



**The
Irish Rugby Injury Surveillance
Project**

**All-Ireland League
Amateur Club Rugby**

2021 - 2022 Season Report





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Irish Rugby Football Union Foreword

The Irish Rugby Football Union (IRFU) are committed to player welfare across all areas of the game in Ireland. Following the challenges presented over the last two years due to the global COVID-19 pandemic, particularly in our domestic game, we are encouraged to see our clubs safely return to rugby and resume their vital role within the Irish Rugby Injury Surveillance (IRIS) Project. As we look towards the upcoming 2022-2023 season, understanding the burden of injury and illness following the return to normal training and competition, will help injury prevention and management strategies.

The IRFU is dedicated to enhancing player welfare and improving performance across the game, and results from the IRIS project have led to the development of a nationwide rugby readiness and robustness programme. The IRFU Engage programme was launched in September 2021 to help players prepare for the demands of the game and continue performing to their best.

Together with the University of Limerick, the IRFU are pleased to announce the continued collaboration on the IRIS Project and we look forward to further annual reports from the IRIS Research Team. We are proud to be part of the planned expansion and further development of this world leading long-term project over the next eight years, which will continue providing us with a comprehensive understanding of injuries in rugby in Ireland.

Thank you to each and every club, data collector, volunteer, player and researcher that is part of this project. Your continued support is a fundamental component of how we protect player health and wellbeing.

Dr. Rod McLoughlin



Irish Rugby Injury Surveillance Foreword

Comprehensive injury surveillance systems in amateur Rugby Union are needed to enhance player welfare and this innovative project to date has involved the research, design and implementation of an online injury recording platform. Collection has now been completed of a fourth season's data and this 2021-2022 season report documents our collaborative work with the IRFU, and with 21 male and female All-Ireland League Clubs. The challenges presented by the COVID-19 pandemic and return to sports training and participation were unprecedented and involved a significant effort from the IRFU and the clubs to present and maintain a safe environment. This year's match exposure of 430 was higher than that of the 2019-2020 season, which was shortened due to the onset of the COVID-19 pandemic. This season represents 430 matches, over 838 players, and support from dedicated data injury recorders, coaches, doctors, physiotherapists, managers, and ancillary staff within clubs: thank you. The IRIS project includes the addition of schools surveillance for both senior cup and junior cup (reported separately).

The IRIS project involves research stemming from ongoing injury prevention and sports performance work by University of Limerick academics across a range of sports, as well as our specific expertise in Rugby Union. It has effectively brought together academics with expert practitioner experience from the fields of biomechanics, medicine, biomedical engineering, mathematics and statistics, physiotherapy, sport psychology, and strength and conditioning as well as post-doctoral and doctoral researchers. The holistic approach to injury surveillance and prevention is central to the project.

IRIS Principal Investigators

Dr. Tom Comyns, PhD

Prof. Ian Kenny, PhD



1.0 Executive Summary

1.1 Match Injuries

Starting in September 2021, the Irish Rugby Injury Surveillance (IRIS) project collected injury data across 430 matches from 21 men's and women's amateur Rugby clubs. This year's match exposure was higher than that of the 2019-2020 season (388 matches), which was shortened due to the onset of the COVID-19 pandemic. Due to the pandemic, there was no 2020-2021 competitive season.

Men's AIL

- There were 17 men's clubs involved in the IRIS project (8 Division One, 9 Division Two clubs).
- There were a total of 709 male players registered in the IRIS project (330 Division One, 379 Division Two players).
- **The overall match time-loss injury incidence rate for males was 55.0/1,000 player hours.**
 - This is higher than the overall match time-loss injury incidence rate for males during the 2019-2020 season (49.1/1,000 player hours).
 - The match time-loss injury incidence rate for Division One males was 59.2/1,000 player hours
 - The match time-loss injury incidence rate for Division Two males was 51.2/1,000 player hours
- A single male player would have to play approximately 14 matches to sustain one injury.

Women's AIL

- There were 4 women's clubs involved in the IRIS project.
- There were a total of 129 female players registered in the IRIS project.
- **The overall match time-loss injury incidence rate for females was 29.8/1,000 player hours.**
 - This is lower than the overall match time-loss injury incidence rate for females during the 2019-2020 season (34.9/1,000 player hours).
- A single female player would have to play approximately 25 matches to sustain one injury.

1.2 Training Injuries

- There were a total of 93 training injuries reported in the men's clubs.
- This is higher than the total number of training injuries reported in the 2019-2020 season (48 injuries) but lower than the 2018-2019 season (121 injuries).
- There was a total of 52 training injuries in Division One men's clubs.
- There was a total of 41 training injuries in Division Two men's clubs.

There was a total of 9 training injuries reported in the women's clubs.

- This is higher than the number of training injuries in the 2019-2020 season (7 injuries) but lower than the total number of training injuries reported in the 2018-2019 season (11 injuries).

1.3 Injury Occurrence

The most commonly reported match injuries for the men's clubs were concussion (13%), followed by ankle ligament sprains (9%). Concussion injuries resulted in an average of 27 days' absence from Rugby match or training activities, while ankle ligament sprains resulted in an average of 32 days' absence.

The most commonly reported match injuries for the women's clubs were concussion (10%), ankle ligament sprains (8%), and hand/finger ligament sprains (8%). Concussion injuries resulted in an average of 51 days' absence from Rugby match or training activities, while ankle ligament sprains resulted in an average of 21 days' absence.

1.4 Injury Event

The tackle event accounted for the majority of match injuries, with 53% of all injuries happening during the tackle in the men's clubs, and 68% in the women's clubs. Within the tackle event, in line with previous reports for the women's clubs, the ball carrier (61%) sustained more injuries compared to the tackler (39%). In the men's clubs however, the data were similar between the tackler (49%) and ball carrier (51%).

1.5 Playing Position

Of all match injuries recorded in the men's clubs, 58% were to the 'forwards' (position no. 1-8), while 42% were to the 'backs' (position no. 9-15). By position, the hooker (no. 2) along with the blindside flanker (no. 6) accounted for the most injuries at 11% each, while the No. 8 and the fullback (no. 15) had the second highest proportion of injuries with 9% each.

Of all match injuries recorded in the women's clubs, 69% were to the forwards (position no. 1-8), while 31% were to the backs (position no. 9-15). The blindside flanker (no. 6) and winger (no. 11) had the highest proportion of match injuries with 17% each.

1.6 Injury Burden

The burden of an injury assesses the incidence rate of an injury in relation to the average severity of the injury (measured as the number of days absent).⁽³⁾

Knee sprains carried the greatest burden of all match injuries for the men's clubs (cumulatively with 250 days absence/1,000 player hours) with an average severity of 95 days per sprain, while for women's clubs toe fractures carried the greatest injury burden (232 days/1,000 player hours) with an average severity of 320 days per fracture. In the 2019-2020 season concussion injury burden was the greatest at 262 days/1,000 player hours, with anterior cruciate ligament sprains of the knee at 573 days/1,000 player hours producing the highest injury burden for women's clubs.

1.7 New & Recurrent Injuries

The majority of all injuries were 'New' compared to 'Recurring'. For all medical attention injuries across the men's and women's clubs, 93% were new injuries compared to 7% recurrent. For time-loss injuries reported in the men's clubs, new injuries accounted for 94%, with 93% in the women's clubs recorded as new.



2.0 Introduction

2.1 The IRIS Project

The Irish Rugby Injury Surveillance (IRIS) project has developed and implemented the first long-term Rugby Union specific injury surveillance system within amateur Rugby Union in Ireland. This system monitors the incidence, nature and severity of both match and training injuries occurring across the amateur game in Ireland. By monitoring this information, injury trends may emerge which will aid in the continued development and implementation of evidence-based injury reduction strategies in order to minimise injury risk and enhance player welfare.

IRIS Aims:

- To develop and implement an injury surveillance system for amateur Rugby Union in Ireland.
- To monitor the incidence and type of injuries occurring and identify any possible injury risk factors.
- To enhance the health and welfare of Rugby Union players by using this information to assist the IRFU policy regarding injury reduction strategies.



2.2 Injury Definitions

The IRIS project follows the guidelines from the World Rugby 'Consensus statement on injury definitions and data collection procedures for studies of injuries in Rugby Union'⁽¹⁾ and the 'International Olympic Committee (IOC) consensus statement: methods for recording and reporting of epidemiological data on illness and injury in sport 2020 (including STROBE Extension for Sport Injury and Illness Surveillance (STROBE-SIIS))'.⁽²⁾

An injury is defined as "Any physical complaint, which was caused by a transfer of energy that exceeded the body's ability to maintain its structural and/or functional integrity that was sustained by a player during a Rugby match or Rugby training, irrespective of the need for medical attention or time-loss from Rugby activities."⁽¹⁾

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.

A dual injury is one of multiple diagnoses resulting from one injury event. Dual injuries were analysed as one injury event for the purposes of calculating overall incidence and injury severity. However, when analysing injury location and nature dual injuries were separated as per international best practice.^(1,2)

Both time-loss and medical attention injuries have been monitored and analysed separately. Medical attention injuries are any injury that resulted in 0-1 days absent from Rugby match or training activities (i.e. slight injuries). Any injury that results in greater than 1 days' absence from match or training activities is classed as a time-loss injury and categorised according to injury severity. Only time-loss injuries were included in injury incidence rate calculations.^(1,2)

Injury severity is calculated as the number of days that elapsed from the date of injury to the date of the player's return to full participation in training and availability for match selection. Injury severity is classified as; slight (0-1 days), minimal (2-3 days), mild (4-7 days), moderate (8-28 days) and severe (>28 days).

Match injury data are presented as the number of injuries per 1,000 player hours of match exposure. In order to calculate match injury incidence rates, the following calculation was used:

Team match injury incidence rate (IR):

$$IR = \frac{\text{number of injuries}}{\text{number of matches} \times \text{number of players (15)} \times \text{match duration (1.33)}} \times 1,000$$

2.3 Recruitment

At the beginning of the 2021-2022 season, the IRIS team successfully recruited 25 clubs from the men's and women's All-Ireland League (AIL). The 2019-2020 season was discontinued abruptly in March 2020 due to the global COVID-19 Pandemic, followed by the cancellation of the 2020-2021 competitive season, and therefore the results of this current report should be considered in light of no competitive amateur Rugby for approximately 16 months ahead of the 2021-2022 season. The Men's AIL is split into two divisions; Division One (Men's AIL 1) and Division Two (Men's AIL 2).

The IRIS project had an 84% compliance rate (21/25 teams recruited) for the 2021-2022 season in comparison to 83% in the 2019-2020 season. These clubs are shown in Table 1.

Table 1: The IRIS clubs 2021-2022

	Men's AIL	Women's AIL
Number of clubs	17 (Division 1 = 8; Division 2 = 9)	4
Number of players	709 (Division 1 = 330; Division 2 = 379)	129

Each club nominated an 'injury recorder', who was trained on use of the IRIS system during the pre-season training of the 2021-2022 season. In the majority of clubs (86%), the physiotherapist or physical therapist to the Senior 1XV acted as the injury recorder. Each injury recorder was given a secure and confidential login to their own club's home-page on the IRIS system. Each club registered all players involved with the Senior 1XV on the IRIS system. Beginning with the start of the Rugby season in September 2021, the injury recorder documented all injuries occurring to the Senior 1XV male or female team. The injury recorders also reported when a player returned to play so that injury severity data could be calculated.



3.0 Match Injuries

3.1 Overall Time-loss Match Injuries

For the 2021-2022 season, injury data from 21 clubs across 430 matches were collected.

A total of 437 match time-loss injuries (any injury resulting in more than 1 days' absence from Rugby match or training activities) were recorded. Any injuries resulting in 0-1 days' absence from Rugby match or training activities (slight injuries) were classified as 'medical attention injuries' and were not included in the analysis of time-loss injuries, as per international best practice.⁽¹⁾

The overall team match time-loss injury incidence rates:

- Men's teams – 55.0/1,000 player hours.
- Women's teams – 29.8/1,000 player hours.
- This is approximately one time-loss injury every match for the men's teams and one every second match for the women's teams.
- A male player would have to play 14 matches in order to suffer one injury.
- A female player would have to play 25 matches in order to suffer one injury.

Table 2 shows the overall team match time-loss injury incidence rate for the Division One men's clubs (Men's AIL 1), the Division Two men's clubs (Men's AIL 2) and the women's clubs (Women's AIL).

Table 2: Match time-loss injuries (excluding 'slight' injuries).

Division	No. Clubs	No. Players	No. Matches	Exposure Hours	No. Injuries	IR*
Men's AIL 1	8	330	171	3411	202	59.2
Men's AIL 2	9	379	190	3791	194	51.2
Overall men's clubs	17	709	361	7202	396	55.0
Women's AIL	4	129	69	1377	41	29.8
Overall women's clubs	4	129	69	1377	41	29.8

*IR – Incidence rate per 1,000 player hours

- 26% of match time-loss injuries required medical imaging (X-Ray, MRI, Ultrasound etc).
- 2% of the men's match time-loss injuries were turf-burns from an artificial pitch, no burns were reported in the women's clubs.

3.2 Match Injury Classification

The injury diagnosis refers to the specific bodily location and nature of the injury.

The most common injury diagnoses for the men's clubs were concussion, followed by ankle sprains, accounting for 13% and 9% of all time-loss match injuries respectively.

Similarly, the most common time-loss match injury diagnoses for the women's clubs were concussion 10%, ankle sprains 8%, and finger sprains 8%.

Tables 3 and 4 show the top three most common match time-loss injury diagnoses for all the men's and women's clubs for the current season (2021-2022), and the three prior seasons (2019-2020, 2018-2019, 2017-2018).

Table 3:¹ Overall most common injury diagnoses for the men's clubs (IR/1,000 player hours, % of injuries)

Men's Clubs			
2021-22	2019-20	2018-19	2017-18
Concussions 7.6 (13%)	Concussions 7.1 (14%)	Concussions 5.3 (11%)	Concussions 6.1 (12%)
Ankle sprains 5.3 (9%)	Ankle sprains 4.5 (9%)	ATFL sprains 4.1 (9%)	ATFL sprains 5.7 (11%)
Hamstring strains 4.6 (8%)	Hamstring strains 2.9 (6%)	Hamstring strains 3.9 (8%)	Hamstring strains 4.1 (8%)

Table 4:² Overall most common injury diagnoses for the women's clubs (IR/1,000 player hours, % of injuries)

Women's Clubs			
2021-22	2019-20	2018-19	2017-18
Concussions 3.6 (10%)	Concussions 5.6 (16%)	Concussions 5.3 (19%)	Concussions 5.1 (11%)
Ankle sprains 2.9 (8%)	Ankle sprains 4.8 (14%)	ATFL sprains 3.4 (12%)	ATFL sprains 5.1 (11%)
Finger sprains 2.9 (8%)	Knee sprains 4.0 (11%)	Knee MCL sprains 2.9 (11%)	Rotator Cuff strains 3.2 (7%)

¹ An 'ATFL sprain' (anterior talo-fibular ligament sprain) refers to a tear of the ligament located on the outside of the ankle joint. It is also called an inversion sprain or lateral ligament sprain.

'Ankle sprains' are inclusive of lateral, medial and high ankle sprains.

A 'hamstring strain', refers to a tear of the muscle group located on the back (posterior aspect) of the thigh.

² A 'rotator cuff strain', refers to a tear of any of the four tendons that surround the shoulder joint.

A 'knee MCL sprain' (medial collateral ligament) refers to a tear of the ligament on the inner part (medial aspect) of the knee joint.

'Knee sprains' are inclusive of all ligaments of the knee (anterior cruciate ligament or ACL, posterior cruciate ligament or PCL, medial collateral ligament or MCL, and lateral collateral ligament or LCL).

Table 5 shows the top three most common match time-loss injury diagnosis for each of the men's divisions (Division One and Division Two) during the 2021-2022 season.

Table 5:³ Most common injury diagnoses for each men's Division One and Division Two (IR/1,000 player hours, % of injuries)

Men's AIL 1	Men's AIL 2
Concussion 9.7 (16%)	Concussion 5.8 (11%)
Ankle sprains 6.7 (11%)	Ankle sprains 4.0 (7%)
Hamstring strains 5.9 (9%)	Hamstring strains 3.4 (6%)

Similar to the 2019-2020 season, the head was the most commonly injured bodily location in the men's clubs, accounting for 16% of all injuries.



³ 'Ankle sprains' are inclusive of lateral, medial and high ankle sprains.
A 'hamstring strain', refers to a tear of the muscle group located on the back (posterior aspect) of the thigh.

For the women's clubs, the most commonly injured bodily locations were the ankle and face, accounting for 17% of all injuries each. Comparatively, in the 2019-2020 season the head was the most commonly injured site with 21% of injuries.

Tables 6 and 7 show the most common diagnoses for each commonly injured bodily location.

Table 6: Men's Clubs: Most common injury diagnoses with regards bodily location (IR/1,000 player hours, % of injuries)

Location	Diagnosis
Head 8.7 (16%)	Concussion 7.6 Lacerations 1.1
Knee 7.2 (13%)	Ligament sprains 2.9 Contusions 1.7 Cartilage/Bursa 1.5
Shoulder 6.5 (12%)	ACJ sprains 2.6 Rotator cuff strains 1.5 GHJ dislocations 1.1

Table 7:⁴ Women's Clubs: Most common injury diagnoses with regards bodily location (IR/1,000 player hours, % of injuries)

Location	Diagnosis
Ankle 5.1 (17%)	Ligament sprains 2.9 Fractures 1.5
Face 5.1 (17%)	Contusions 1.5 Broken nose 1.5 Lacerations 1.5
Shoulder 2.9 (10%)	ACJ sprains 0.7 Rotator Cuff strains 0.7 Neurological (e.g. 'Stinger') 0.7

⁴ An 'ACJ sprain' (acromio-clavicular joint sprain) refers to a tear of the ligaments that connect the collar bone (clavicle) to the shoulder (glenohumeral joint).
A 'rotator cuff strain', refers to a tear of any of the four tendons that surround the shoulder joint.

3.3 Timing of Match Injury

The majority of injuries occurred in the 2nd half amongst both the men's (55%) and women's teams (73%).

The men's clubs again saw a rise from 1st quarter to 4th quarter this season, similar to the previous two seasons (2018-2019 and 2019-2020 seasons). In the 2017-2018 season however, the men's clubs saw a decline from 3rd quarter to 4th quarter. Figure 1(a) shows the timing of match injury for the men's clubs comparing this season (2021-2022) to the previous three seasons (2019-2020, 2018-2019, 2017-2018).

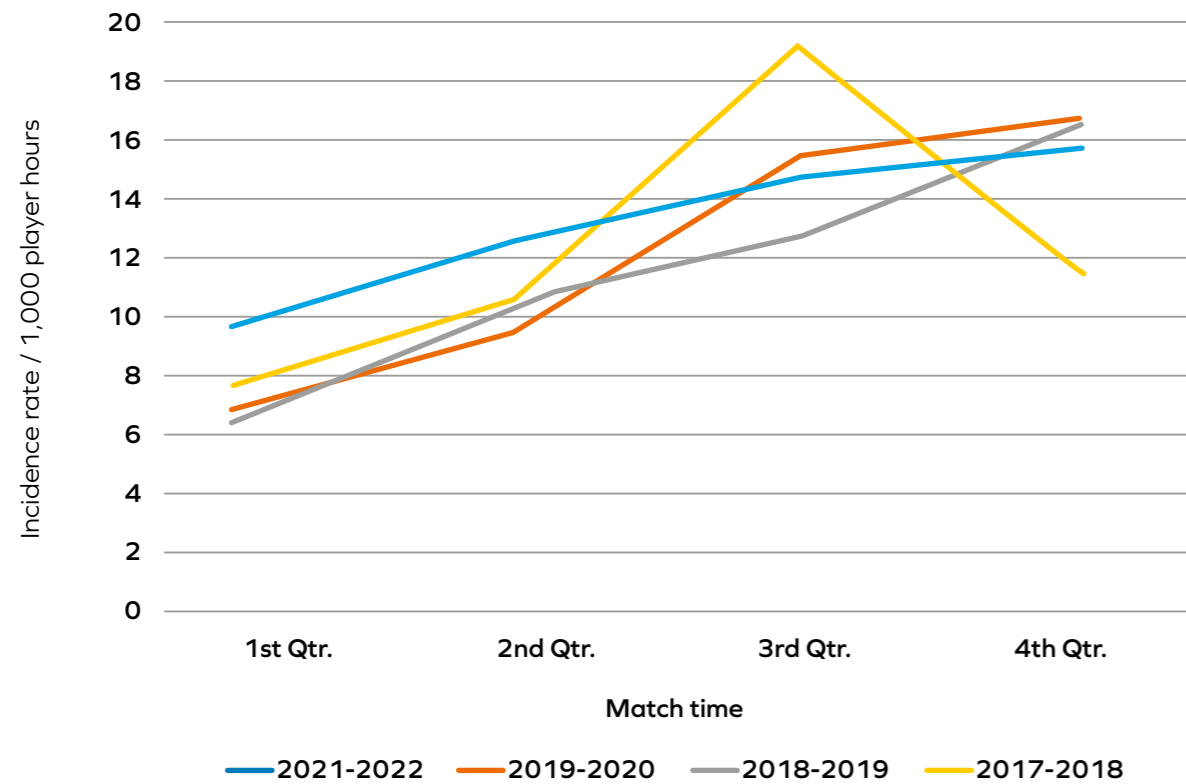


Figure 1(a): Timing of injury during match play for the men's clubs (IR/1,000 player hours)

During the 2021-2022 season, the women's clubs saw a spike in the 3rd quarter, very similar to that of the 2019-2020 season. During the first two seasons, the women's injury incidence plateaued after the 2nd quarter, with a slight increase towards the 4th quarter observed in the 2018-2019 season. Figure 1(b) shows the timing of match injury for the men's clubs comparing this season (2021-2022) to the previous three seasons (2019-2020, 2018-2019, 2017-2018).

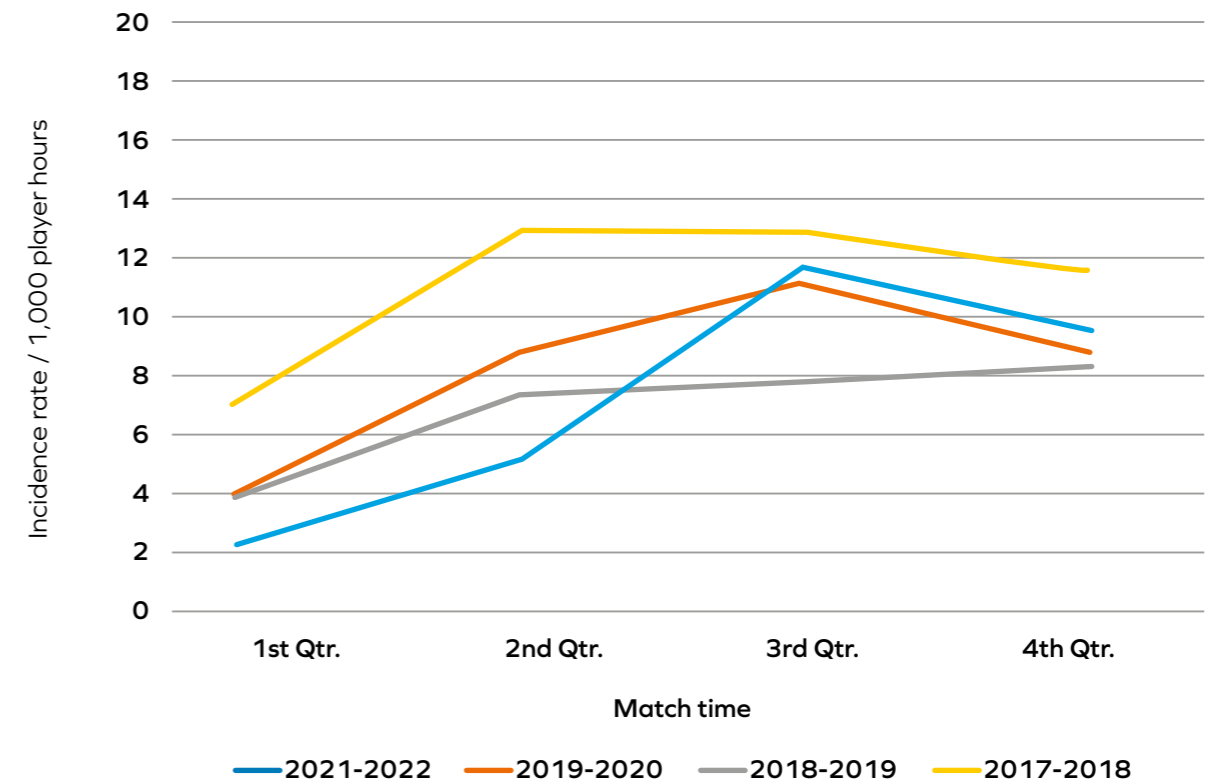


Figure 1(b): Timing of injury during match play for the women's clubs (IR/1,000 player hours)

3.4 Match Injury Event

Figure 2 shows the event surrounding the occurrence of an injury (i.e. mechanism).

The tackle event has accounted for the majority of injuries across both the men's and women's clubs for four seasons in a row. For the women's clubs specifically, the ball carrier (i.e. being tackled) has reported higher injuries than the tackler every season.

The tackler (49%) and ball carrier (51%) this season had similar rates of tackle-related injuries in the men's clubs. Whereas in both the 2019-2020 and 2018-2019 seasons, the tackler sustained a higher rate of injuries compared to the ball carrier for tackle-related injuries, when in the 2017-2018 season the ball carrier had a higher rate of injuries during the tackle event.

Updates were made to IRISweb following the 2019-2020 season, including the addition of 'accidental collision/contact' and 'aerial duel' as mechanisms. Accidental collisions were responsible for 12% of injuries in the women's clubs, and 5% in the men's clubs. The men's clubs also reported a small proportion (5%) of aerial duel injuries this season, whereas no injuries were reported from aerial duels in the women's clubs.

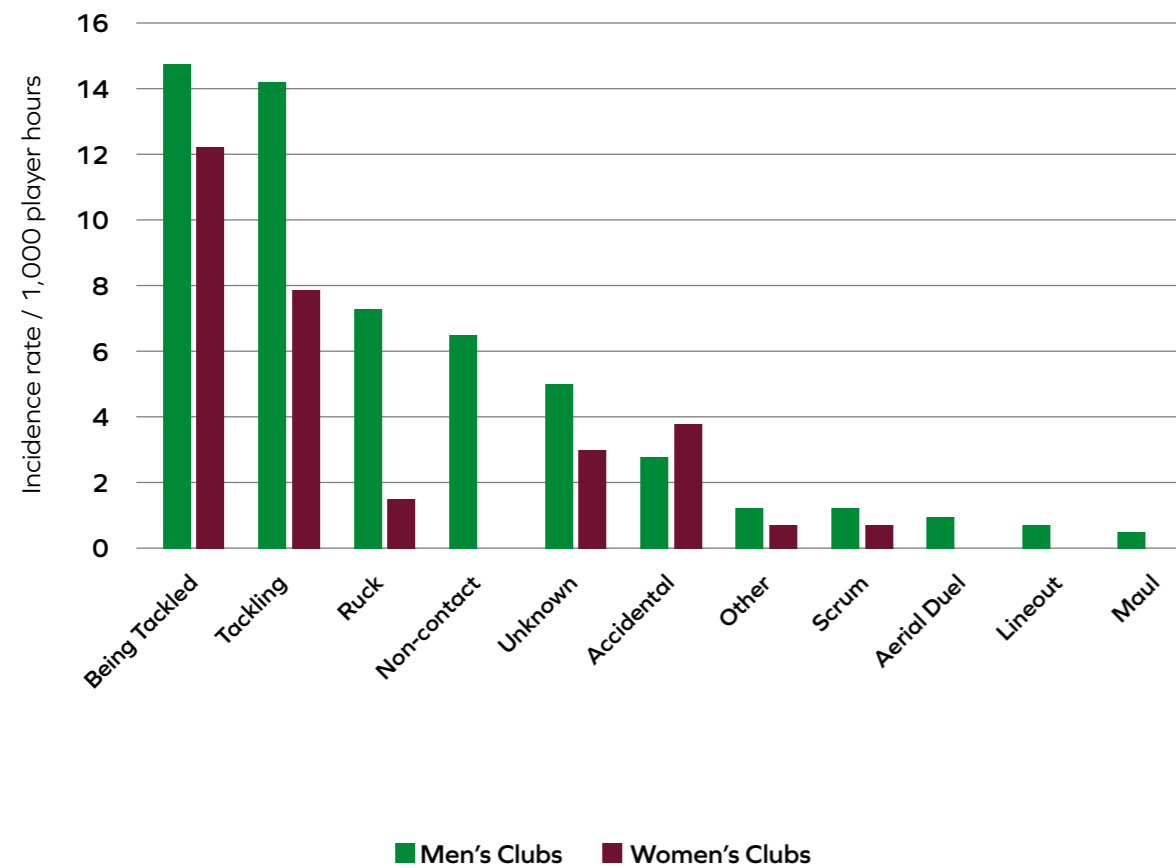


Figure 2: Injury event (IR/1,000 player hours)

3.5 Nature of Match Injury

The nature of injury refers to the type of injury occurring.

Sprains (referring to ligament tears) were the most common injury type for the men's clubs, followed by strains (referring to muscle or tendon tears). While sprains and strains have been the top two types of injury in every season for both the men's and women's clubs, the 2021-2022 season is the first to report the men's clubs having sustained more sprains than strains, with the women's clubs reporting more sprains in every season since 2017-2018.

The column labelled 'Other' refers to a small proportion of reported injuries including; dental, eye, fascia or throat injuries. Other injuries accounted 3% and 2% of all injuries in the men's and women's clubs respectively.

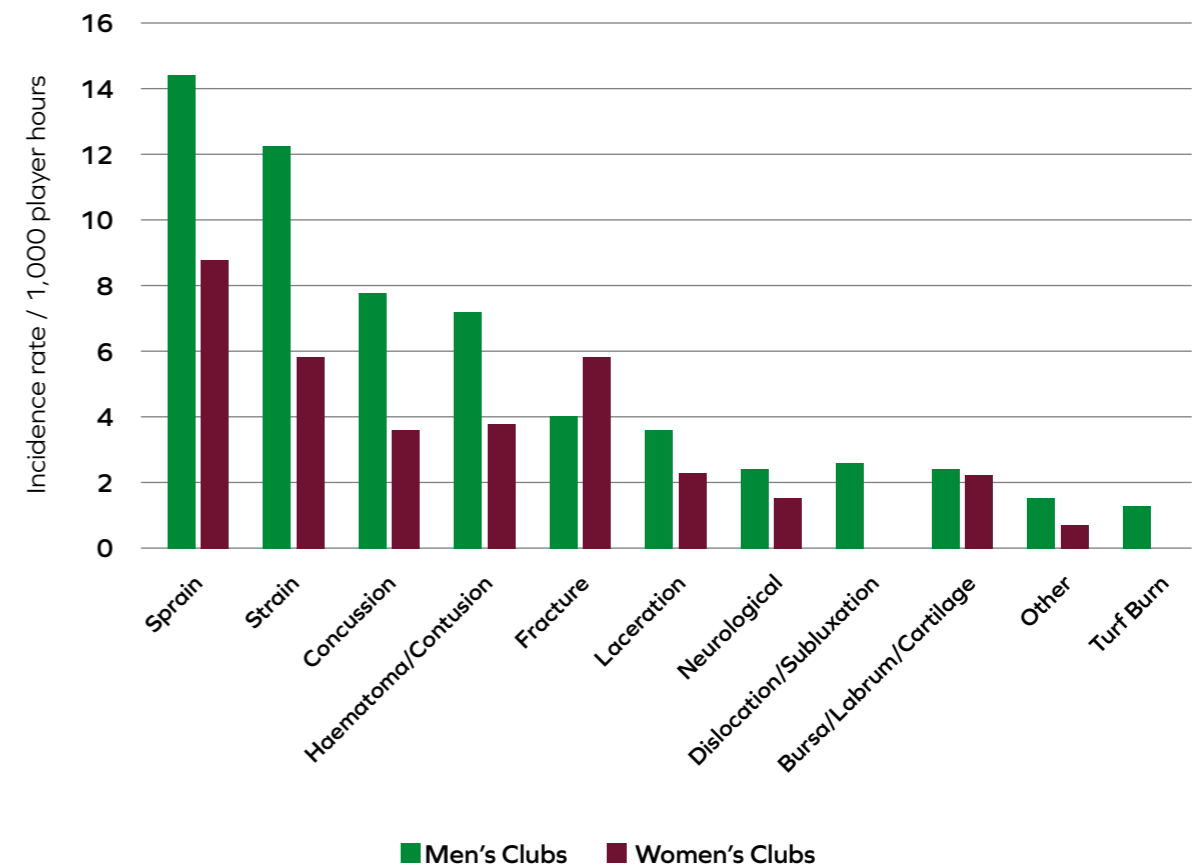


Figure 3: Nature of injury (IR/1,000 player hours)

3.6 Body Location of Match Injury

The head and knee were the top two most commonly injured bodily areas in the men's clubs again this year accounting for 16% and 13% of injuries respectively. The shoulder was ranked third this season at 12% of all injuries in contrast to the first two seasons where it ranked highest.

In 2021-2022, at 4.6/1,000 player hours, the posterior thigh saw its' highest rate of injury incidence reported in the men's clubs (2019-2020: 3.1; 2018-2019: 3.8; 2017-2018: 4.6/1,000 player hours).

Figure 4(a) shows the incidences of injury according to bodily location for the men's clubs.

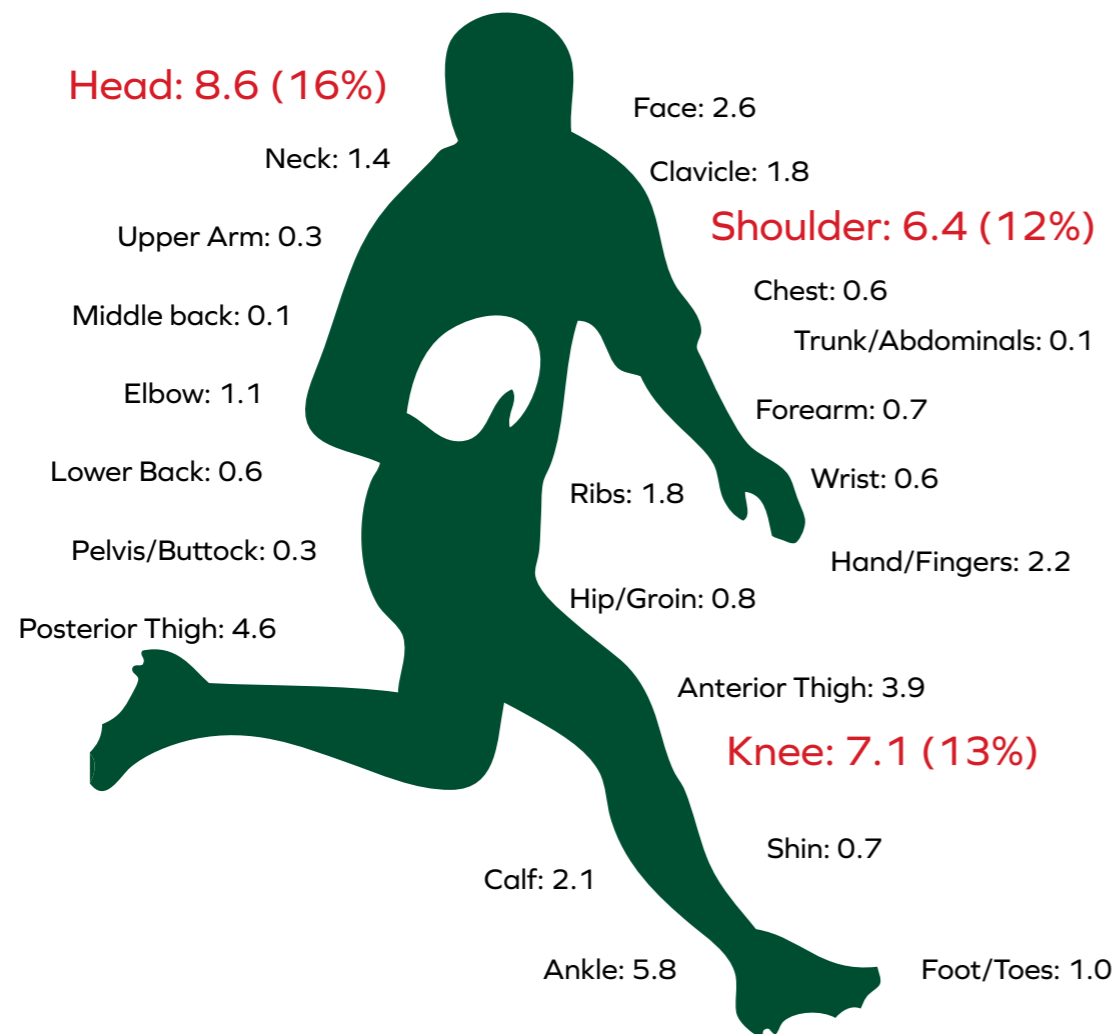


Figure 4(a): Location of injury for the men's clubs (IR/1,000 player hours)

The face and ankle replaced the head as the most commonly injured area in the women's clubs this season, receiving 17% of injuries each. This is followed by the head, shoulder and hand each with a frequency of 10% of all injuries.

The knee sustained an injury incidence rate of 1.5/1,000 player hours, in comparison to rates of 6.3/1,000 player hours in both the 2019-2020 and 2018-2019 seasons, and 4.5/1,000 player hours in the 2017-2018 season.

Figure 4(b) shows the incidences of injury according to bodily location for the women's clubs.

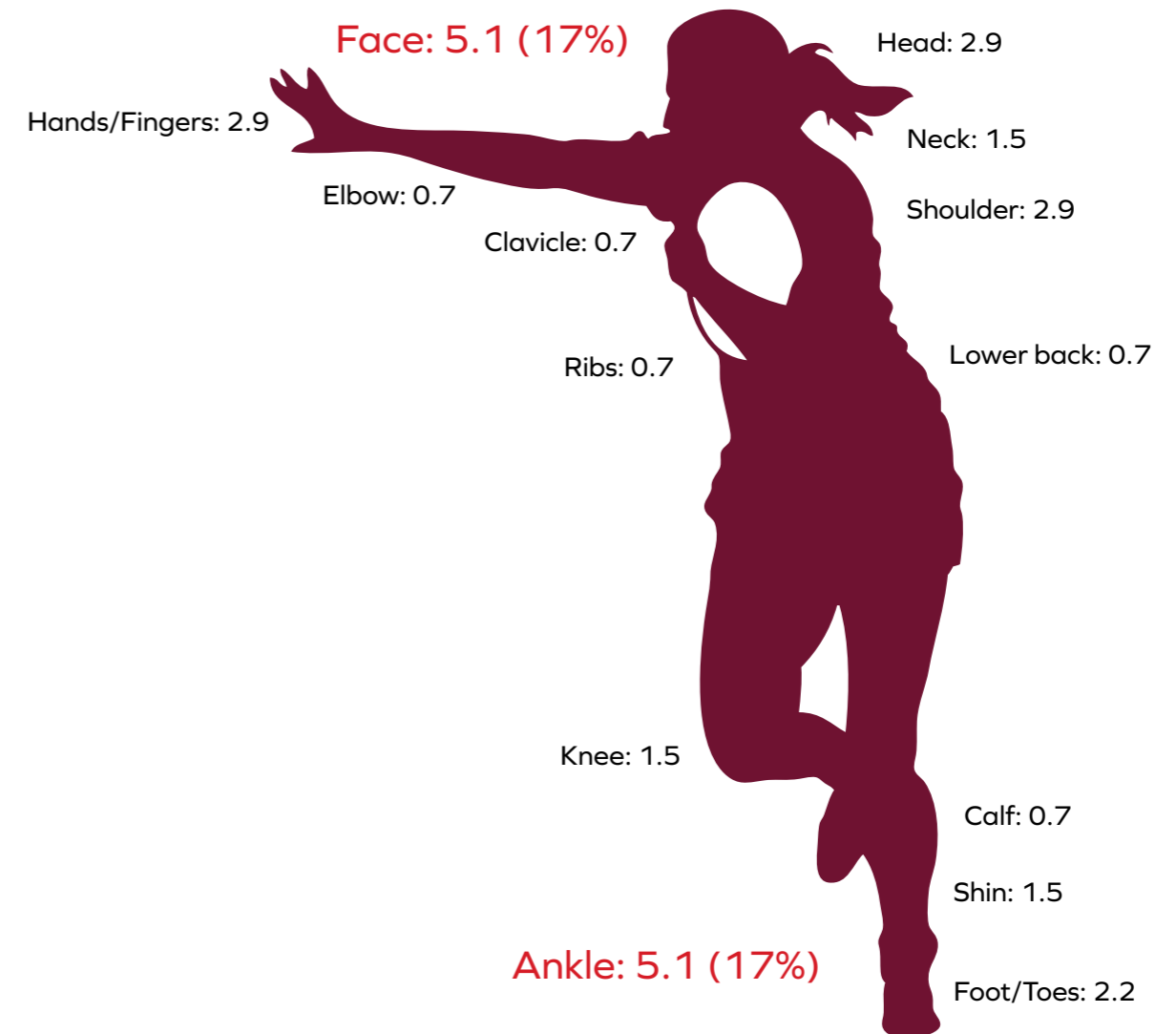


Figure 4(b): Location of injury for the women's clubs (IR/1,000 player hours)

3.7 Playing Position of Match Injury

Rugby player positions are split into 'forwards' (position no. 1-8) and 'backs' (position no. 9-15). Forwards (58%) sustained more reported injuries than the backs (42%) in the 2021-2022 season, in-line with the prior three seasons.

By position, the blindside flanker (no. 6) and the hooker (no. 2) received the most reported injuries, each accounting for 11% of all match time-loss injuries for the men's clubs. The full back (no. 15) and no. 8 accounted for 9% of injuries each as seen in Figure 5(a).

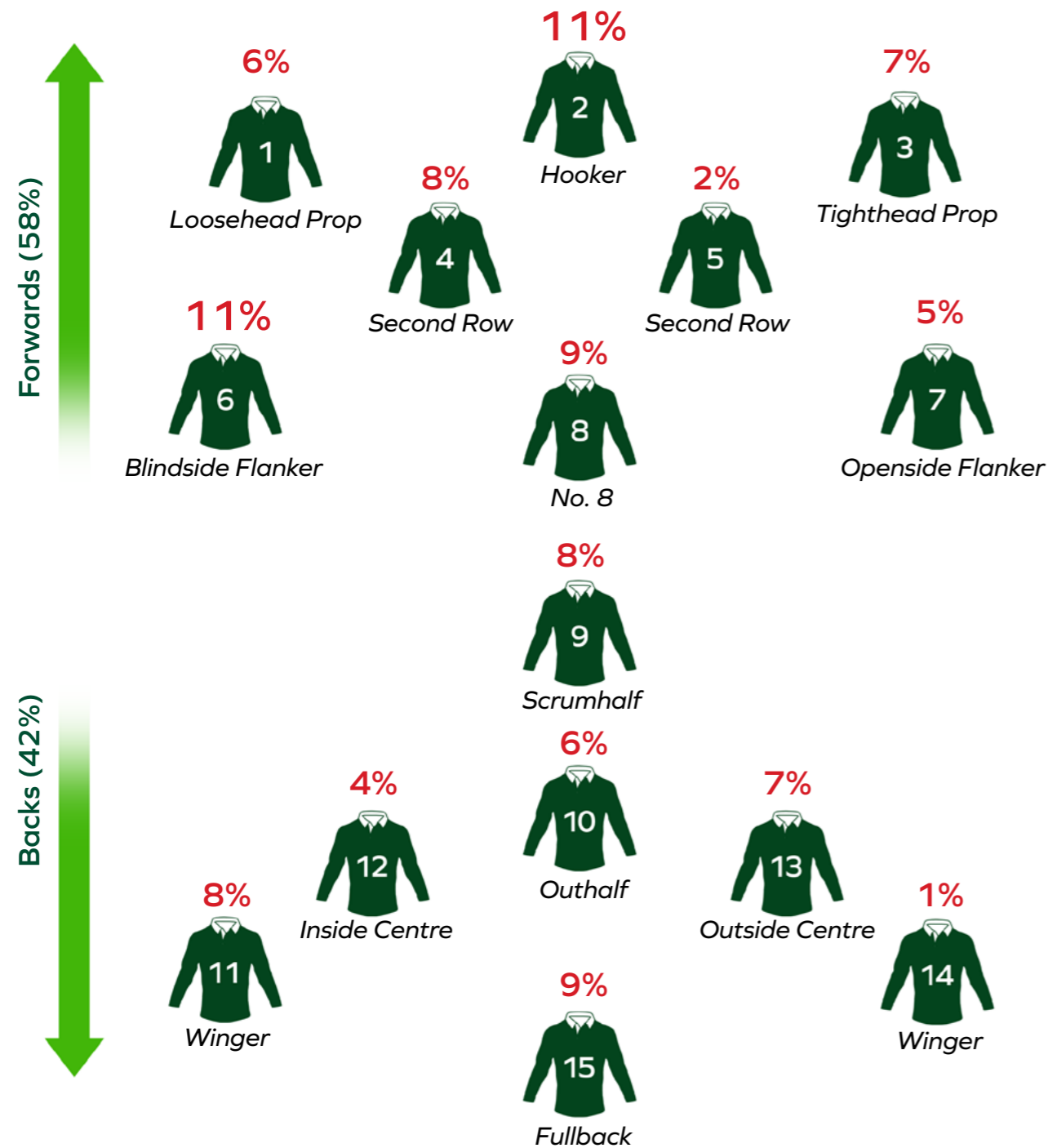


Figure 5(a)⁶: Percentage of injuries occurring per playing position in the men's clubs.

⁶ Figure 5(a) is cumulatively 100% without whole number mathematical rounding.

Overall for the women's clubs, forwards sustained 69% of the injuries during the 2021-2022 season. The two positions which sustained the most injuries were the blindside flanker (no. 6) and wing (no. 11) with 17% of all reported injuries each. In the 2019-2020 season, the outhalf (no. 10) and outside centre (no. 13) sustained the most injuries in the women's clubs with 14% of all injuries.

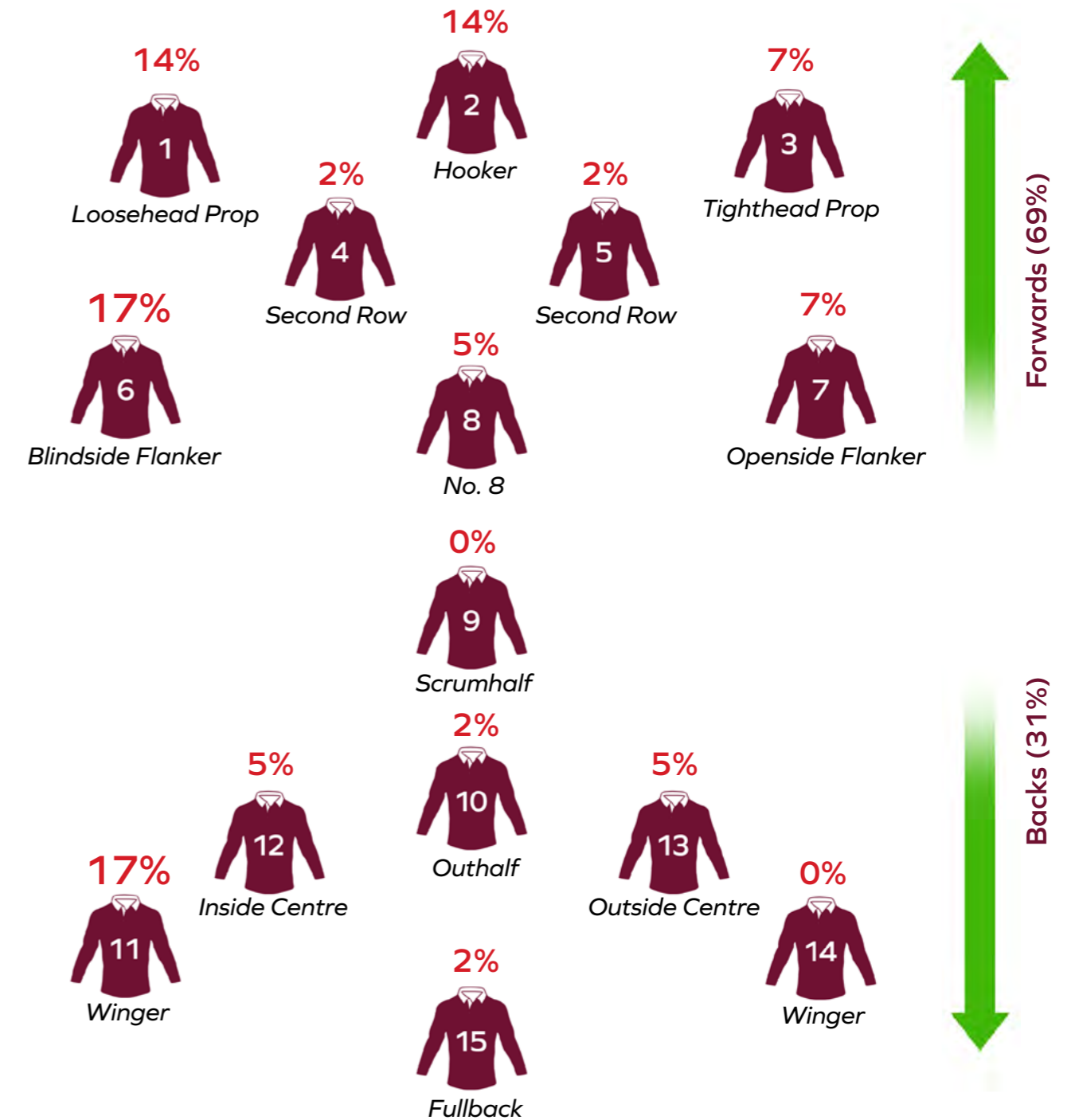


Figure 5(b)⁷: Percentage of injuries occurring per playing position in the women's clubs

⁷ Figure 5(b) is cumulatively 100% without whole number mathematical rounding.



3.8 Match Injury Severity

Injury severity was calculated as total number of days absent from Rugby match or training and classified according to the World Rugby Consensus guidelines.⁽¹⁾ In line with the 2019-2020 season, most injuries had 'moderate' or 'severe' time-loss for both men's and women's clubs, as shown in Figure 6.

Slight injuries (0-1 days absence) were considered as 'medical attention' injuries and were not included in analysis of time-loss injuries.⁽¹⁾ Slight injuries are discussed in more detail in sub-section 3.10.

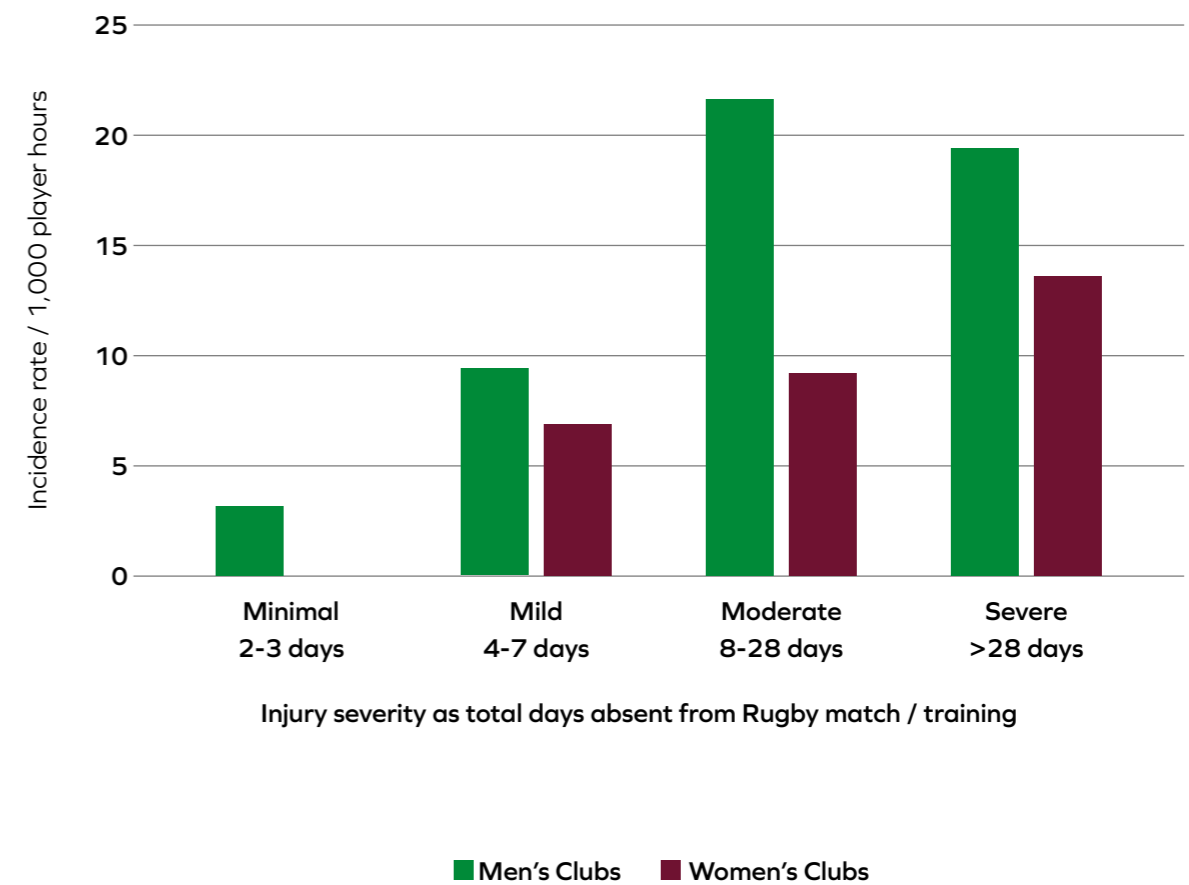


Figure 6: Injury severity of time-loss injuries (IR/1,000 player hours)

3.9 Match Injury Burden

The burden of an injury assesses the incidence rate of an injury in relation to the average severity of the injury ([IR] x [average number of days' absence]).

Knee sprains carried the greatest burden of all match injuries for the men's clubs (250 days/1,000 player hours), while for women's clubs toe fractures carried the greatest injury burden (232 days/1,000 player hours). In the 2019-2020 season, the cumulative injury burden of concussion injuries was the greatest at 262 days/1,000 player hours, with anterior cruciate ligament sprains of the knee at 573 days/1,000 player hours resulting in the highest cumulative injury burden for women's clubs.

Concussions had the second greatest injury burden this year for both men's and women's clubs, with a rate of 207 days/1,000 player hours and 184 days/1,000 player hours respectively. For the men's clubs, concussions resulted in an average of 27 days' (compared to 38 days in the 2019-2020 season) absence from Rugby match or training, and 51 days' (compared to 53 days in the 2019-2020 season) average absence for the women's players.

Adult players over the age of 20 will not return to contact sport until 21 days following the concussion but they will be allowed to do more low-risk activities and exercise in the first two weeks.

Table 8 shows the highest injury burden and average total days off for all the men's and women's clubs.

Table 8:⁸ Diagnosis, Injury Burden (days absence/1,000 player hours), average TDO (total days off)

	Diagnosis	Injury Burden	Average TDO
Men's Clubs	Knee sprains	250	95
	Concussions	207	27
	Ankle sprains	155	32
Women's Clubs	Toe fractures	232	320
	Concussions	184	51
	Fibula fractures	136	187

⁸ 'Knee sprains' are inclusive of all ligaments of the knee (anterior cruciate ligament or ACL, posterior cruciate ligament or PCL, medial collateral ligament or MCL, and lateral collateral ligament or LCL).

'Ankle sprains' are inclusive of lateral, medial and high ankle sprains.

'Toe fractures' are inclusive of metatarsals (forefoot) and phalanx fractures.

'Fibula fractures' refer to a fracture of the fibula, a lower leg bone adjacent to the shin.

3.10 Medical Attention Match Injuries (slight injuries)

Any injuries resulting in 0-1 days' absence from Rugby match or training are considered as slight or 'medical attention' injuries, therefore were excluded from the analysis of time-loss injuries as per international best practice.⁽¹⁾

During the 2021-2022 season, 7 medical attention injuries were recorded in the men's clubs, with an additional 6 recorded for the women's clubs.

The overall team match medical attention injury incidence rates:

Men's AIL clubs – 1.1/1,000 player hours

Women's AIL clubs – 4.4/1,000 player hours

Table 9: Match medical attention injuries (slight injuries) per division

Division	No. Clubs	No. Players	No. Matches	Exposure Hours	No. Injuries	IR*
Men's AIL 1	8	330	171	3411	4	1.2
Men's AIL 2	9	379	190	3791	3	0.8
Overall men's clubs	17	709	361	7202	7	1.0
Women's AIL	4	129	69	1377	6	4.4
Overall women's clubs	5	129	69	1377	6	4.4

*Incidence rate per 1,000 player hours

Lacerations held the highest incidence rate (0.6/1,000 player hours) for all types of medical attention injuries for the men's clubs.

Sprains held the highest incidence rate (1.5/1,000 player hours) for the women's clubs medical attention injuries.

For the men's clubs, 43% of medical attention injuries were to the head and face. Whereas, 12.5% of injuries were evenly distributed across the ankle, elbow, face, forearm, hand/fingers and shoulder for medical attention injuries in the women's clubs.

The tackle event accounted for the majority of medical attention injuries in the men's clubs (0.6/1,000 player hours) and women's clubs (2.2/1,000 player hours), all occurring to the tackler.

3.11 New & Recurrent Injuries

The majority of all injuries were 'New' compared to 'Recurring'. For all medical attention injuries across the men's and women's clubs, 93% were new injuries compared to 7% recurrent. For time-loss injuries reported in the men's clubs, new injuries accounted for 94%, with 93% in the women's clubs recorded as new.

3.12 Other Match-day Related Injuries

A small proportion of injuries occurred during the match warm-up and these were not included in the analysis of the time-loss match injury incidence, as only injuries occurring during the match play counted as match injuries.

In the men's clubs, 7 warm-up injuries were reported, all were time-loss. Of these, 2 were non-contact, 1 from tackling, 1 accidental collision, and 3 were unknown mechanisms.

No match warm-up injuries were reported for the women's clubs.



4.0 Training Injuries

4.1 Overall Time-loss Training Injuries

For the 2021-2022 season, training injury data from the 21 clubs (17 men's and 4 women's) were also collected. For operational reasons, as the frequency and duration of training sessions were not recorded, training injury incidence rates are not available. Therefore, the total number of training injuries that occurred are reported.

Any injuries resulting in 0-1 days absence from Rugby match or training activities were considered to be medical attention injuries and are not included in the analysis of time-loss injuries, as per international best practice.⁽¹⁾

The overall number of training injuries for the men's clubs was 93, while the overall number of training injuries for the women's clubs was 9.

Table 10 shows the overall number of training injuries for the Division One men's teams (Men's AIL 1), the Division Two men's teams (Men's AIL 2) and the women's teams (Women's AIL).

Table 10: Training time-loss injuries (excluding slight injuries)

Division	No. Clubs	No. Players	No. Injuries
Men's AIL 1	8	330	52
Men's AIL 2	9	379	41
Overall men's clubs	17	709	93
Women's AIL	4	129	9
Overall women's clubs	4	129	9

4.2 Training Injury Classification

The injury diagnosis refers to the specific bodily location and nature of the injury.

The most common injury diagnosis for the men's clubs was ankle sprains, accounting for 20% of all training time-loss injuries. This was followed by hamstring strains, accounting for 16%, and groin strains which accounted for 7% of training injuries. There were also three shoulder dislocations from training activities, compared to two in the 2019-2020 season and six in the 2018-2019 season.

There were two ankle sprains and two hamstring strains accounting for the most diagnosed training time-loss injuries for the women's clubs. There was one concussion reported from training in the women's clubs and five across all of the men's clubs.

Table 11 and 12 show the top three most common specific training time-loss injury diagnoses for both the men's and women's clubs over the past four seasons.

Table 11:⁹ Overall most common training injury diagnoses for the men's clubs (% of injuries)

Men's Clubs			
2021-22	2019-20	2018-19	2017-18
Ankle sprains (20%)	Hamstring strains (23%)	Hamstring strains (13%)	Hamstring strains (12%)
Hamstring strains (16%)	Ankle sprains (13%)	Ankle sprains (12%)	Ankle sprains (11%)
Groin strains (7%)	Calf strains (6%)	Calf/Achilles strains (10%)	Groin strains (11%)
-	Knee tendon strains (6%)	-	-
-	Quadriceps contusions (6%)	-	-

⁹ 'Ankle sprains' are inclusive of lateral, medial and high ankle sprains.

A 'hamstring strain', refers to a tear of the muscle group located on the back (posterior aspect) of the thigh.

A 'groin strain', refers to a tear of primarily the iliopsoas or adductor muscle group.

A 'calf/achilles strain', refers to a tear of one or more of the muscle groups located on the back (posterior aspect) of the lower leg.

Table 12: Overall most common training injury diagnoses for the women's clubs (% of injuries)

Women's Clubs			
2021-22	2019-20	2018-19	2017-18
Ankle sprains (22%)	Finger fractures (29%)	Hamstring strains (18%)	Ankle sprains (19%)
Hamstring strains (22%)	Sternoclavicular sprains (14%)	Concussions (18%)	Hamstring strains (13%)
-	Neck strains (14%)	-	Lumbar spine strains (13%)
-	Wrist strains (14%)	-	-
-	Lumbar herniation (14%)	-	-
-	Finger nerve damage (14%)	-	-

Table 13 shows the top three most common specific training time-loss injury diagnoses for each of the men's divisions (Division 1 and Division 2).

Table 13:¹⁰ Most common training injury diagnoses for each men's Division 1 and Division 2 (% of injuries)

Men's AIL 1	Men's AIL 2
Hamstring strains (17%)	Ankle sprains (31%)
Ankle sprains (12%)	Hamstring strains (14%)
Concussions (6%)	Groin strains (12%)
Hand fractures (6%)	-

¹⁰ 'Ankle sprains' are inclusive of lateral, medial and high ankle sprains.

A 'hamstring strain', refers to a tear of the muscle group located on the back (posterior aspect) of the thigh.

A 'groin strain', refers to a tear of primarily the iliopsoas or adductor muscle group.

4.3 Body Location of Training Injuries

Overall, the ankle (20%) and posterior thigh (17%) were the most common injury sites in the men's clubs, followed by the knee (9%) and groin (9%). The 2019-2020 season's report showed similar rankings, with the posterior thigh (23%) and ankle (15%) most common.

Figure 7(a) shows the incidences of training injury according to bodily location for the men's clubs.

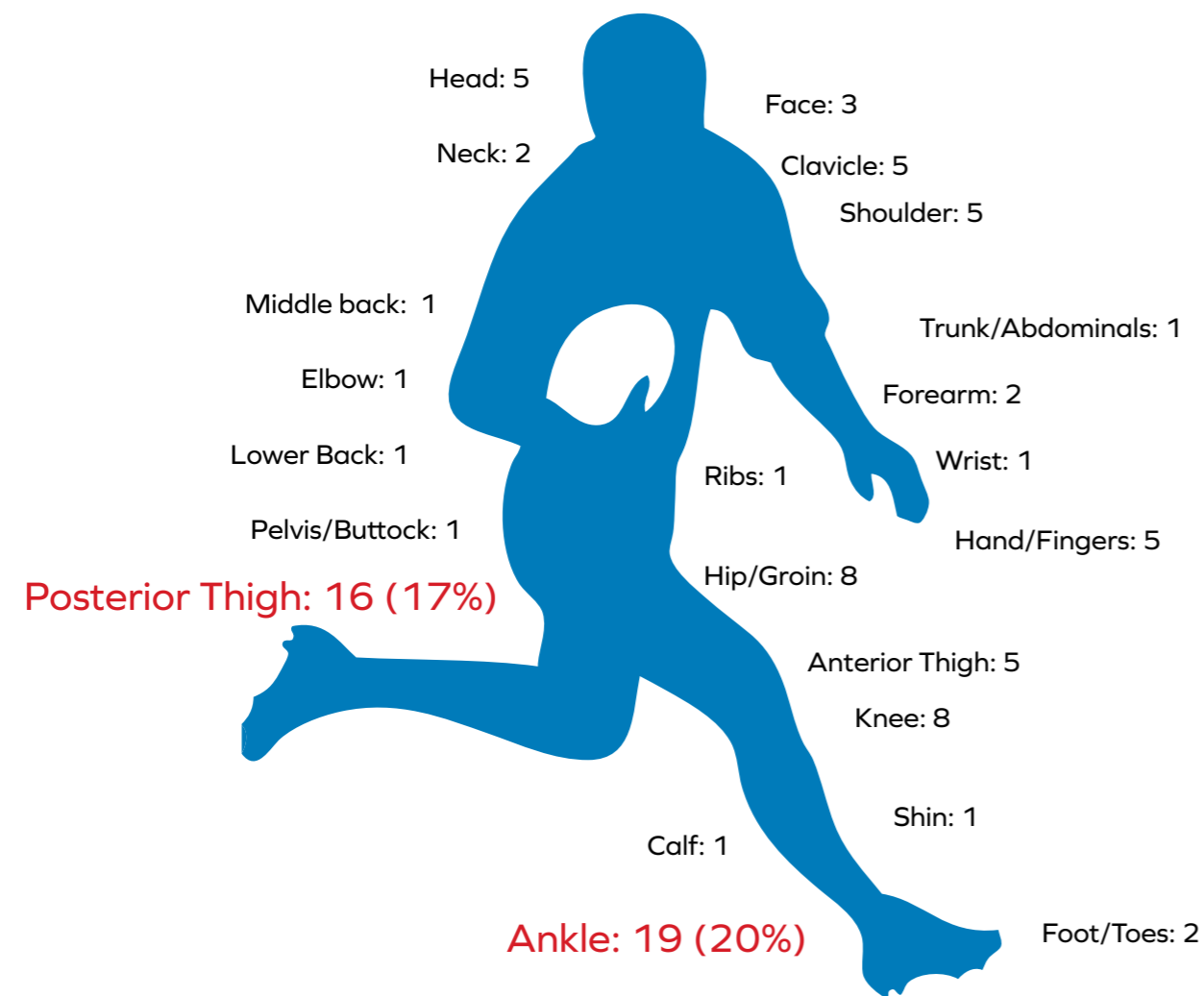


Figure 7(a): Location of training injury for the men's clubs (number of injuries)

Similar to the men's clubs in 2021-2022, the women's clubs also saw the majority of training injuries occur at the posterior thigh and ankle. These data are different than the 2019-2020 season where the fingers (43%) were the most common location of injury in the women's clubs, and no ankle or posterior thigh injuries were reported.

Figure 7(b) shows the incidences of injury according to bodily location for the women's clubs.

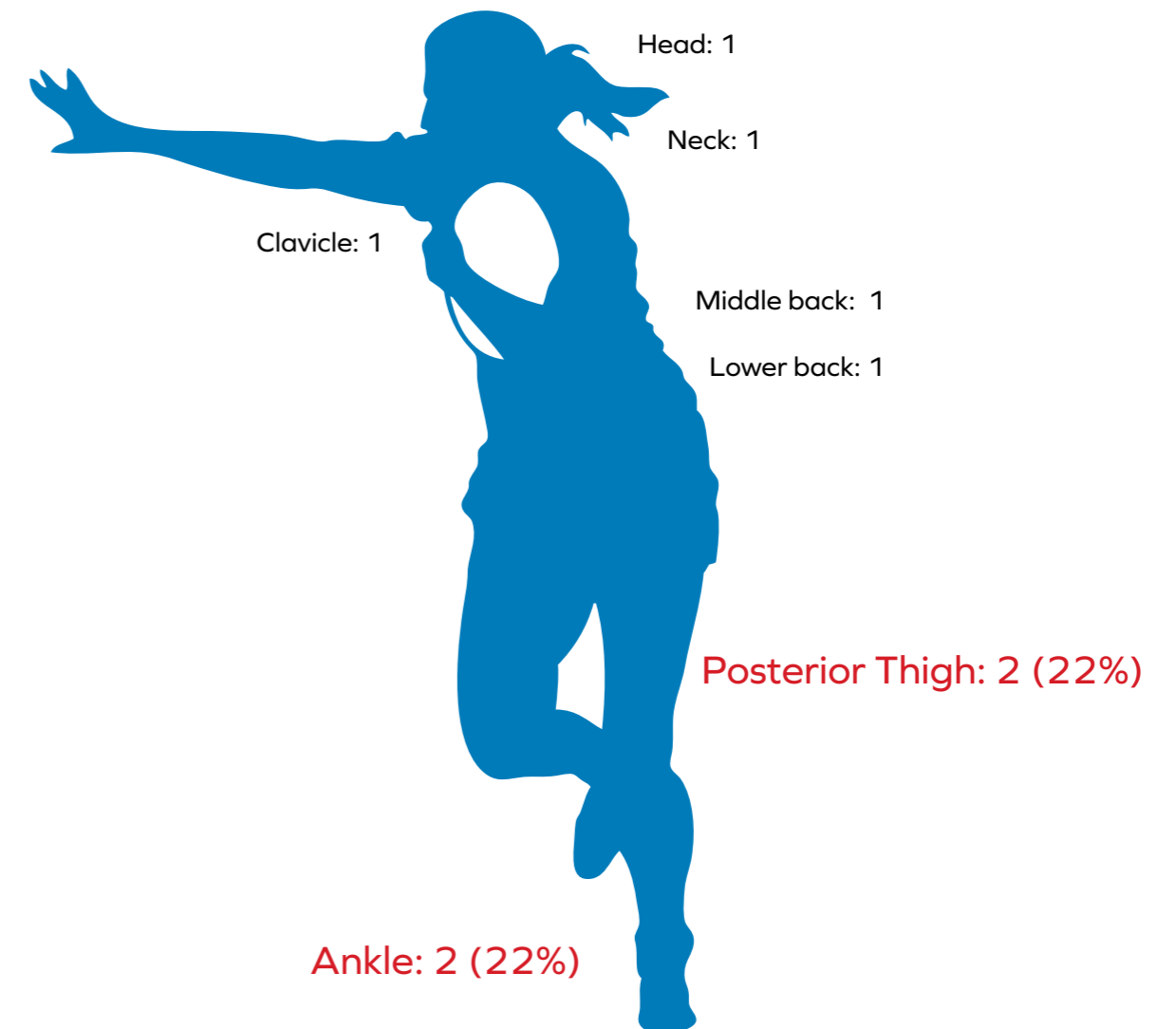


Figure 7(b): Location of training injury for the women's clubs (number of injuries)

4.4 Nature of Training Injuries

The nature of injuries refers to the type of injury occurring.

In all four seasons to date, sprains (referring to ligament injuries) and strains (referring to muscle or tendon injuries) have been responsible for the majority of training injuries in the men's clubs. In the women's clubs, the types of injuries have been more evenly distributed across natures, with Figure 8 representing data from this season.

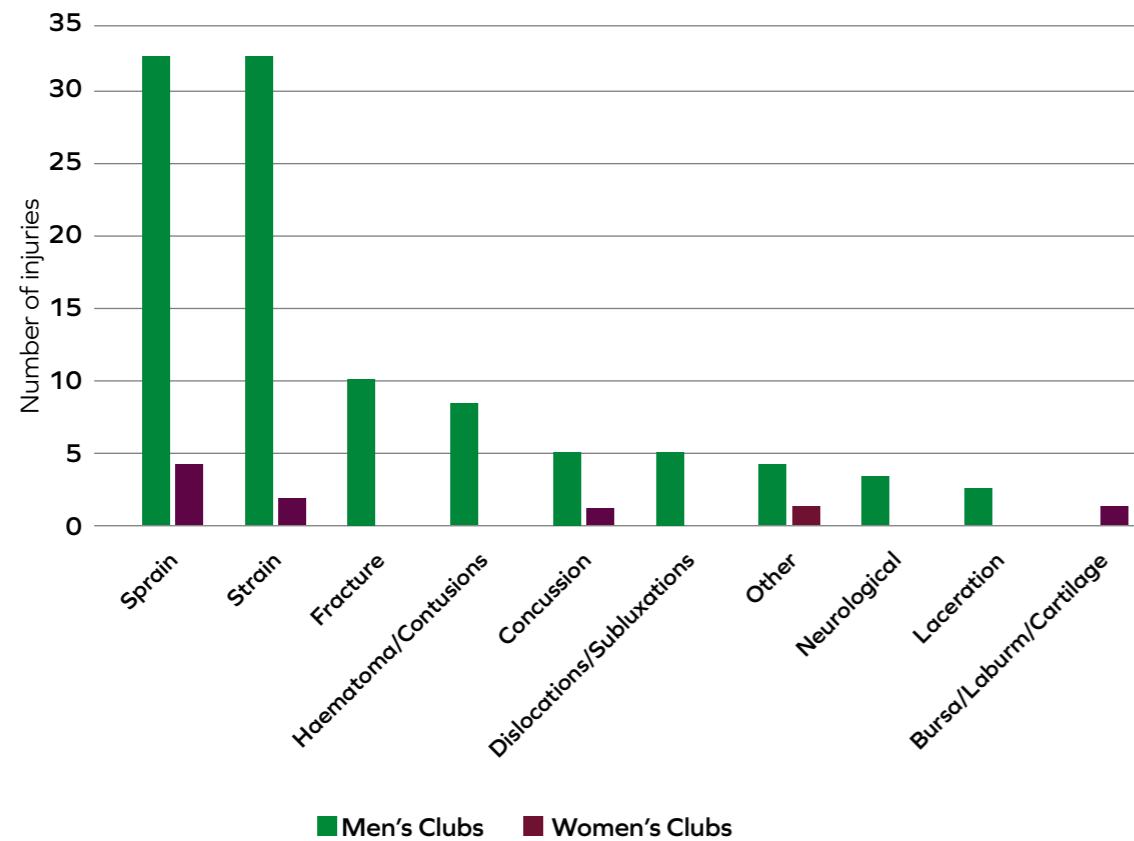


Figure 8: Nature of training injury (number of injuries)

4.5 Training Injury Event

Figure 9 shows the events surrounding the occurrence of an injury.

The training injury event for the men's clubs this season, similar to the match injuries, showed that injuries were most frequent for the ball-carrier during the tackle event compared to other events as shown in Figure 9. Being tackled was tied for the most training injuries in the women's clubs with the same proportion coming from both conditioning drills and some unknown.

The men's clubs reported two injuries occurring during gym sessions. No gym session injuries were reported in the women's clubs.

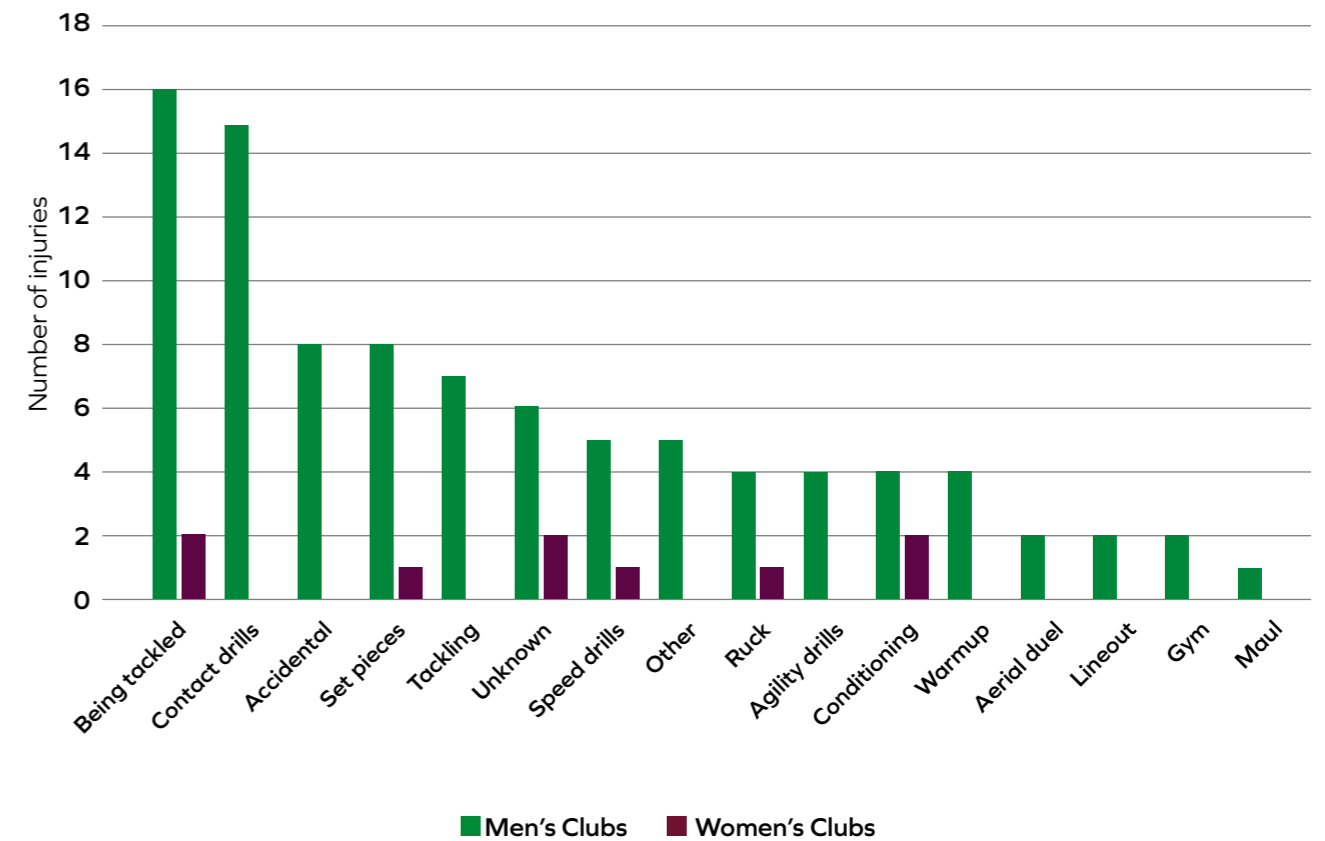


Figure 9: Training injury event (number of injuries)

4.6 Training Injury Severity

Injury severity was calculated as total number of days absent from Rugby match or training and classified according to the World Rugby Consensus guidelines. The majority of training injuries were moderate or severe, as shown in Figure 10. In the 2019-2020 report, most injuries for both men's and women's clubs were severe.

Slight injuries (0-1 days' absence) were considered as 'medical attention' injuries and were not included in analysis of time-loss injuries, as per international best practice.⁽¹⁾ Slight injuries are discussed in more detail in sub-section 4.8.

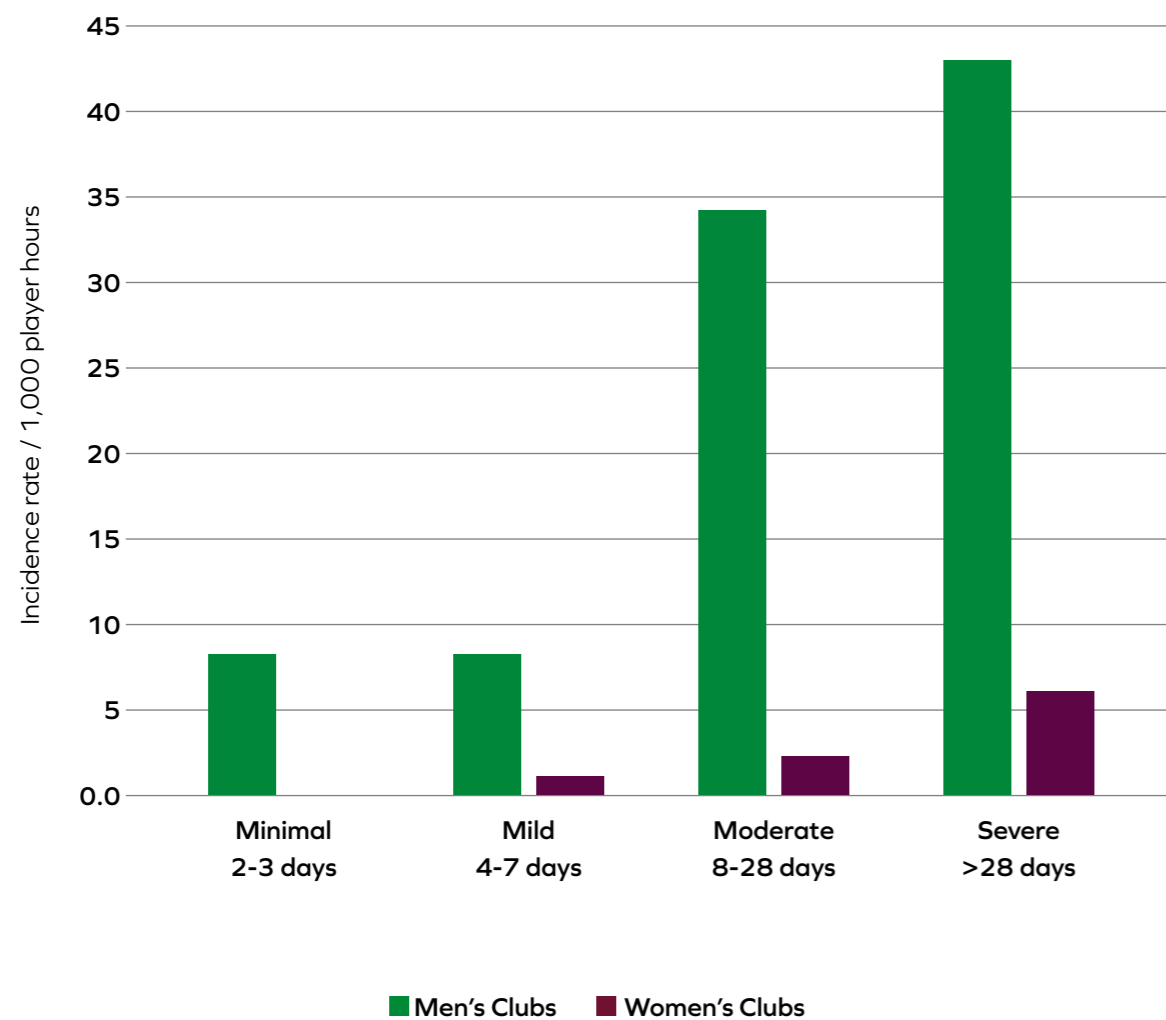


Figure 10: Training injury severity (number of injuries)

4.7 Training Injury Burden

The burden of an injury assesses the incidence rate of an injury in relation to the average severity of the injury ([IR] x [average number of days' absence]). However, because exposure rates were not collected for training, incidence rates were not able to be calculated.

For training injuries reported in the men's clubs, ankle sprains represented the highest frequency of diagnosis (20%), and had an average days' absence of 30 days. For the women's clubs, ankle sprains and hamstring strains accounted for the most frequent diagnosis (22%) and had an average days' absence of 25 and 102 days respectively.

Table 14 represents the number of injury occurrences and average number of total days off per diagnoses.

Table 14:¹¹ Diagnosis, number of training injuries, average TDO (average total days off)

	Diagnosis	Number of Injuries	Average TDO
Men's Clubs	Ankle sprains	19	30
	Hamstring strains	15	28
	Groin strains	5	15
Women's Clubs	Ankle sprains	2	25
	Hamstring strains	2	102

4.8 Medical Attention Training Injuries (slight injuries)

Any injury resulting in 0-1 days absent from Rugby match or training is considered a slight, or 'medical attention' injury and therefore were excluded from the analysis of time-loss injuries, as per best international practice.⁽¹⁾

During the 2021-2022 season, one medical attention injury was reported from training activities from the men's clubs, but none were reported in the women's clubs. Slight injuries reported from training continue to be low similar to previous seasons, with 2019-2020 season recording 1 injury each for both men and women, and the 2018-2019 season reporting 4 injuries for the men's clubs and 0 for the women's clubs.

Table 15: Training medical attention injuries

Division	No. Clubs	No. Players	No. Injuries
Men's Clubs	17	709	1
Women's Clubs	4	129	0

¹¹ 'Ankle sprains' are inclusive of lateral, medial and high ankle sprains.

A 'hamstring strain', refers to a tear of the muscle group located on the back (posterior aspect) of the thigh.

A 'groin strain', refers to a tear of primarily the iliopsoas or adductor muscle group.

5.0 Future Directions

Following three successful seasons of the IRISweb system, the IRIS project continued and completed its fourth season of data collection during the 2021-2022 campaign. Recruitment continued in the men's AIL across both Division One and Division Two. Recruitment in the women's clubs will continue to expand across the Women's AIL. For the 2022-2023 season, the IRIS Project aims to increase compliance across the men's clubs (n=20) and to recruit additional women's clubs in an effort to have all 10 Women's AIL clubs participating.

The IRIS Project began a control feasibility study in the 2021-2022 season measuring an intervention programme called ENGAGE. ENGAGE is a bespoke Rugby readiness and robustness programme which aims to improve overall player performance and reduce injury risk. Through a structured and progressive 3-phase warm-up, ENGAGE aims to prepare players for the immediate training and match ahead, while increasing long-term player robustness, thus aiming to reduce the risk of injury.



6.0 Publications and Conferences

6.1 Journal Publications

Dolan P., Kenny I.C., Glynn L.G., Campbell M.J., Warrington G.D., Cahalan R., Harrison A.J., Lyons M. and Comyns T.M. (20xx). Risk Factors for Acute Ankle Sprains in Field-Based, Team Contact Sports: a Systematic Review. *The Physician and Sportsmedicine*. IF 2.241, Q2, 55/116 [in press] DOI: <http://dx.doi.org/10.1080/00913847.2022.2093618>

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6.2 Conference Communications

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Yeomans, C. Invited plenary speaker. (2022) The IRIS Project; Research challenges and solutions in the community game. Proceedings of the 2022 World Rugby Player Welfare and Laws Symposium. 22-23 March 2022, UK.

Kenny, I.C. & Comyns T.M. Invited plenary speakers. (2021) 'Irish amateur community Rugby women's and men's comparative injury surveillance'. Proceedings of the 2021 University of Bath Female Rugby Union Research Symposium. 2 December 2021, Bath, UK.

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