Community Rugby Injury Surveillance and Prevention Project

Season Report
2018-2019

Authored by the Community Rugby Injury Surveillance Project steering group

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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 2018-19.

KEY FINDINGS

COMMUNITY MATCH INJURIES

Overall match injury incidence rate:

25.7 per 1000 player match-hours

or

Overall: 1 injury every 1.9 matches

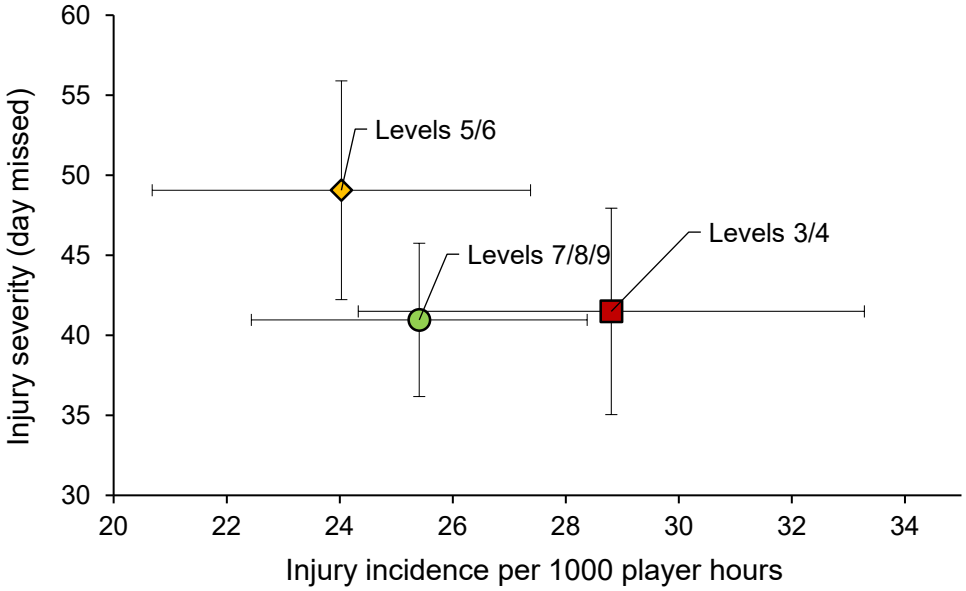
Levels 3/4: 1 injury every 1.7 matches; Levels 5/6: 1 every 2.1 matches;

7/8/9: 1 every 2.0 matches

Mean severity per injury:

44 days missed (5.2 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:

55% in the tackle

Most common injury diagnosis

Concussion (17% of all injuries)

Injury accounting for most days lost

Knee ligament/joint injuries

EXECUTIVE SUMMARY

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 2018-19 was 25.7 injuries per 1000 player match hours. This is similar compared with 2017-18 (22.8 injuries per 1000 player match hours), but there has been an increase over the last 10 years and in 2018-19, incidence was 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.

Concussion – Most common injury diagnosis

- The incidence of reported concussion during season 2018-19 was 4.4 per 1000 player match hours, compared with 3.6 injuries per 1000 player match hours in season 2017-18.
- There was one concussion for a team every 11.4 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 has continued to increase in line with previous seasons and for playing levels 5-9, this increase has been greatest in the last three seasons.
- 72% of all concussions were sustained in the tackle with 40% of all concussions to the ball carrier and 32% to the tackler.

The Tackle – Most common injury event

- The tackle was associated with approximately 55% of all injuries.
- When the player is tackling, the most commonly injured sites are the upper limb (44% of all injuries). Good tackling technique has the potential to reduce injuries to these areas.
- The most commonly injured sites to the ball carrier are in the lower limb (43% of all injuries).
- Head/neck injuries account for a similar percentage of tackle injuries for the tackling player (35%) and the ball carrier (31%).

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

- Knee ligament/joint injuries incurred the highest number of days lost to injury and accounted for 14% of the total days lost to injury.
- Concussion accounted for 10% of the total days lost to injury.

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INTRODUCTION

The men's community rugby playing population in England represents the largest 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 the Premiership Rugby Injury Surveillance Project (PRISP), the University Super Rugby Injury Surveillance Project and Schools Injury Surveillance Project 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. 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 for anyone working in rugby union to use with their team. Further details are available on:
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:

$$\text{Injury incidence} = \text{number of Injuries} \Big/ \left[(\text{number of matches} \times \text{number of players (15)} \times \text{match duration (1.33 hours)})/1000\right]$$

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 2018-19 season, 638 match injuries were reported over 1241 matches. This resulted in an overall match time-loss injury incidence of 25.7 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. With a consistent increase in injury incidence in the last three seasons, the incidence for season 2018-19 is now outside the normal limits of variation. The average number of days missed from rugby was at the lower limit of normal variation (Figure 2). Injury burden (days absence per 1000 hours) was the highest recorded and at the upper limit of normal variation (Figure 3). Table 2 shows that for most injuries, the player returns within 8-28 days.

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	159	5520	28.8	42	1.7
Levels 5/6	198	8240	24.0	49	2.1
Levels 7/8/9	281	11060	25.4	41	2.0
Overall	638	24820	25.7	44	1.9

Table 2. Match injury incidence for each severity classification.

Days missed	Incidence	Percentage of all injuries
8-28 days	11.4	44
29-84 days	7.2	28
>84 days	2.3	9
Unknown	4.8	19

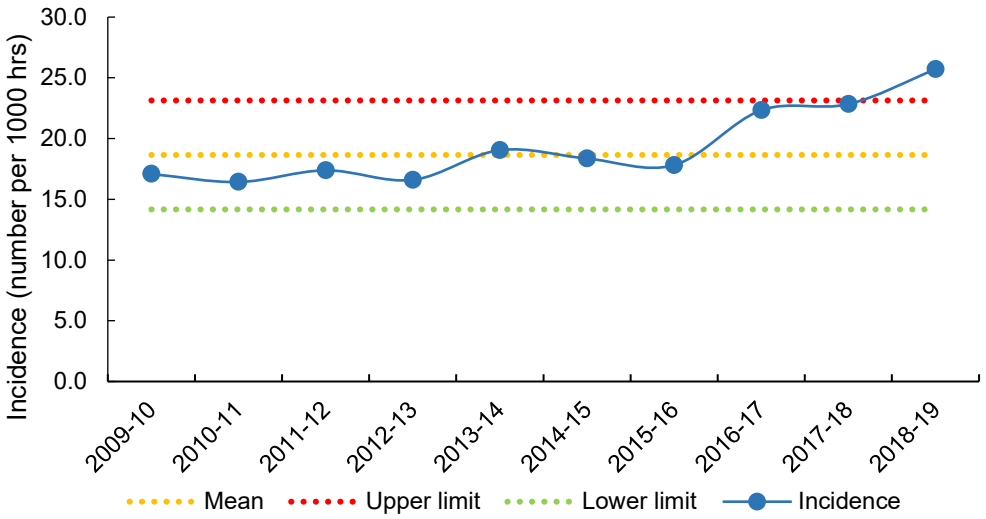


Figure 1. Injury incidence for over 10 seasons. 2 standard deviations (2SD) above and below the mean incidence denote the range within which a natural variation in the data is expected.

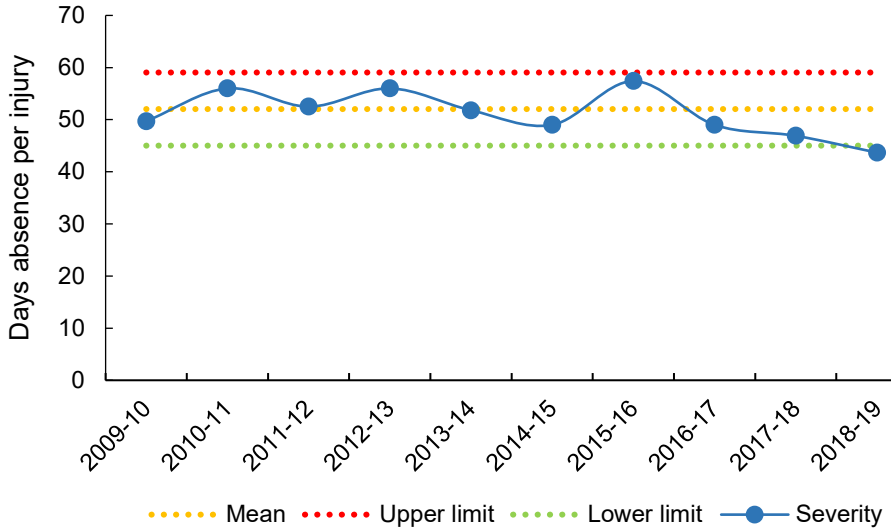


Figure 2. Mean days absence per injury for over 10 seasons. 2 standard deviations (2SD) above and below the mean incidence denote the range within which a natural variation in the data is expected.

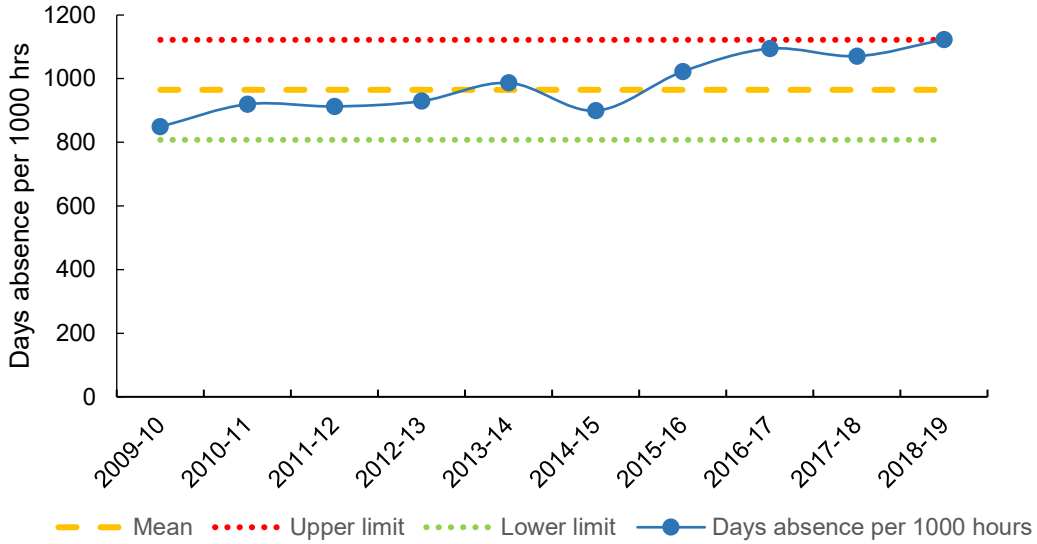


Figure 3. Injury burden over 10 seasons. 2 standard deviations (2SD) above and below the mean incidence denote the range within which a natural variation in the data is expected.

Injury incidence and severity at different playing levels

The injury incidence and severity for each playing level in season 2018-19 is shown in Figure 4, demonstrating that the any differences between levels are minor and not significant statistically. The trend over 10 seasons is shown in Figure 5 and demonstrates a general trend for a higher incidence over the last three seasons across each playing level.

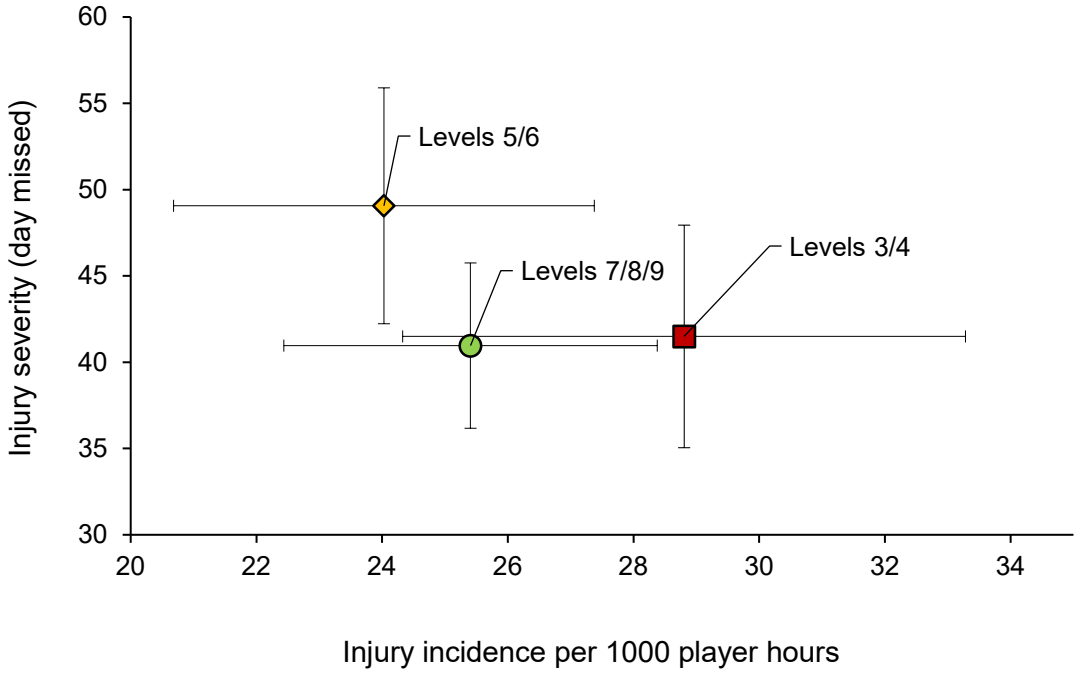


Figure 4. Injury incidence and severity for each playing level.

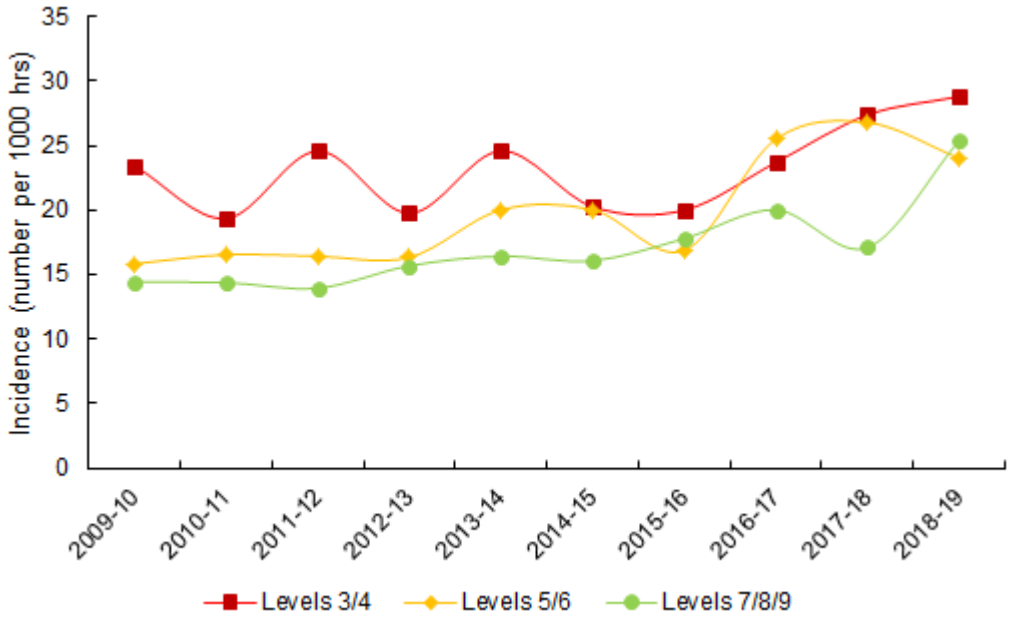


Figure 5. Injury incidence over multiple seasons by different playing levels.

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 an increasing incidence of injury as the level of player increases across age groups and playing levels.

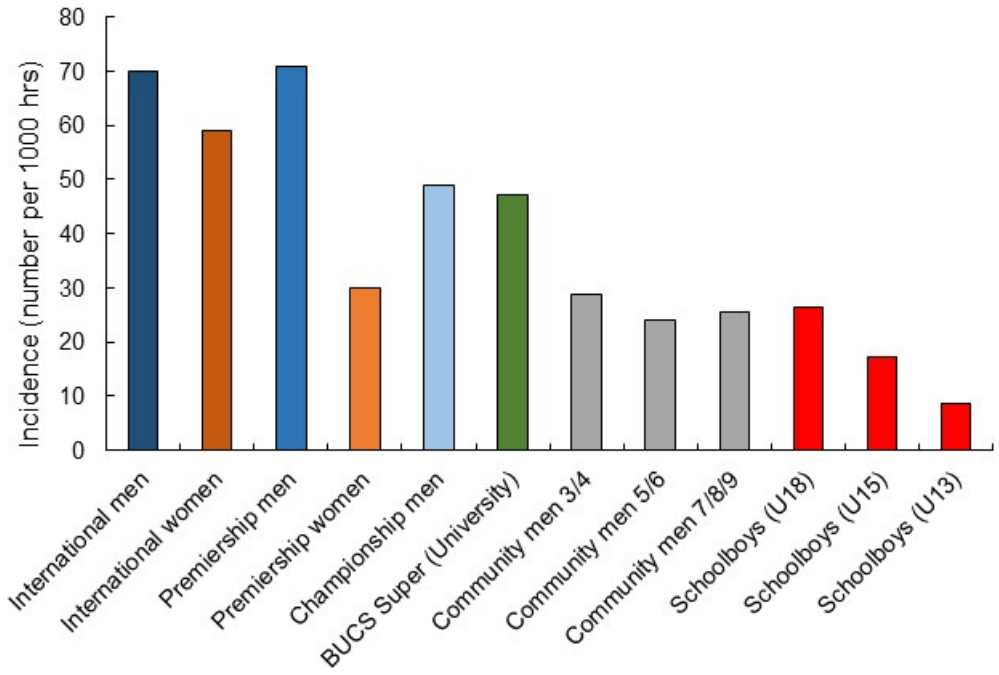


Figure 6. A comparison of greater than 7-day time-loss injury rates for different levels of community rugby with professional, university level and schools rugby.
Data sources: Community level 3/4, 5/6 and 7/8/9 are taken from the 2018-19 findings of this current report. Data from all other playing levels are derived from respective season reports for the 2018-19 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 55% 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 (44% of all tackle injuries) whereas for the ball carrier the lower limb is the most commonly injured region (43%). 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.

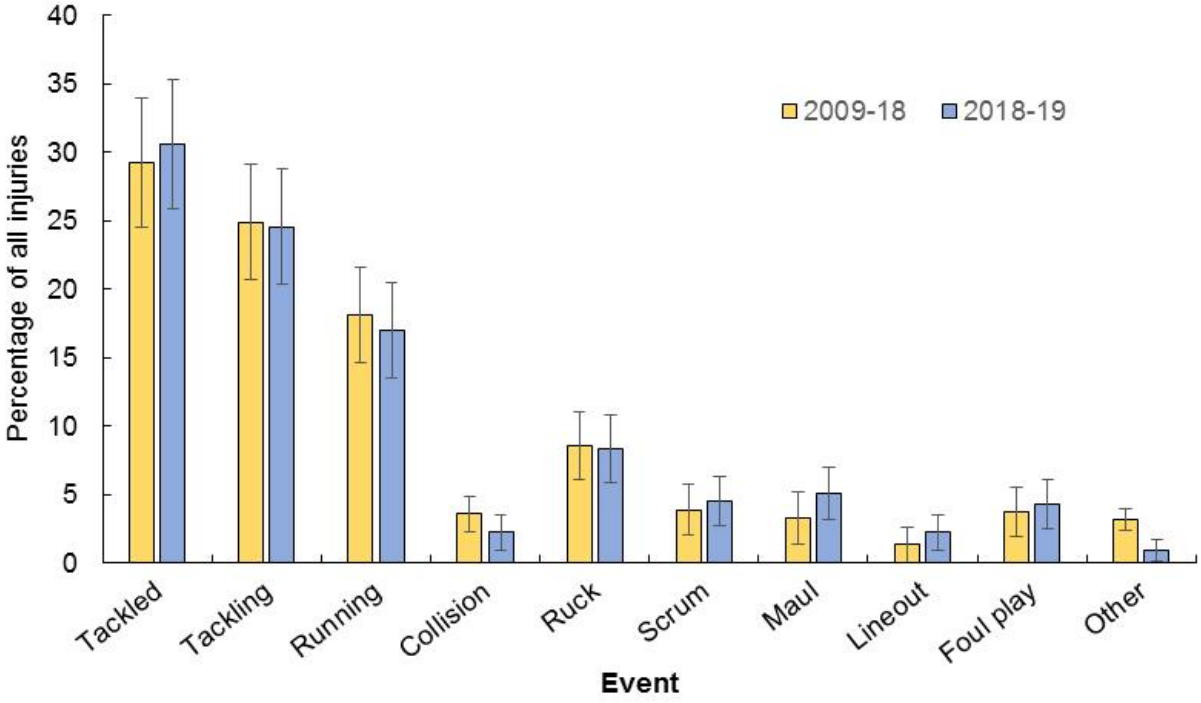


Figure 7. The incidence of injuries for specific match events for all playing levels combined for the average over seasons 2009-18 and 2018-19.

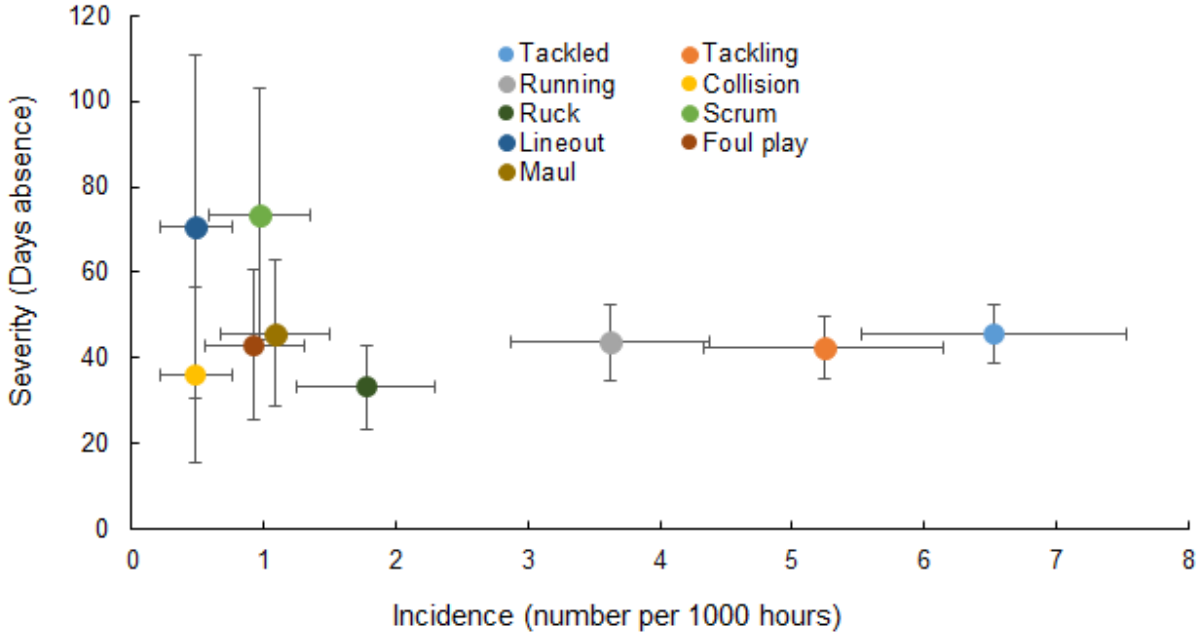


Figure 8. Injury event by incidence and severity for all playing levels combined.

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.

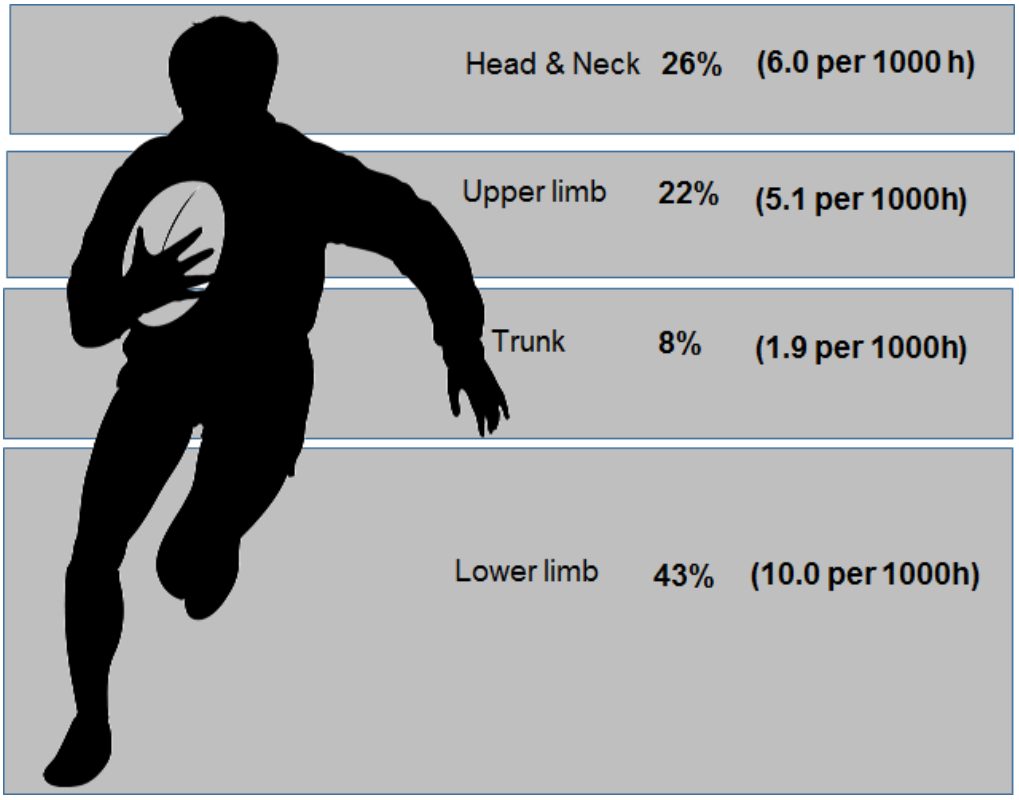


Figure 9. The distribution of match injuries by body region by percentage and incidence.

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	139	5.6	28.8	161
	Neck	10	0.4	47.0	19
Upper limb	Shoulder	75	3.0	44.7	135
	Up arm	33	1.3	47.7	63
	Elbow	5	0.2	127.7	26
	Forearm	4	0.2	91.0	15
	Wrist	4	0.2	43.8	7
	Hand	5	0.2	28.0	6
Trunk	Chest	28	1.1	46.6	53
	Low back	14	0.6	34.4	19
	Up back	2	0.1	49.0	4
	Stomach	2	0.1	41.5	3
Lower limb	Knee	77	3.1	64.4	200
	Ankle	68	2.7	51.6	141
	Low leg	25	1.0	70.0	71
	Thigh	51	2.1	32.3	66
	Groin	16	0.6	38.1	25
	Foot	10	0.4	46.6	19

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 (accounting for 10% of all days absence) is largely due to a much higher incidence rather than severity compared with other injuries.

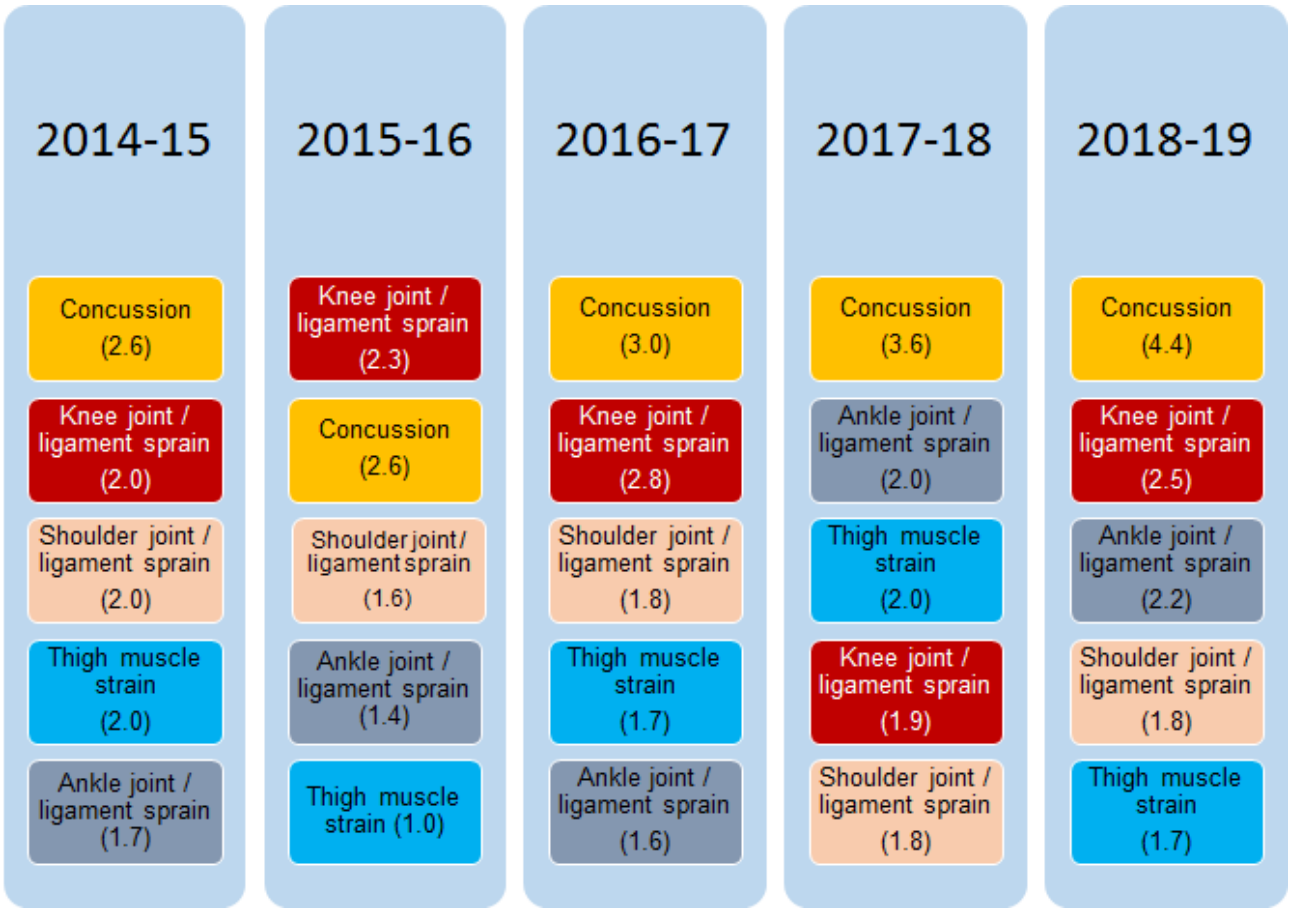


Figure 10. Top five injury diagnoses in rank order for **incidence** for all playing levels combined over seasons 2014-15 to 2018-19. Numbers within brackets denote incidences (injuries per 1000 player match hours).

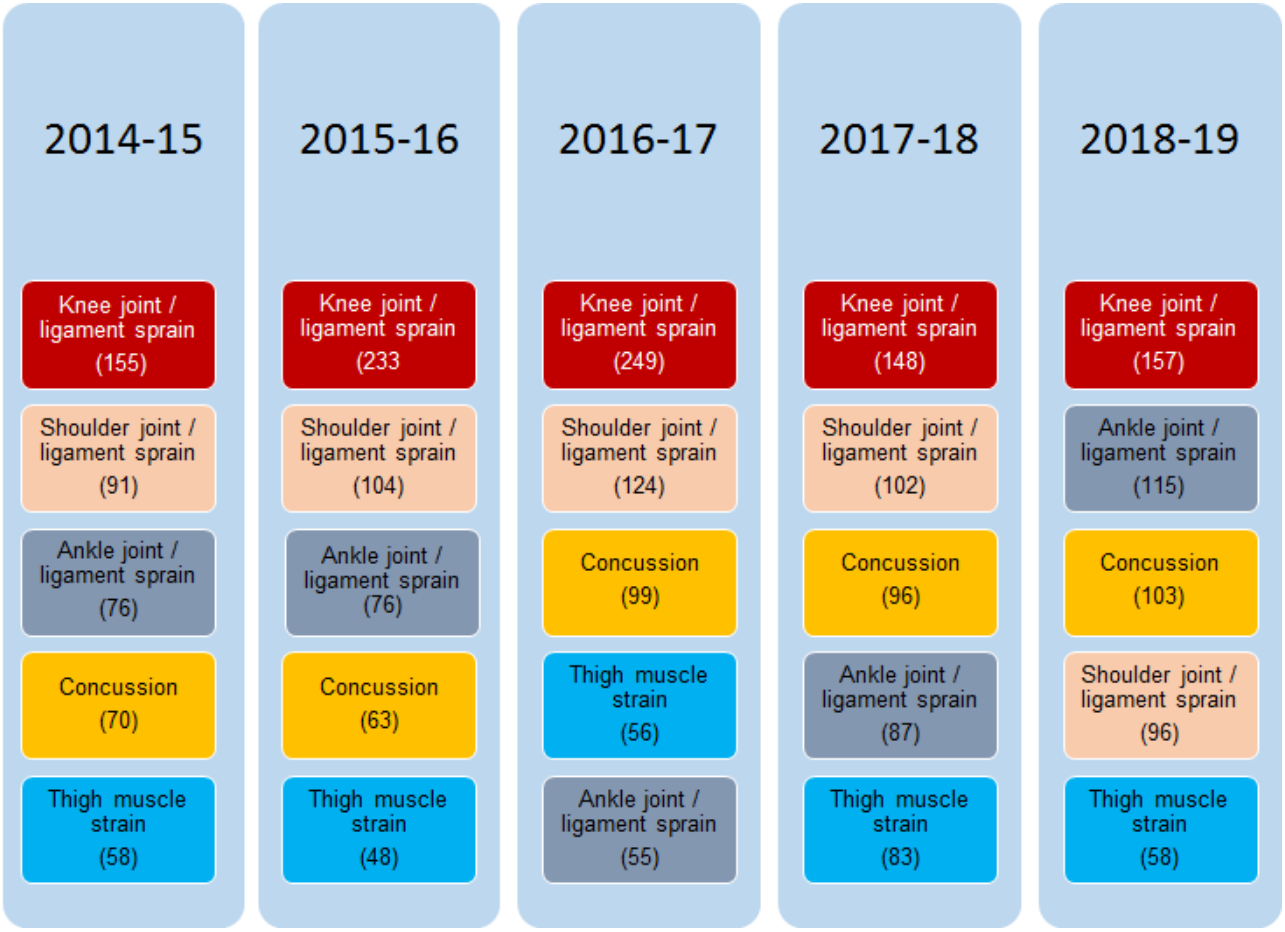


Figure 11. Top five injury diagnoses in rank order of **burden** for all playing levels combined over seasons 2014-15 to 2018-19. Numbers within brackets denote (number of days missed per 1000 player match hours).

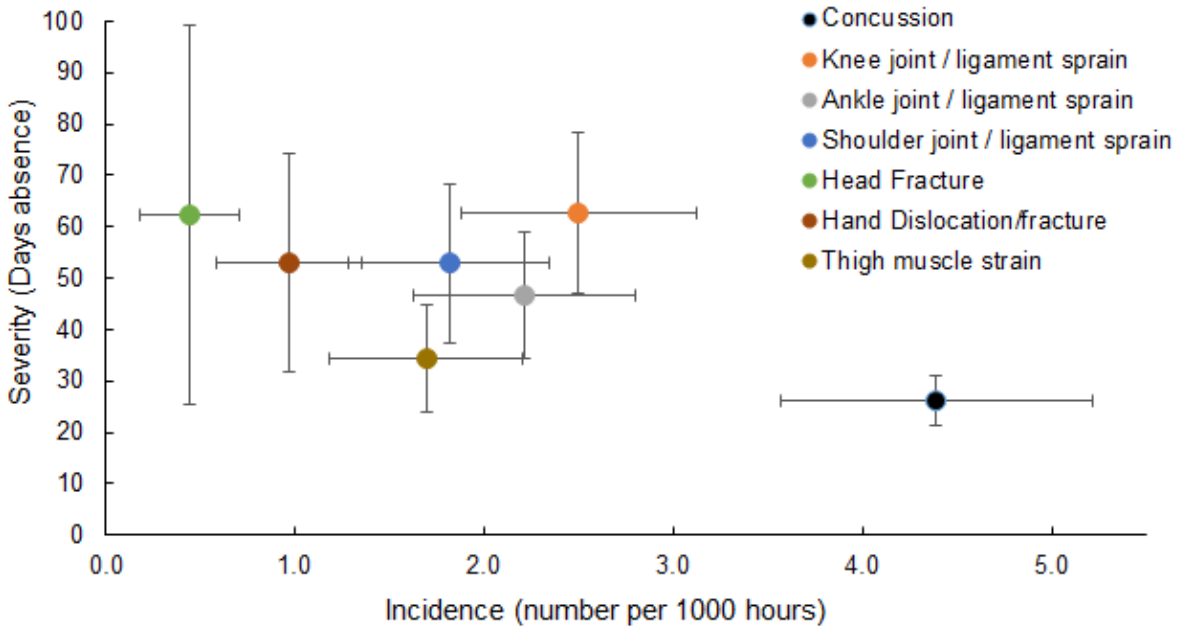


Figure 12. Injury event by incidence and severity for all playing levels combined.

Concussion

Concussion incidence and severity

Overall concussion incidence was 4.4 per 1000 player match hours, equating to 1 concussion in every 11.4 team games, and accounted for 17% of all time-loss injuries (Table 4). The mean number of days missed per concussion was 26 (2.7 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	276	26	4.7 (2.9-6.5)	10.6	2.7	2
Level 5/6	412	43	5.2 (3.7-6.8)	9.6	2.6	2
Level 7/8/9	553	40	3.6 (2.5-4.7)	13.8	2.8	2
All Levels	1241	109	4.4 (3.6-5.2)	11.4	2.7	2

Concussion trends over time

There has been a consistent increase in reported concussion incidence since 2013-14 and in 2018-19 concussion incidence was higher than the upper limit of expected variation (Figure 12). Based on the data available, it is not possible to provide a specific reason for this increase 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 either as a result of higher-risk physical impacts or due a to a greater frequency of contact events during match play.

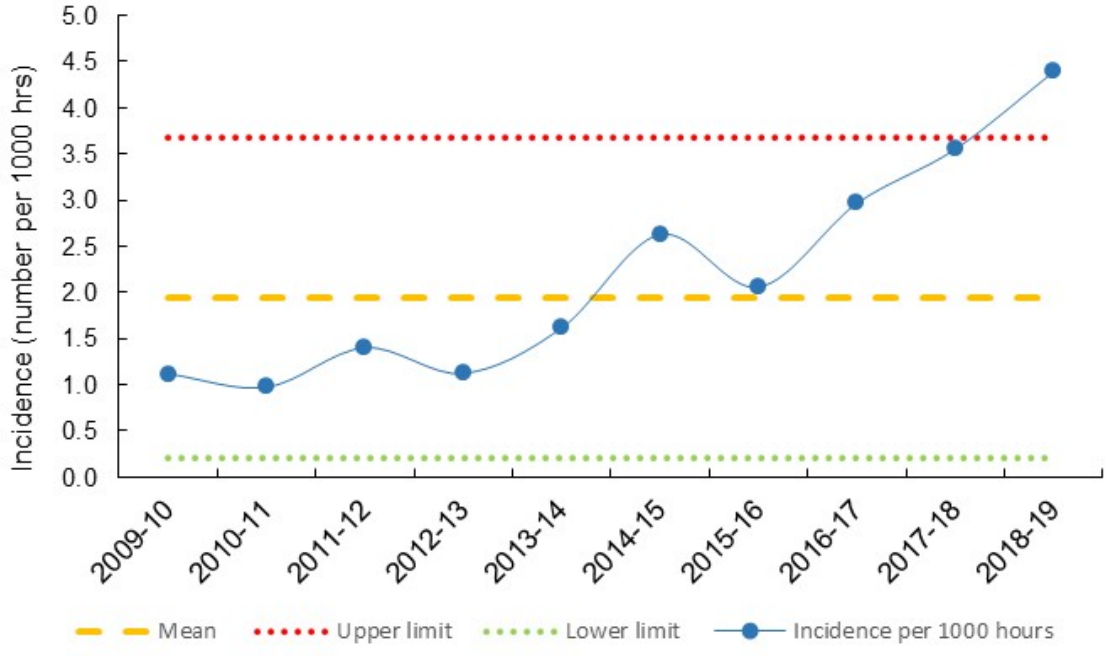


Figure 12. Incidence of reported concussions over 10 seasons for all playing levels combined, including the mean incidence over this period with upper and lower limits of two standard deviations.

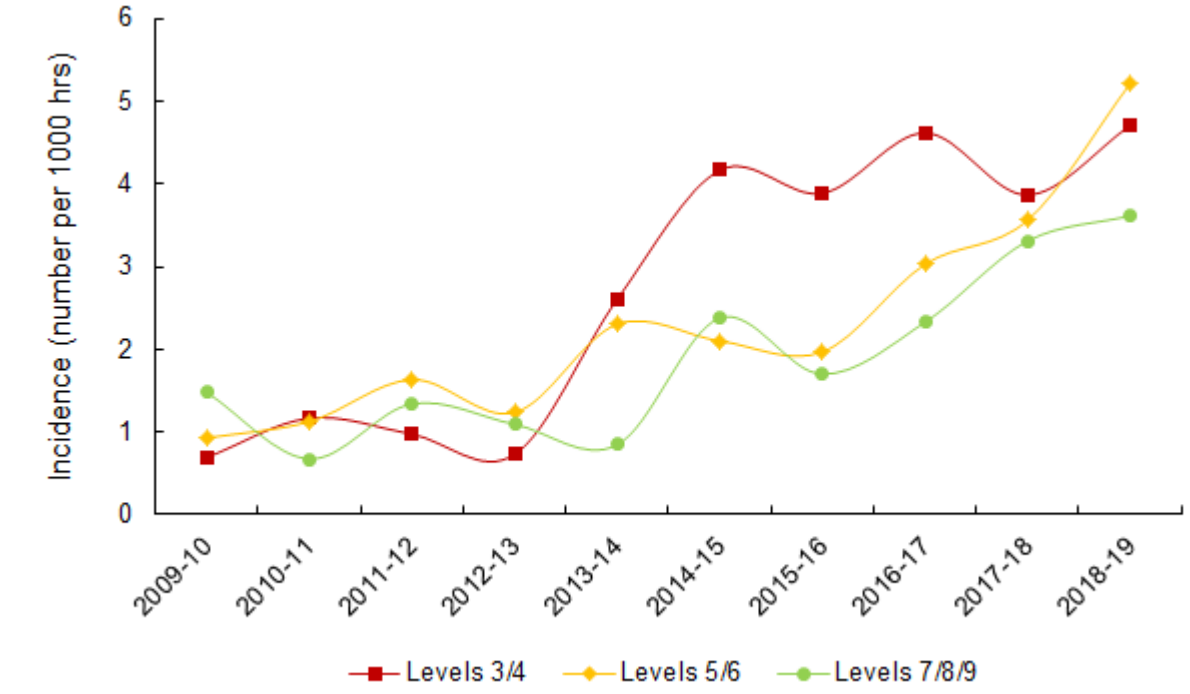


Figure 13. Incidence of reported concussions over 10 seasons for each playing level.

Match events associated with concussion

In 2018-19, the tackle was reported as the injury event for 72% of all concussions with 40% of all concussions to the ball carrier and 32% to the tackling player (Figure 14). This is a common finding across previous seasons and other levels of play (Professional, University and Schoolboy). Further work is required to understand the specific characteristics of tackles which result in injury.

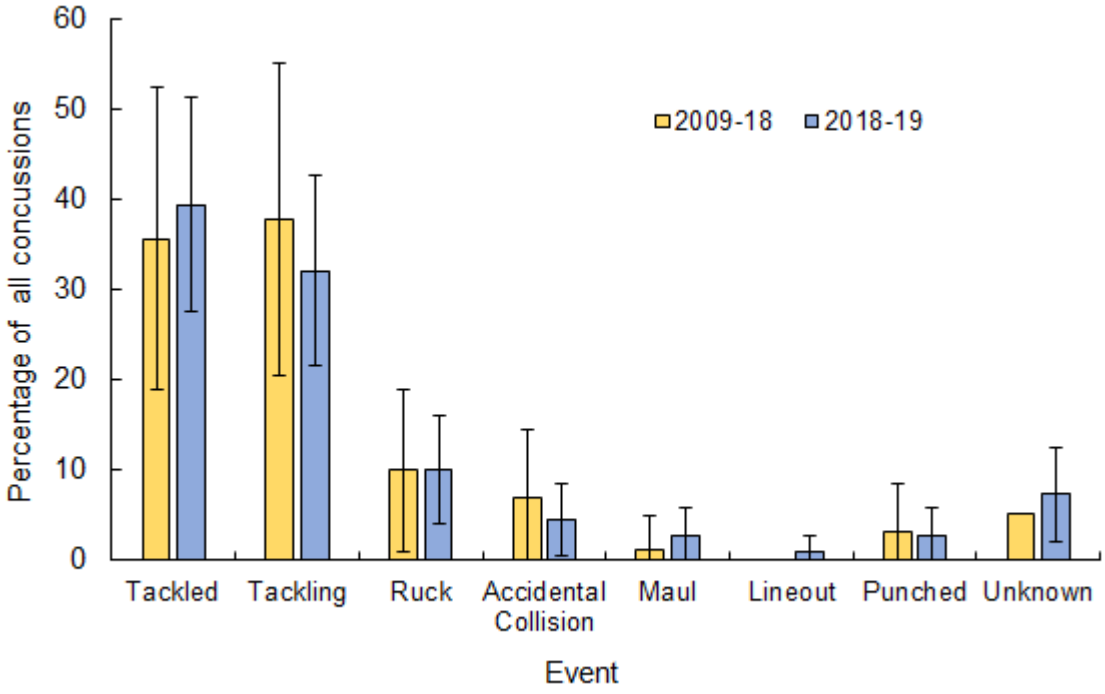


Figure 14. Percentage of reported concussions by match event for season 2018-19 compared with the average across all previous seasons (2009-2018).

Concussion and Return to Play

There was an average of 26 days (2.7 matches) missed per concussion. The percentage of concussions according to the number of matches missed is shown in Figure 15. An RFU Regulation introduced in March 2014 permits the concussed player to return at the earliest after 19 days. 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 eight concussions (7% of cases) (denoted by the red area), the concussed player returned to play following an absence of just 18 days or less which suggests that some players are still returning prematurely to match play.

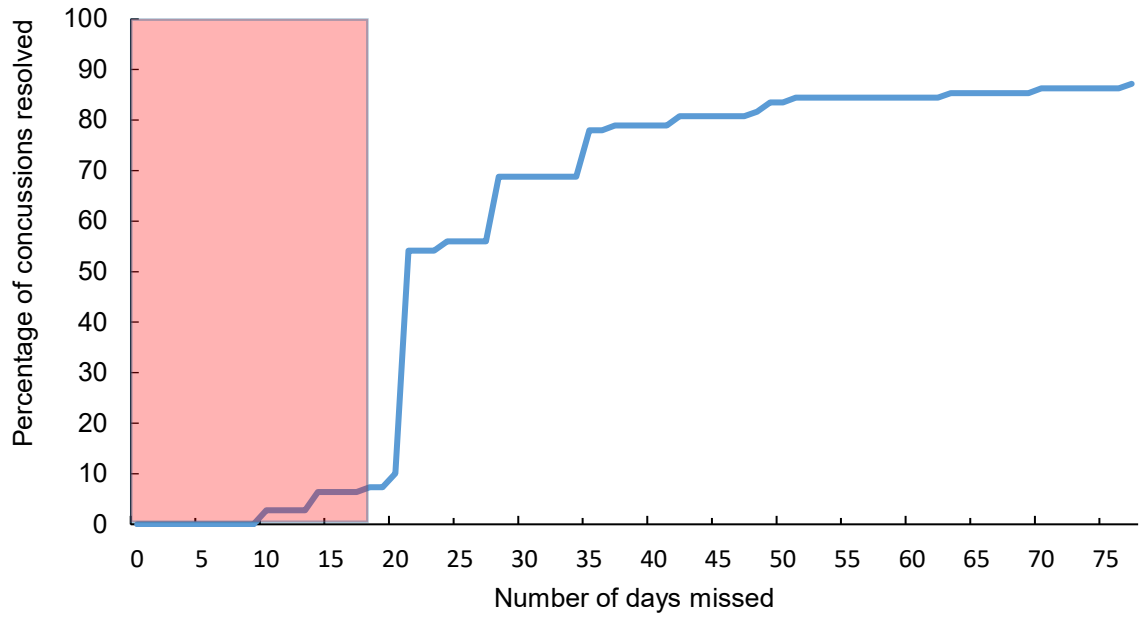


Figure 15. Percentage of concussion injuries for number of days missed for season 2018-19. A return to play data was not available for all concussions and therefore the percentage of concussions resolved is less than 100%.

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 16. Specific guidelines on the pathways for concussed adult players returning to play can be accessed via the RFU's Headcase resource: https://www.englandrugby.com//dxdam/86/86c7a5b7-e65a-4f58-ae9c-3c3c1449b519/HEADCASE%20Adult%20Concussion%20Management%20Guidelines.pdf

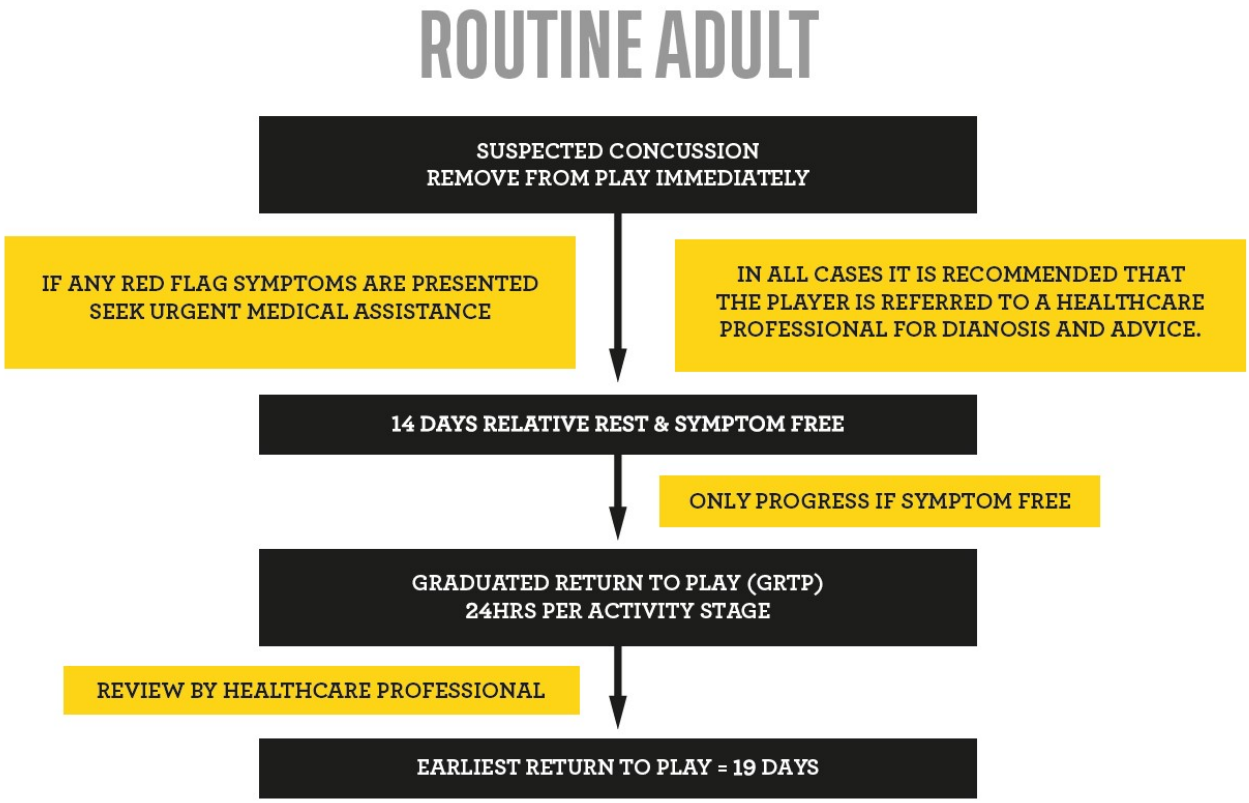


Figure 16. Return to play pathway for concussed adult players not in an enhanced care setting.

Catastrophic injury

No catastrophic injuries were reported by any participating clubs over the 2018-19 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, there was no difference in the incidence of time-loss injuries in forwards (23.0 injuries per 1000 player hours) compared with backs (24.3 injuries per 1000 player hours). Figure 17 shows that the injury incidence for positional groups for season 2018-19 follows a similar pattern to combined data from previous seasons. The higher incidence for nearly all positional groups in season 2018-19, reflects the higher overall incidence for the current season compared with the historical mean.

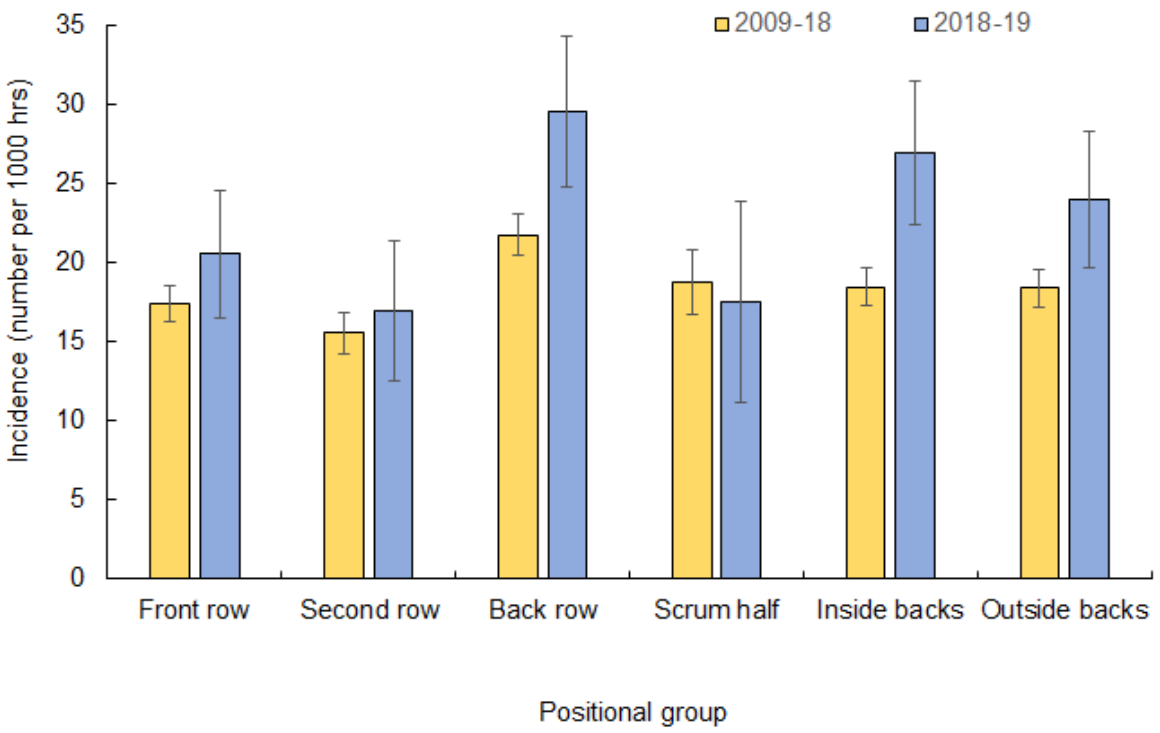


Figure 17. Comparison between positional groups for injury incidence in season 2018-19 compared with the average for seasons 2009-2018.
Forwards: Front row: loose head and tight head props, hooker, Second row: left and right locks; Back row: open side and blind side flankers, No. 8; Backs: Inside backs: 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 43 (5.1 matches missed), and 43 (5.1 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 18).

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 may also be a factor in this finding.

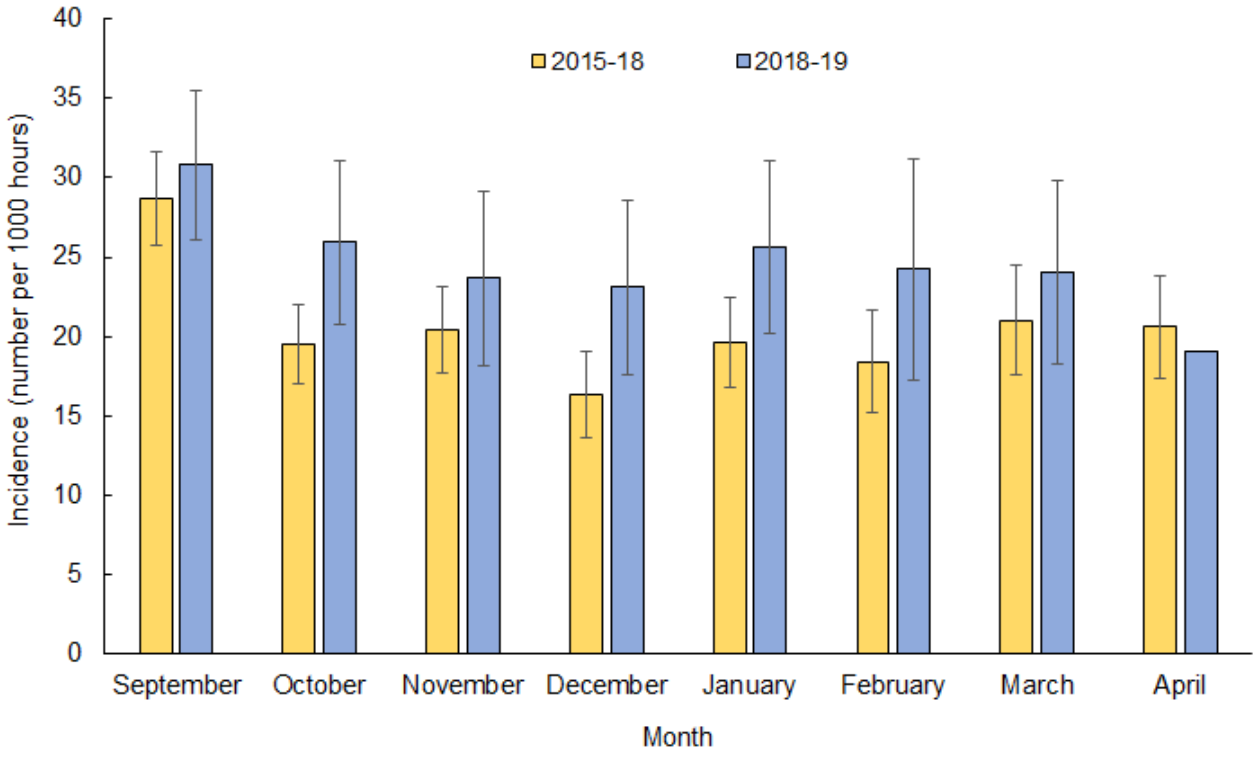


Figure 18. Incidence of time-loss injuries over each month of the 2018-19 rugby season, with equivalent data combined for 2015-18 for comparison.
Note: Due to very small numbers of matches and injuries reported during August and May, injury incidences for these months have been excluded.

Artificial Grass Pitches

Season 2018-19 is the first season whereby a number of clubs (23 in total) across England played a full season of home matches on a Rugby365 artificial grass pitch (AGP). Clubs with AGP pitches were incorporated into the CRISP project for the 2018-19 season so that an initial comparison could be made with injuries sustained on grass pitches. In this analysis, data from AGP clubs when playing on AGP (normally home but also some away fixtures on an opponent's AGP pitch) was compared with when they played on Grass (normally away matches). Table 5 and Figures 19 and 20 show that there was no difference in the incidence and severity of injuries sustained on these surfaces in 2018-19.

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

Surface	Injuries	Match hours	Incidence	Average days absence	Average matches per injury
Grass	103	4600	22.4	39	2.2
AGP	95	4340	21.9	36	2.3

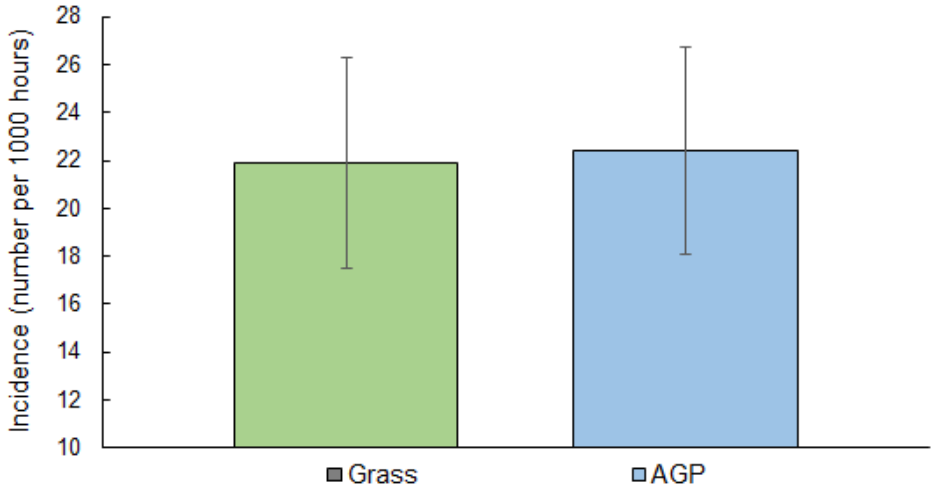


Figure 19. Comparison between pitch surface types for injury incidence.

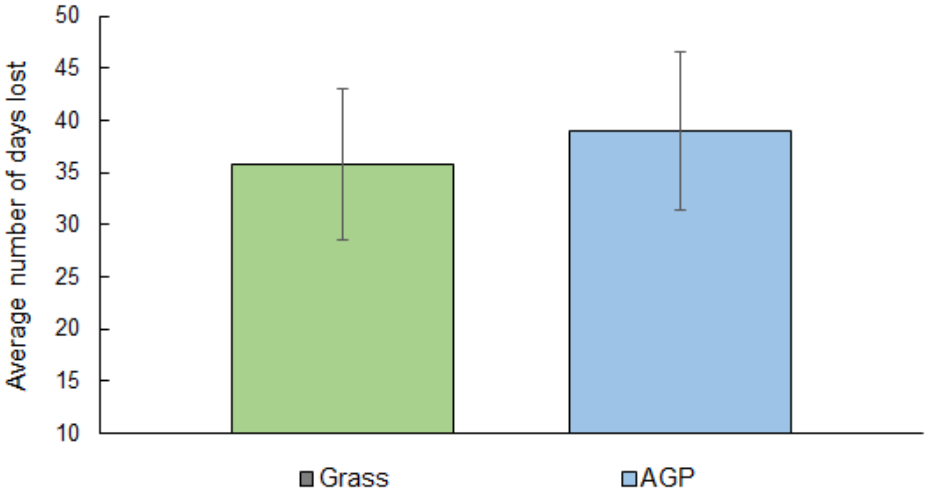


Figure 20. Comparison between pitch surface types for injury severity (average days missed per injury).

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 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.

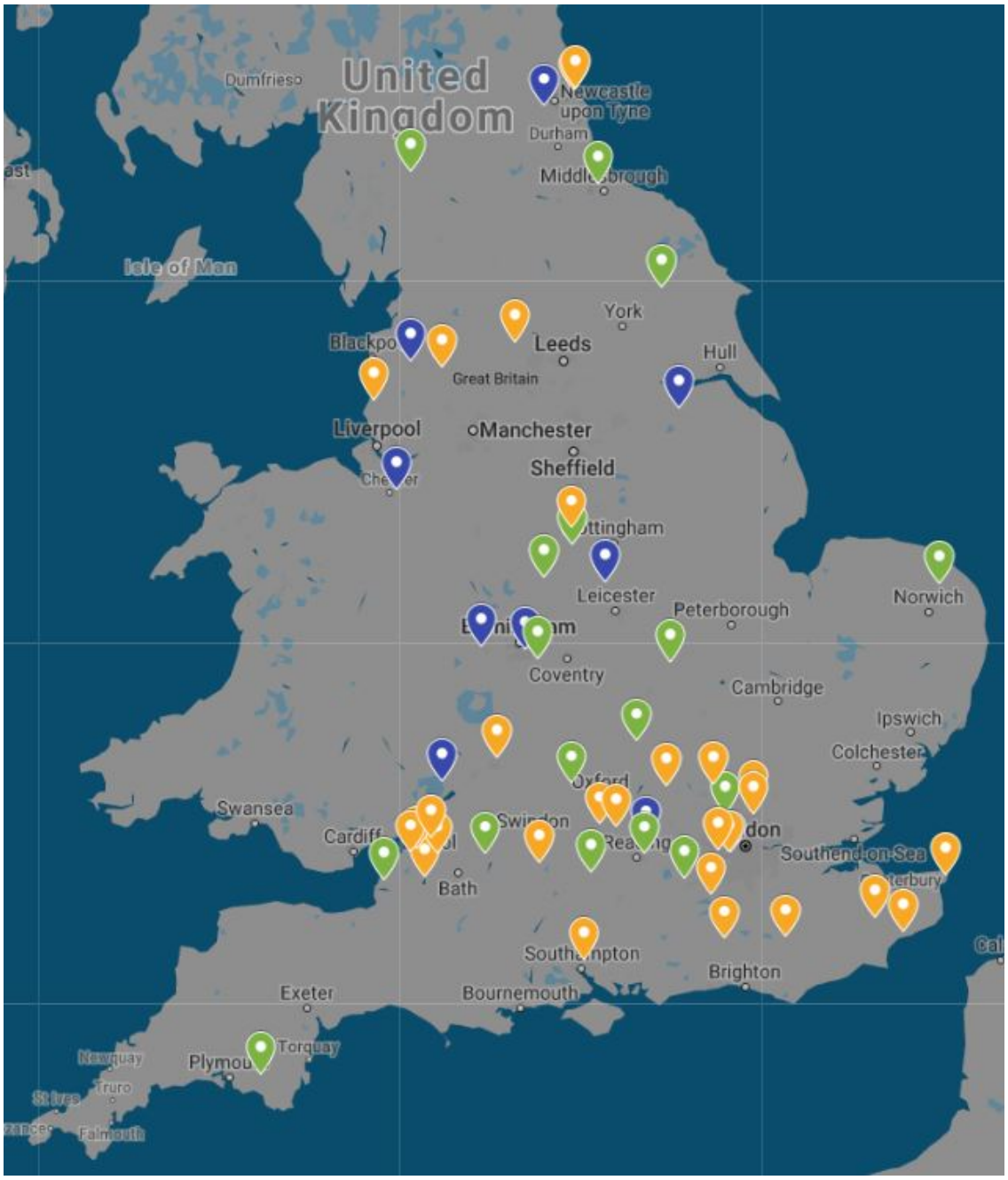
Artificial Grass Pitches

Season 2018-19 saw the first season with data to compare injuries on artificial surfaces compared with grass in the community game. The data showed no difference in the incidence of injuries on the two surfaces but this data should be regarded as preliminary given that is only one season with a limited sample of clubs. Season 2019-20 will see a continuation of data collection in AGP clubs to provide a larger dataset and therefore a greater level of certainty over the findings.

PROJECT METHODS

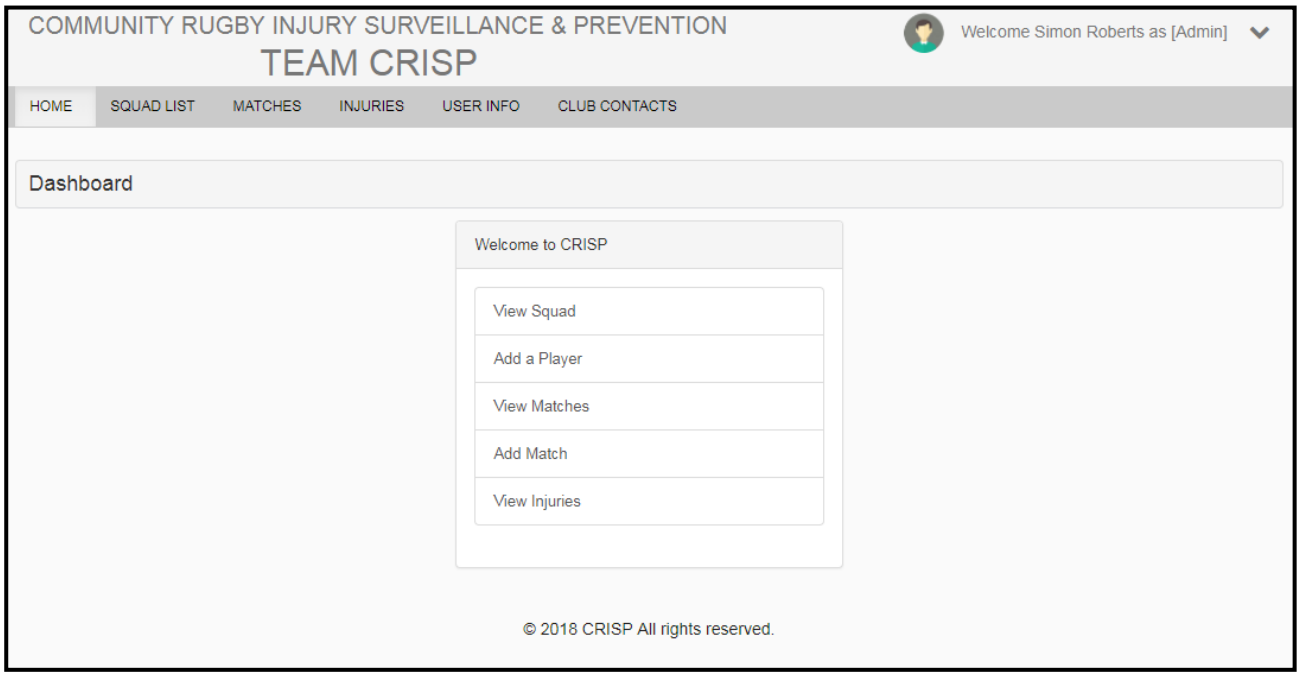
Recruitment

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 51% of clubs who participated in season 2017-18 continuing participation in season 2018-19. The diverse geographical range of participating clubs for the 2018-19 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.



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.

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Many thanks to the coaches and sports injury staff at all participating clubs in the Community Injury Surveillance Project for 2018-19.

Level 3/4: Barnes, Blackheath, Blaydon, Chester, Cinderford, Henley Hawks, Loughborough Students, Preston Grasshoppers, Sedgley Park, Stourbridge, Tynedale.

Level 5/6: Billingham, Brighton, Buckingham, Burton, Chippenham, Chobham, Derby, Hornets, Ivybridge, Malton & Norton, North Walsham, Old Haberdashers, Penrith, Reading, Scunthorpe, Shelford, Walsall, Witney.

Level 7/8/9: Avonmouth Old Boys, Ashford, Aylesbury, Belper, Blackburn, Cheltenham Tigers, Cheshunt, Chew Valley, Chiswick, Crowborough, Didcot, Effingham & Leatherhead, Enfield Ignatians, Folkestone, Gordano, Grasshoppers, Harpenden, Horsham, Keighley, Leighton Buzzard, Marlborough, North Bristol, North Shields, Scarborough, Southport, Thanet Wanderers, Trojans, Wallingford, Whitley Bay Rockliffe

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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

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

Body region	Injury location	Levels 3/4		Levels 5/6		Levels 7/8/9	
		%	Incidence	%	Incidence	%	Incidence
Head/neck	Head	18.9	6.9	27.9	6.7	19.2	4.9
	Neck	0.0	0.0	2.0	0.5	2.1	0.5
	All Head/neck	18.9	6.9	29.9	7.2	21.4	5.4
Upper limb	Shoulder	11.9	4.4	7.6	1.8	14.6	3.7
	Up arm	0.6	0.2	1.0	0.2	0.4	0.1
	Elbow	0.0	0.0	1.0	0.2	1.1	0.3
	Forearm	1.9	0.7	0.0	0.0	0.4	0.1
	Wrist	1.3	0.5	0.5	0.1	0.7	0.2
	Hand	3.8	1.4	6.6	1.6	5.0	1.3
	All Upper limb	19.5	7.1	16.8	4.0	22.1	5.6
Trunk	Chest	4.4	1.6	5.1	1.2	3.9	1.0
	Up back	0.0	0.0	0.0	0.0	0.7	0.2
	Low back	0.0	0.0	2.5	0.6	3.2	0.8
	Stomach	0.6	0.2	0.0	0.0	0.4	0.1
	All Trunk	5.0	1.8	7.6	1.8	8.2	2.1
Lower limb	Groin	3.1	1.2	1.0	0.2	3.2	0.8
	Thigh	6.9	2.5	7.6	1.8	8.9	2.3
	Knee	5.0	1.8	18.3	4.4	11.7	3.0
	Low leg	3.8	1.4	3.0	0.7	4.6	1.2
	Ankle	13.2	4.8	10.7	2.5	9.3	2.4
	Foot	3.1	1.2	1.0	0.2	1.1	0.3
	All Lower limb	35.2	12.9	41.6	10.0	38.8	9.9

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

	Match Quarter			
Season	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
All seasons	20	24	27	29