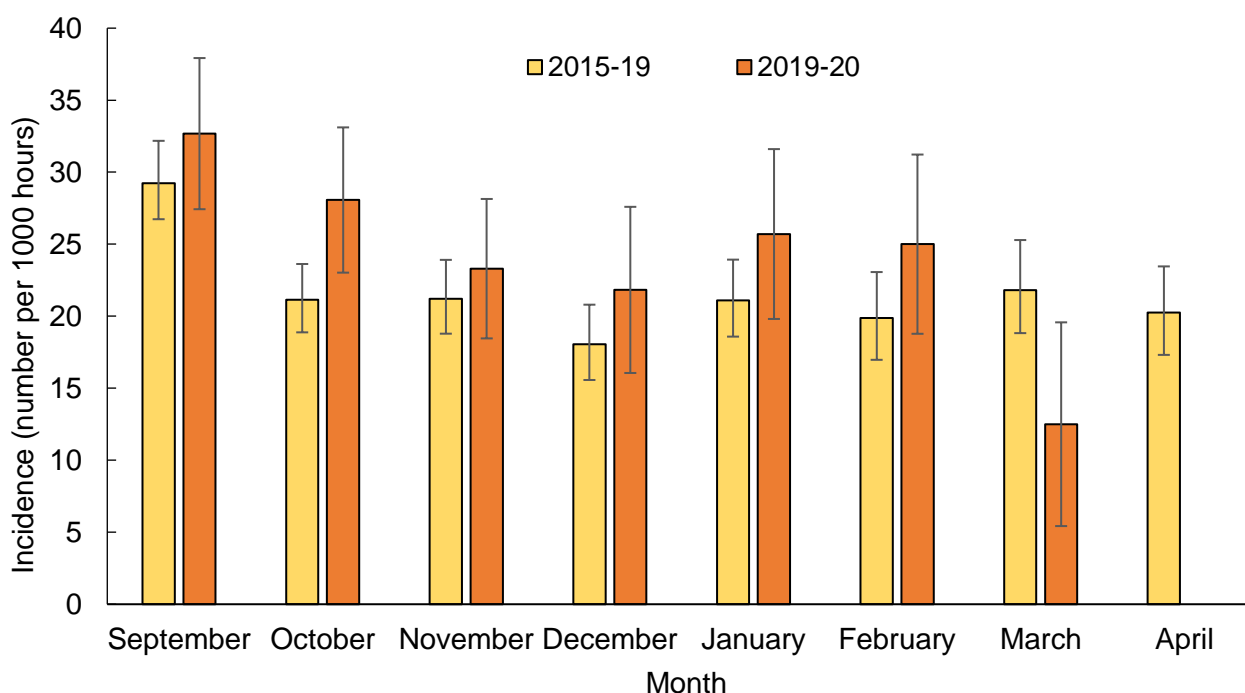


Figure 19. Incidence of time-loss injuries over each month of the 2019-20 rugby season, with equivalent data combined for 2015-19 for comparison.

Note: Due to very small numbers of matches and injuries reported during August and May, injury incidences for these months have been excluded. The truncated season due to Covid-19 meant that information was available for fewer matches in March and none in April for season 2019-20.

Pitch Surface: Artificial Grass Pitches

Season 2019-20 is the second season whereby all clubs with a Rugby365 artificial grass pitch (AGP) have been incorporated into the CRISP project so that a comparison can be made with injuries sustained on grass pitches. This now includes 28 clubs in England (23 in season 2018-19). In this analysis, data from AGP clubs when playing on AGP (normally home games but also some away fixtures on an opponent's AGP pitch) was compared with their games played on Grass (normally away matches).

Based on the data collected over the last two seasons, there does not appear to be any difference in the injury incidence, type and how they are sustained during match play.

Pitch surface: Incidence and severity

Table 5 and Figures 20 and 21 show that there was no difference in the incidence and severity of injuries sustained on these surfaces over season 2018-19 and 2019-20. Statistically, there are no differences between the surface types for either the incidence or severity of injury.

Table 5. Match injury incidence and severity for time-loss injuries for AGP and Grass pitches.

Surface	Surface	Injuries	Match hours	Incidence	Average days absence	Average matches per injury
Grass	2018-19	95	4340	21.9	36	2.3
	2019-20	71	3500	20.3	36	2.5
All Grass combined		166	7840	21.2	36	2.4
AGP	2018-19	103	4600	22.4	39	2.2
	2019-20	95	3740	25.4	41	2.0
All AGP combined		198	8340	23.7	40	2.1

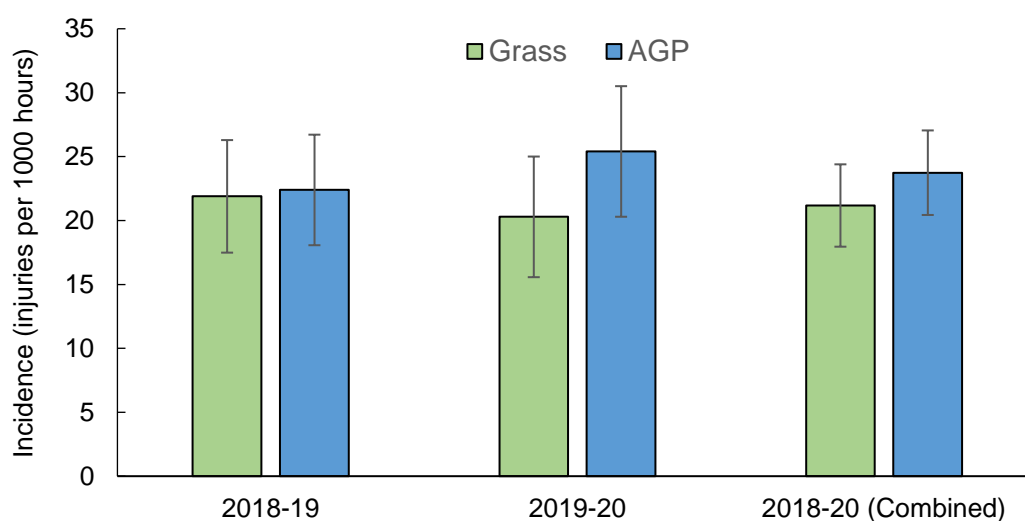


Figure 20. Comparison between pitch surface types for injury incidence.

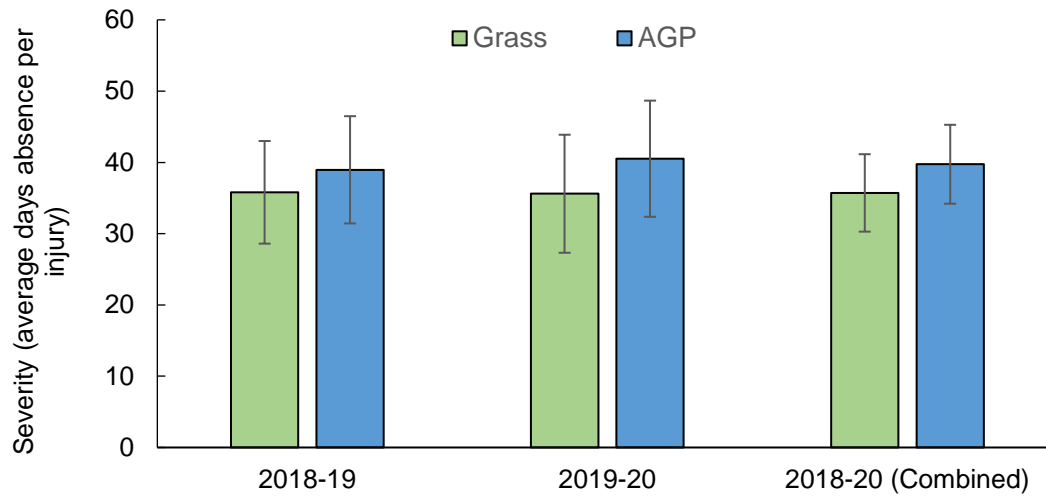


Figure 21. Comparison between pitch surface types for injury severity (average days missed per injury).

Pitch surface: Injury event

The injury incidences by match event over the two seasons are shown in Figure 22. This indicates that there are no differences between the two surface types.

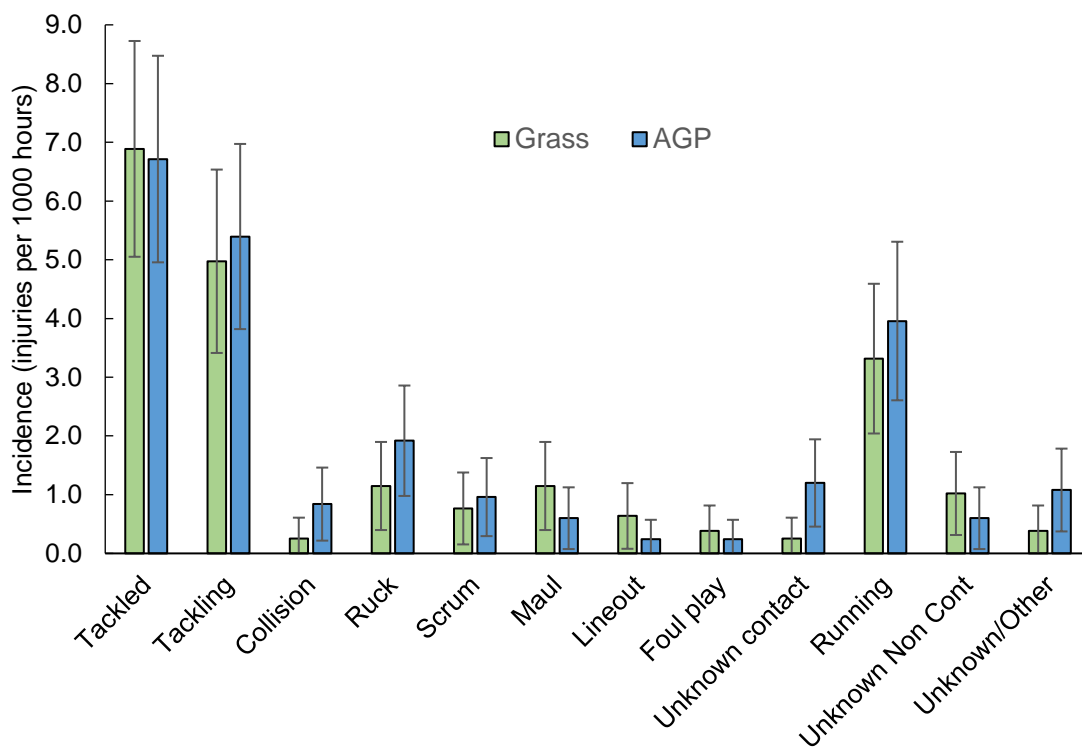


Figure 22. Comparison between pitch surface types for match event associated with injury.

Pitch surface: Injury locations and diagnoses

The data in Figures 23 and 24 suggests that there is no difference between pitch surfaces in terms of the location of injury or for the most common injury types.

Grass			AGP	
23%	(5.0 per 1000 h)	Head & Neck	24%	(5.5 per 1000 h)
23%	(4.8 per 1000h)	Upper limb	25%	(5.8 per 1000h)
6%	(1.3 per 1000h)	Trunk	7%	(1.6 per 1000h)
48%	(10.1 per 1000h)	Lower limb	44%	(10.1 per 1000h)

Figure 23. Comparison between pitch surface types for top five most common injury diagnoses.

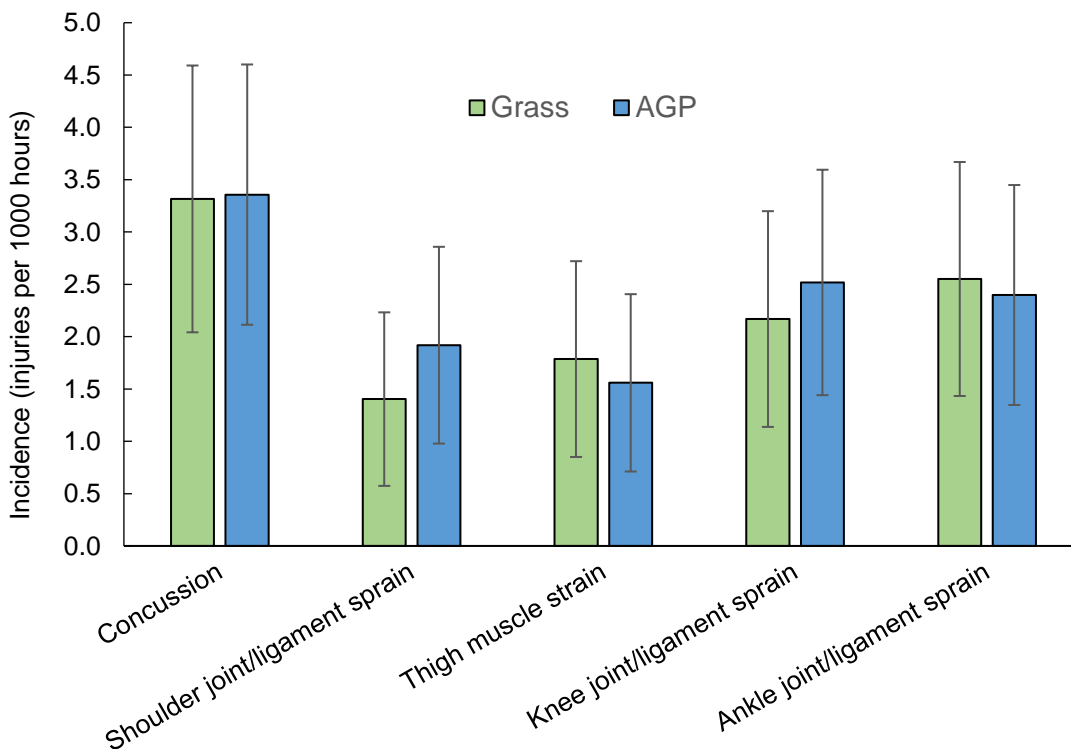


Figure 24. Comparison between pitch surface types for top five most common injury diagnoses.

FUTURE DIRECTIONS FOR THE PROJECT

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.

The results provided in this report are only relevant to the various levels of the men's community games and it would not be appropriate to be generalise this to different playing levels and groups. Similar surveillance studies are running concurrently in English Professional rugby (PRISP), Women's elite game (WRISP), Championship rugby, University Super Rugby and Schools rugby from U13-U18, using similar injury definitions and therefore providing data which can be compared across these different playing levels.

Future work will involve video analysis to provide a greater insight into what happens during game events and how the number of contact events might vary between playing levels.

Artificial Grass Pitches

Over the first two seasons on data comparing injuries sustained on grass and artificial grass pitches, the data shows no difference in the incidence of injuries on the two surfaces. Further continuation of this surveillance with more injury data will provide a greater certainty of these results. Future work involving video analysis will allow a greater insight into whether the game (number of contact events) is played differently on AGP and grass.

PROJECT METHODS

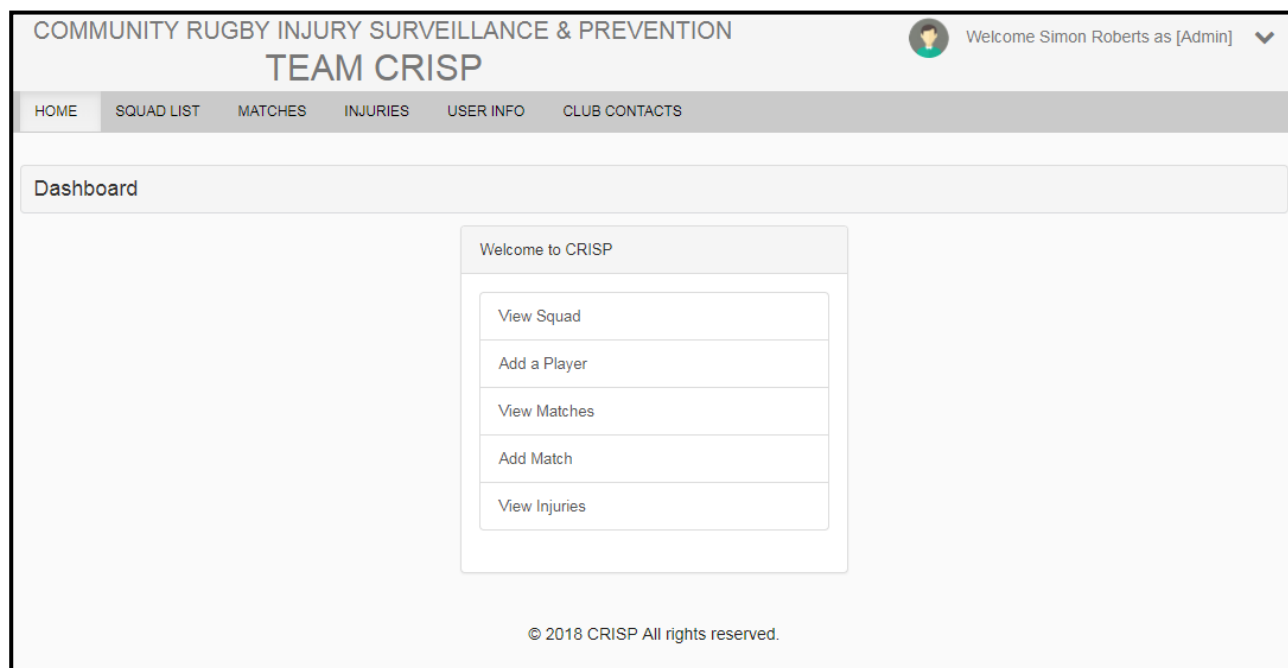
Recruitment

All clubs participate in this project voluntarily by responding to invitation emails sent directly to all men's first teams participating in RFU leagues 3-9, or to advertisement material distributed through coaching courses, newsletters and social media. Each season, a number of teams continue participation from the previous season, with 57% of clubs who participated in season 2018-19 continuing participation in season 2019-20. The diverse geographical range of participating clubs for the 2019-20 season is shown in the map below. Coloured pins represent the locations of clubs in Levels 3/4 (blue), Levels 5/6 (green) and Level 7/8/9 (orange).



Data collection

Participating clubs have the option to report injuries using either paper data collection forms or through the club's dedicated web page on the project's online data entry platform as shown below.



The screenshot displays the 'TEAM CRISP' web dashboard. At the top, the header reads 'COMMUNITY RUGBY INJURY SURVEILLANCE & PREVENTION' and 'TEAM CRISP'. A user profile for 'Simon Roberts as [Admin]' is visible in the top right corner. Below the header is a navigation menu with links for 'HOME', 'SQUAD LIST', 'MATCHES', 'INJURIES', 'USER INFO', and 'CLUB CONTACTS'. The main content area is titled 'Dashboard' and features a central panel with the following options: 'View Squad', 'Add a Player', 'View Matches', 'Add Match', and 'View Injuries'. At the bottom of the dashboard, there is a copyright notice: '© 2018 CRISP All rights reserved.'

Each participating club assigns one or more primary contact (normally the team's sports therapist or physiotherapist) who is responsible for collating and reporting the following data:

- A first team squad list with brief information for each player
- Brief details for all first team matches – used to understand the injury risk per match
- Any time-loss injury sustained during first team match which caused the player to miss at least one match (eight days or greater absence from playing).
- Player consent for their injury data to be reported to the CRISP team, obtained in accordance with GDPR.

PUBLICATIONS AND REPORTS

The information collected by this Project has resulted in a number of Journal publications and conference communications.

Journal publications

Attwood, M.J., Roberts, S.P., Stokes, K.A., England, M. and Trewartha, G. (2018). Association of the Functional Movement Screen™ with match-injury burden in men's community rugby union. *Journal of Sports Sciences*. *Online First*:

Attwood, M.J., Roberts, S.P., Stokes, K.A., England, M. and Trewartha, G. (2017). Efficacy of a movement control injury prevention programme in adult men's community rugby union: a cluster randomised controlled trial. *British Journal of Sports Medicine*, *Online First*: 21 October 2017. doi: 10.1136/bjsports-2017-098005.

Roberts, S.P., Trewartha, G., England, M., Goodison, W. & Stokes, K.A. (2016). Concussion and head injuries in English community rugby union match play. *American Journal of Sports Medicine*, doi: 10.1177/0363546516668296.

Singh V.R., Trewartha, G., Roberts, S.P., England, M. & Stokes, K.A. (2016). Shoulder injuries in English community rugby union. *International Journal of Sports Medicine*, 37(08), 659-664.

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.

ACKNOWLEDGEMENTS

Many thanks to the coaches and sports injury staff at all participating clubs in the Community Injury Surveillance Project for 2019-20.

Level 3/4: Barnes, Chester, Cinderford, Henley Hawks, Loughborough Students, Preston Grasshoppers, Rosslyn Park, Sale, Scunthorpe, Tynedale.

Level 5/6: Bedford Athletic, Blaydon, Buckingham, Burton, Chippenham, Colchester, Coney Hill, Derby, Douglas (IOM), Dorking, Harpenden, Hornets, Kenilworth, Kettering, Lichfield, Lymm, Old Haberdashers, Old Patesians, Paviers, Penrith, Sevenoaks, Shelford, Syston, Witney.

Level 7/8/9: Aylesbury, Barton Hill, Cheltenham Tigers, Chesterfield, Chew Valley, Chiswick, Devizes, Effingham & Leatherhead, Enfield Ignatians, Grasshoppers, Haringey Rhinos, Horsham, Keighley, Ledbury, North Bristol, Nottingham Casuals, Oadby Wyggestonians, Reading, Scarborough, Southwell, Trojans, Walsall, Wellington, Whitley Bay Rockliffe

Community Injury Surveillance Project Team

Prof Keith Stokes - Department for Health, University of Bath (Lead Investigator)
Dr Simon Roberts - Department for Health, University of Bath (Research Fellow)
Dr Carly McKay - Department for Health, University of Bath (Senior Lecturer)
Dr Simon Kemp - RFU Medical Services Director
Rachel Faull-Brown - RFU Player Welfare Manager
Dr Karen Hood - Head of RFU Injured Players Foundation

© 2009 Rugby Football Union. The RFU Rose is an official trade mark of the Rugby Football Union and is the subject of extensive trade mark registration world wide.

SUPPLEMENTARY DATA

This section contains additional data to that of the main findings.

Table S1. Injury incidence and severity over 10 seasons.

Season	Injuries	Match hours	Incidence	Average days absence	Average matches per injury
2009-10	385	22540	17.1	50	2.9
2010-11	539	32820	16.4	56	3.0
2011-12	645	37100	17.4	53	2.9
2012-13	399	24040	16.6	56	3.0
2013-14	613	32180	19.0	52	2.6
2014-15	496	27020	18.4	49	2.7
2015-16	502	28180	17.8	57	2.8
2016-17	595	26640	22.3	49	2.2
2017-18	495	21680	22.8	47	2.2
2018-19	638	24820	25.7	44	1.9
2019-20	567	21740	26.1	39	1.9

Table S2. Percentage and incidence of injuries for body locations and region totals for different playing levels.

Body region	Location of injury	Levels 3/4		Levels 5/6		Levels 7/8/9	
		Percentage	Incidence	Percentage	Incidence	Percentage	Incidence
Head/neck	Head	24.8	7.0	20.5	5.4	24.5	6.1
	Neck	2.3	0.7	1.3	0.3	1.5	0.4
Upper limb	Shoulder	14.7	4.1	16.2	4.3	18.1	4.5
	Up arm	0.8	0.2	0.9	0.2	1.5	0.4
	Elbow	0.8	0.2	2.1	0.6	0.5	0.1
	Forearm	1.6	0.4	0.9	0.2	0.0	0.0
	Wrist	0.8	0.2	0.0	0.0	1.0	0.2
	Hand	5.4	1.5	5.6	1.5	5.4	1.3
Trunk	Upper back	0.8	0.2	0.0	0.0	0.0	0.0
	Lower back	3.9	1.1	3.0	0.8	2.0	0.5
	Chest	1.6	0.4	2.6	0.7	2.0	0.5
	Stomach	0.0	0.0	0.0	0.0	0.0	0.0
Lower limb	Groin	1.6	0.4	2.6	0.7	1.5	0.4
	Thigh	9.3	2.6	9.4	2.5	9.8	2.4
	Knee	13.2	3.7	12.0	3.1	14.7	3.6
	Low leg	2.3	0.7	3.8	1.0	5.4	1.3
	Ankle	10.9	3.0	15.0	3.9	7.4	1.8
	Foot	0.0	0.0	1.3	0.3	3.9	1.0
Head/neck total		27.1	7.6	21.8	5.7	26.0	6.4
Upper limb total		24.0	6.7	25.6	6.7	26.5	6.6
Trunk total		6.2	1.7	5.6	1.5	3.9	1.0
Lower limb total		37.2	10.4	44.0	11.5	42.6	10.6

Table S3. Percentage of injuries by quarter for all playing levels combined over each season

Season	Match Quarter			
	0-20	20-40+	40-60	60-80+
2009-10	18	26	27	30
2010-11	19	24	28	29
2011-12	19	25	26	30
2012-13	17	26	29	27
2013-14	15	23	26	35
2014-15	18	26	29	28
2015-16	44	13	21	22
2016-17	17	22	28	33
2017-18	16	31	27	26
2018-19	17	27	29	27
2019-20	21	24	27	29
All seasons	20	24	27	29

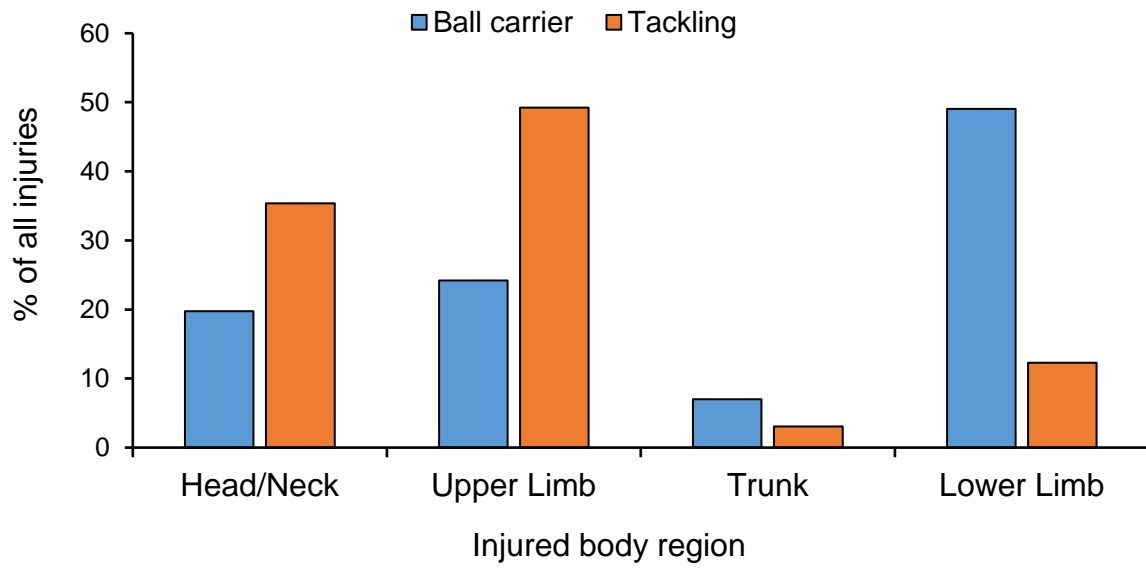


Figure S1. Percentage of injuries by body region sustained by the ball carrier and tackling player in the tackle event.