



**The
Irish Rugby Injury Surveillance
Project**

**All-Ireland League
Amateur Club Rugby**

2023 - 2024
Season Report



The IRIS Team



Authored by the Irish Rugby Injury Surveillance (IRIS) Project Steering Group

IRFU:

Dr Rod McLoughlin (Medical Director, IRFU)
Dr Caithriona Yeomans (Medical Manager, IRFU)

Principal Investigators:

Associate Professor Tom Comyns (Strength and Conditioning, University of Limerick)
Professor Ian Kenny (Biomechanics, University of Limerick)

Supporting Investigators:

Mr Kilian Bibby (Doctoral Researcher, Sport Science, University of Limerick) *
Associate Professor Róisín Cahalan (Doctoral Supervisor, Physiotherapy, University of Limerick)
Professor Mark Campbell (Sport Psychology, University of Limerick)
Mr Dáire Curran (Doctoral Researcher, Physiotherapy, University of Limerick)
Professor Liam Glynn (School of Medicine, University of Limerick)
Ms Lauren Guilfoyle (Doctoral Researcher, Physiotherapy, University of Limerick)
Professor Drew Harrison (Biomechanics, University of Limerick)
Associate Professor Mark Lyons (Doctoral Supervisor, Strength and Conditioning, University of Limerick)
Associate Professor John Mulvihill (Doctoral Supervisor, Biomedical Engineering, University of Limerick)
Professor Kieran O'Sullivan (Doctoral Supervisor, Physiotherapy, University of Limerick)
Ms Laura Power (Doctoral Researcher, Athletic Therapy, University of Limerick)
Associate Professor Helen Purtill (Mathematics and Statistics, University of Limerick)
Professor Giles Warrington (Human Performance and Innovation, University of Limerick)

The authors would like to acknowledge with considerable gratitude, the work of the doctors, physiotherapists and staff involved with the IRIS clubs who have recorded injury information throughout the project.

**Report Primary Author*

Contents

The IRIS Team	i
Contents	ii
Irish Rugby Football Union Foreword	iv
Irish Rugby Injury Surveillance Foreword	v
1.0 Executive Summary	1
1.1 Match Injury	1
1.2 Training Injury	1
1.3 Injury Occurrence	2
1.4 Injury Event	2
1.5 Playing Position	2
1.6 Injury Burden	2
1.7 New & Recurrent Injury	3
2.0 Introduction	5
2.1 The IRIS Project	5
2.2 Injury Definitions	6
2.3 Recruitment	7
3.0 Match Injury	9
3.1 Overall Time-loss Match Injury	9
3.2 Match Injury Classification	10
3.3 Timing of Match Injury	13
3.4 Match Injury Event	15
3.5 Nature of Match Injury	16
3.6 Body Location of Match Injury	17
3.7 Playing Position of Match Injury	19
3.8 Match Injury Severity	22
3.9 Match Injury Burden	23
3.10 Medical Attention Match Injury (slight injury)	24
3.11 New & Recurrent Injury	25
3.12 Other Match-day Related Injury	25
4.0 Training Injury	26
4.1 Overall Time-loss Training Injury	26
4.2 Training Injury Classification	27
4.3 Body Location of Training Injury	29
4.4 Nature of Training Injury	31
4.5 Training Injury Event	32
4.6 Training Injury Severity	33
4.8 Medical Attention Training Injury (slight injury)	35

5.0 Future Directions of the IRIS Project	37
6.0 Glossary of Terms	40
7.0 Publications and Conferences	42
7.1 Journal Publications	42
7.2 Conference Communications	44
8.0 References	51



Irish Rugby Football Union Foreword

The Irish Rugby Football Union welcome the latest injury surveillance report from the Irish Rugby Injury Surveillance (IRIS) Project. We are proud to support the expansion and development of the IRIS Project, showing our continued commitment to player welfare across all levels of the game in Ireland.

These reports played a vital role in our review of injury mechanisms, and our subsequent decision to participate in World Rugby's Global Tackle Height trial. Injury data from the IRIS Project have allowed us to accurately monitor injury rates before the law change and during the first season of the trial. These data allow us to better understand the impact of lowering the tackle height and improving tackle technique on injury rates, injury severity and injury mechanisms. This shows the value of injury surveillance in helping shape the game from a safety perspective.

The 2023/24 season saw the release of our updated Guide to Concussion and Graduated Return to Play protocols. The proactive approach to concussion management and rehabilitation aims to return players safely and efficiently to rugby performance. The six-stage graded return to aerobic fitness, strength, agility, contact skills and rugby skills aligns to the IRFU ENGAGE Readiness and Robustness programme and tackle technique training.

We are encouraged to see the ongoing support from our clubs working with the IRIS Project. 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 support player health and wellbeing.

Medical Director, IRFU
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 provided essential and accurate data for all those involved in the game to help inform training, recovery, and game policy. The IRIS project has involved the research, design and implementation of an online injury recording platform. Collection has now been completed of a sixth season's data and this 2023-2024 season report documents our collaborative work with the IRFU, and with 23 men's and women's All-Ireland League clubs.

This season represents 508 matches, over 1,000 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 senior cup (reported separately).

IRIS involves research stemming from ongoing injury reduction 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
Associate Professor Tom Comyns, PhD
Professor Ian Kenny, PhD



1.0 Executive Summary

1.1 Match Injury

Starting in September 2023, the Irish Rugby Injury Surveillance (IRIS) project collected injury data across 508 matches from 23 men's and women's amateur Rugby clubs.

Men's AIL

- There were 19 men's clubs involved in the IRIS project (7 Division One, 12 Division Two clubs).
- There were a total of 853 male players registered in the IRIS project (335 Division One, 518 Division Two players).
- The overall match time-loss injury incidence rate for males was 36.3/1,000 player hours
- This is lower than the overall match time-loss injury incidence rate for males during the 2022-2023 season (43.3/1,000 player hours).
- The match time-loss injury incidence rate for Division One males was 33.4/1,000 player hours.
- The match time-loss injury incidence rate for Division Two males was 38.0/1,000 player hours.
- A single male player would have to play, on average, 21 matches to sustain one injury.

Women's AIL

- There were 4 women's clubs involved in the IRIS project.
- There were a total of 145 female players registered in the IRIS project.
- The overall match time-loss injury incidence rate for women was 22.8/1,000 player hours.
- This is lower than the overall match time-loss injury incidence rate for females during the 2022-2023 season (30.3/1,000 player hours).
- A single female player would have to play, on average, 33 matches to sustain one injury.

1.2 Training Injury

There were a total of 79 training injuries reported in the men's clubs.

- This is lower than the total number of training injuries reported in the 2022-2023 season (116 injuries).
- There was a total of 48 training injuries in Division One men's clubs.
- There was a total of 31 training injuries in Division Two men's clubs.

There was a total of 7 training injuries reported in the women's clubs.

- This is lower than 2022-2023 (16 injuries).

1.3 Injury Occurrence

The most commonly reported match injuries for the men's clubs were concussion (12%), followed by ankle ligament sprains (9%). Concussion injuries resulted in an average of 30 days' absence from Rugby match or training activities, while ankle ligament sprains resulted in an average of 36 days' absence.

The most commonly reported match injuries for the women's clubs were knee ligament sprains (11%), and ankle ligament sprains (11%). Concussion injuries (9%) resulted in an average of 28 days' absence from Rugby match or training activities, ankle ligament sprains averaged a slightly higher amount of days' absence (30), and knee sprains an average of 162 days' absence.

Note: Reported concussion incidence includes suspected concussions as per IRFU recognise and remove protocol. The Graduated Return to Play (GRTP) protocol requires a minimum of 21 days absence from play for adults and 23 days for players under 20 years of age.

1.4 Injury Event

The tackle event accounted for the majority of match injuries, with 59% of all injuries happening during the tackle in the men's clubs, and 63% in the women's clubs. Within the tackle event, opposite to previous reports, for the women's clubs, the tackler (59%) sustained more injuries compared to the ball carrier (41%). In the men's clubs, also opposite to previous reports, the ball carrier (57%) sustained more injuries than the tackler (43%).

1.5 Playing Position

Of all match injuries recorded in the men's clubs, 55% were to the 'forwards' (position no. 1-8), while 45% were to the 'backs' (position no. 9-15). By position, the hooker (no. 2) accounted for the most injuries at 11%, followed by the tighthead prop (no. 3) at 10% and the blindside flanker (no. 6) at 9%.

Of all match injuries recorded in the women's clubs, 71% were to the forwards (position no. 1-8), while 29% were to the backs (position no. 9-15). The loosehead prop (no. 1), tighthead prop (no. 3) and lock (no. 4) accounted for the most injuries at 14% of match injuries 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).⁽¹⁾

Shoulder dislocation/subluxation carried the greatest burden of all match injuries for the men's clubs (with 144 days absence/1,000 player hours) with an average severity of 136 days per shoulder dislocation/subluxation. In the 2022-2023 season concussion was the greatest at 273 days/1,000 player hours for men's clubs. For women's clubs, similar to the 2022-2023 season, knee sprains carried the greatest injury burden (417 days/1,000 player hours) with an average severity of 163 days per sprain.

1.7 New & Recurrent Injury

The majority of all injuries were 'New' compared to 'Recurring'. For time-loss injuries reported in the men's clubs, new injuries accounted for 94% of all injuries, with 97% in the women's clubs recorded as new. For all medical attention injuries across the men's and women's clubs, 100% were new injuries, with no recurrent injuries reported.



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'⁽²⁾ 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)).⁽³⁾

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."

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 overall injury severity. However, when analysing injury location and nature dual injuries were separated as per international best practice.^(2,3) 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.^(2,3)

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, for a team, the following calculation was used:

Match injury incidence rate (IR):

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

Injury definitions are listed in Section 6.0 Glossary of Terms, page 40.

2.3 Recruitment

At the beginning of the 2023-2024 season, the IRIS team successfully recruited 23 clubs from the men's and women's All-Ireland League (AIL). 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 96% compliance rate (23/24 teams recruited) for the 2023-2024 season in comparison to 93% in the 2022-2023 season. These clubs are shown in Table 1.

Table 1: The IRIS club recruitment 2023-2024

	Men's AIL	Women's AIL
Number of clubs	19 <i>(Division 1 = 7; Division 2 = 12)</i>	4
Number of players	853 <i>(Division 1 = 335; Division 2 = 518)</i>	145

Each club nominated an 'injury recorder', who was trained on use of the IRIS system during the pre-season training of the 2023-2024 season. In the majority of clubs (91%), 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 Autumn 2023, the injury recorder documented all injuries occurring to the Senior 1XV men's or women's team. The injury recorders also reported when a player returned to play so that injury severity data could be calculated.



3.0 Match Injury

3.1 Overall Time-loss Match Injury

For the 2023-2024 season, injury data from 23 clubs across 508 matches were collected.

A total of 347 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 – 36.3/1,000 player hours.
- Women's teams – 22.8/1,000 player hours.
- These incidence rates approximate to 2 time-loss injuries every 3 games for the men's teams and 1 every 2 games for the women's teams.
- A male player would have to play approximately 21 matches in order to suffer one time-loss injury.
- A female player would have to play approximately 33 matches in order to suffer one time-loss 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	7	335	162	3232	108	33.4
Men's AIL 2	12	518	269	5367	204	38.0
Overall men's clubs	19	853	431	8598	312	36.3
Women's AIL	4	145	77	1536	35	22.8
Overall women's clubs	4	145	77	1536	35	22.8

*IR – Incidence rate per 1,000 player hours

- 24% of match time-loss injuries required medical imaging (X-Ray, MRI, Ultrasound etc).

3.2 Match Injury Classification

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

The most common injury diagnoses for the men's clubs were concussion, followed by ankle sprains, accounting for 12% and 9% of all time-loss match injuries respectively.

For the women's clubs, the most common time-loss match injury diagnoses were knee sprains (11%) and ankle sprains (11%).

Tables 3 and 4 show the three most common match time-loss injury diagnoses for all the men's and women's clubs for the current season (2023-2024). For the men's clubs and women's clubs the lowest incidence rate and second lowest percentage for concussions was reported when comparing the prior four seasons (2022-2023, 2021-2022, 2019-2020, 2018-2019). **

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

Men's Clubs				
2023-24	2022-23	2021-22	2019-20	2018-19
Concussions 4.4 (12%)	Concussions 9.1 (20%)	Concussions 7.6 (13%)	Concussions 7.1 (14%)	Concussion 5.3 (11%)
Ankle sprains 3.4 (9%)	Ankle sprains 5.0 (11%)	Ankle sprains 5.3 (9%)	Ankle sprains 4.5 (9%)	ATFL sprains 4.1 (9%)
Hamstring strains 3.0 (8%)	Hamstring strains 4.7 (10%)	Hamstring strains 4.6 (8%)	Hamstring strains 2.9 (6%)	Hamstring strains 3.9 (8%)

* accounts for separation of dual injuries and mathematical rounding

** IRIS did not collect full season data during 2020-2021 due to training and match curtailment as a result of the COVID-19 pandemic

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

Women's Clubs				
2023-24	2022-23	2021-22	2019-20	2018-19
Knee sprains 2.6 (11%)	Ankle sprains 4.3 (14%)	Concussions 3.6 (10%)	Concussions 5.6 (16%)	Concussions 5.3 (19%)
Ankle sprains 2.6 (11%)	Knee sprains 3.7 (12%)	Ankle sprains 2.9 (8%)	Ankle sprains 4.8 (14%)	ATFL sprains 3.4 (12%)
Concussions 2.0 (9%)	Concussions 2.5 (8%)	Finger sprains 2.9 (8%)	Knee sprains 4.0 (11%)	Knee MCL sprains 2.9 (11%)

*accounts for separation of dual injuries and mathematical rounding

Table 5 shows the three most common match time-loss injury diagnoses for each of the men's divisions (Division One and Division Two) during the 2023-2024 season.

Table 5: 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 5.3 (16%)	Concussion 3.5 (9%)
Hamstring strains 5.0 (15%)	Ankle sprains 3.4 (9%)
Ankle sprains 3.3 (10%)	Hamstring strains 1.9 (5%)

*accounts for separation of dual injuries and mathematical rounding



The shoulder was the most commonly injured body location in the men's clubs, accounting for 16% of all injuries in 2023-2024. This differs to the 2022-22 season when the head was the most injured location with 23% of all injuries.

For the women's clubs in 2023-2024, the most commonly injured body locations were the ankle (17%) followed by hand/finger and knee both accounting for 14% of all injuries. This is lower when compared to the 2022-2023 season when the ankle and knee were the most commonly injured sites with 22% of injuries each.

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

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

Location	Diagnosis
Shoulder 6.1 (16%)	Ligament sprain 1.9 Strain 1.8 Dislocation/Subluxation 1.1
Knee 4.9 (13%)	Ligament sprain 2.1 Bursa/Cartilage 1.1 Haematoma/Contusion 1.0
Head 4.6 (13%)	Concussion 4.4

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

Location	Diagnosis
Ankle 3.9 (17%)	Ligament sprain 2.6 Haematoma/Contusion 0.7 Fracture 0.6
Knee 3.2 (14%)	Ligament sprain 2.5 Haematoma/Contusion 0.7
Hand/finger 3.1 (14%)	Fracture 1.3 Ligament sprain 1.2 Dislocation/Subluxation 0.6

3.3 Timing of Match Injury

The majority of injuries occurred in the 2nd half in both the men's (66%) and women's (57%) clubs.

Similar to the 2017-2018 season, there was a 3rd quarter peak. Whereas in the other seasons there was a rise in injuries from 1st quarter to 4th quarter. Figure 1(a) shows the timing of match injury for the men's clubs comparing this season (2023-2024) to the previous five seasons.

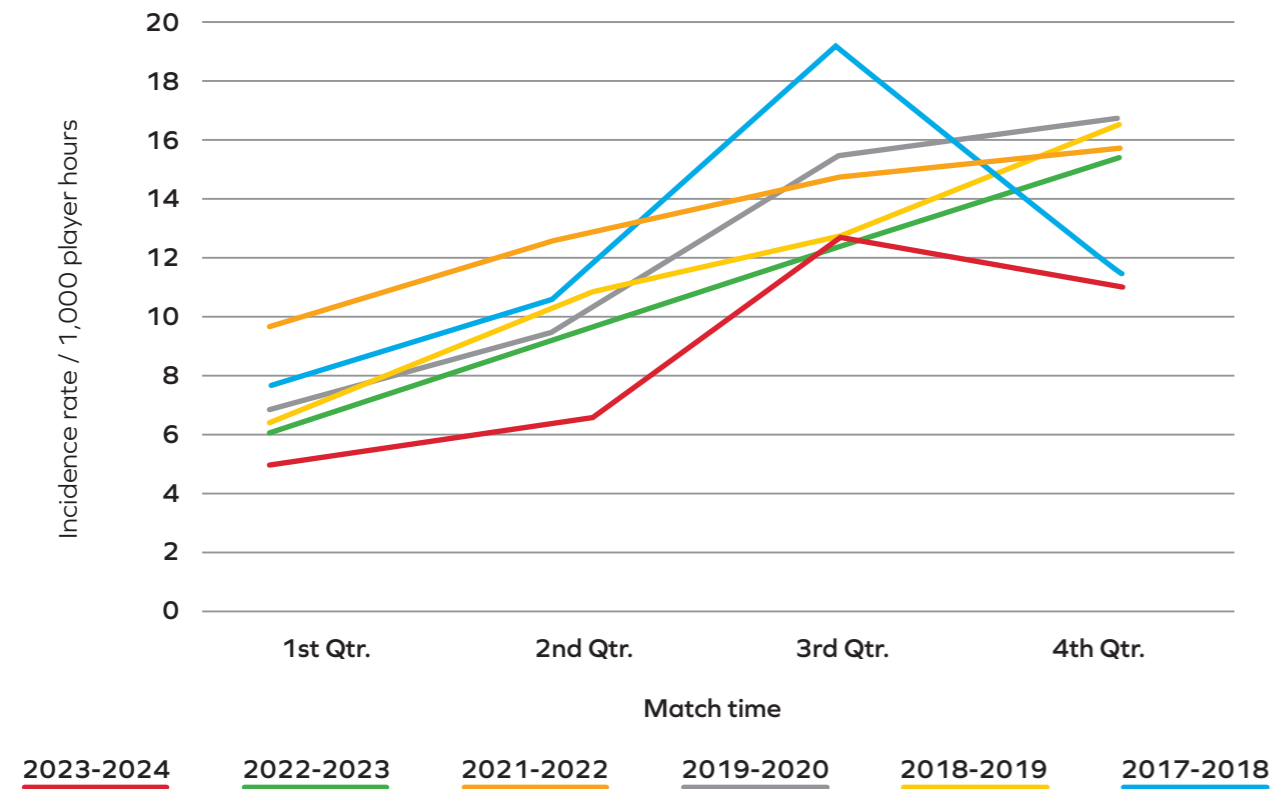


Figure 1(a): Timing of injury during match play for the men's clubs (IR/1,000 player hours)

The women's 2023-2024 season showed a decrease in injuries between the 1st and 2nd quarter followed by a steady rise towards the 4th quarter. Whereas in the 2022-2023 season women's match injuries showed a steady rise from the 1st quarter to the 4th quarter. 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. Figure 1(b) shows the timing of match injury for the women's clubs comparing this season (2023-2024) to the previous five seasons.

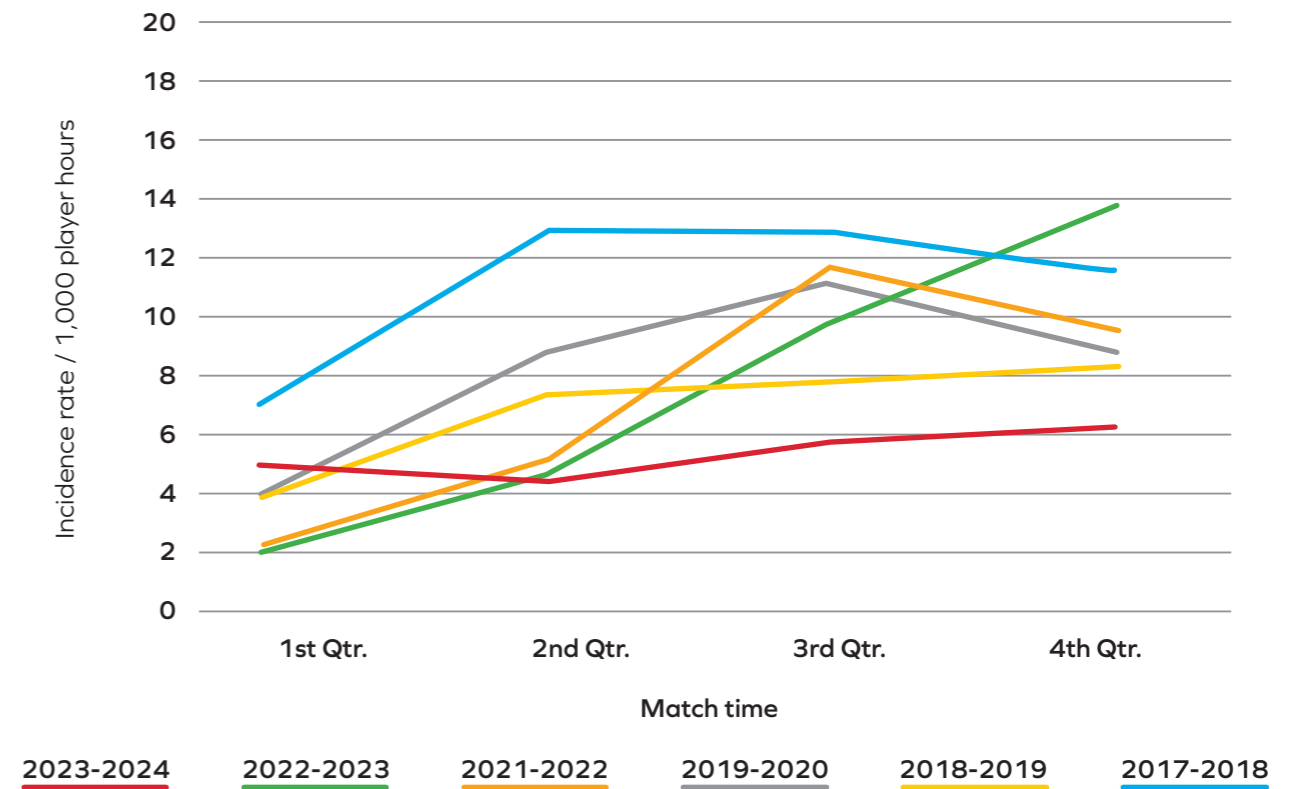


Figure 1(b): Timing of injury during match play for the women's clubs (IR/1,000 player hours)

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 six seasons in a row. For the women's clubs for the first time the tackler (i.e. tackling) has reported higher injuries than the ball-carrier compared to all previous seasons.

The ball carrier (57%) had higher injury rates than the tackler (43%) this season in the men's clubs, similar to the 2017-2018 season. In 2021-2022 injury rates between the two were similar and in the 2022-2023, 2019-2020 and 2018-2019 seasons the tackler had a higher rate of injuries during the tackle event. Non-contact injuries were responsible for 11% and 5% of all injuries for men's and women's clubs respectively.

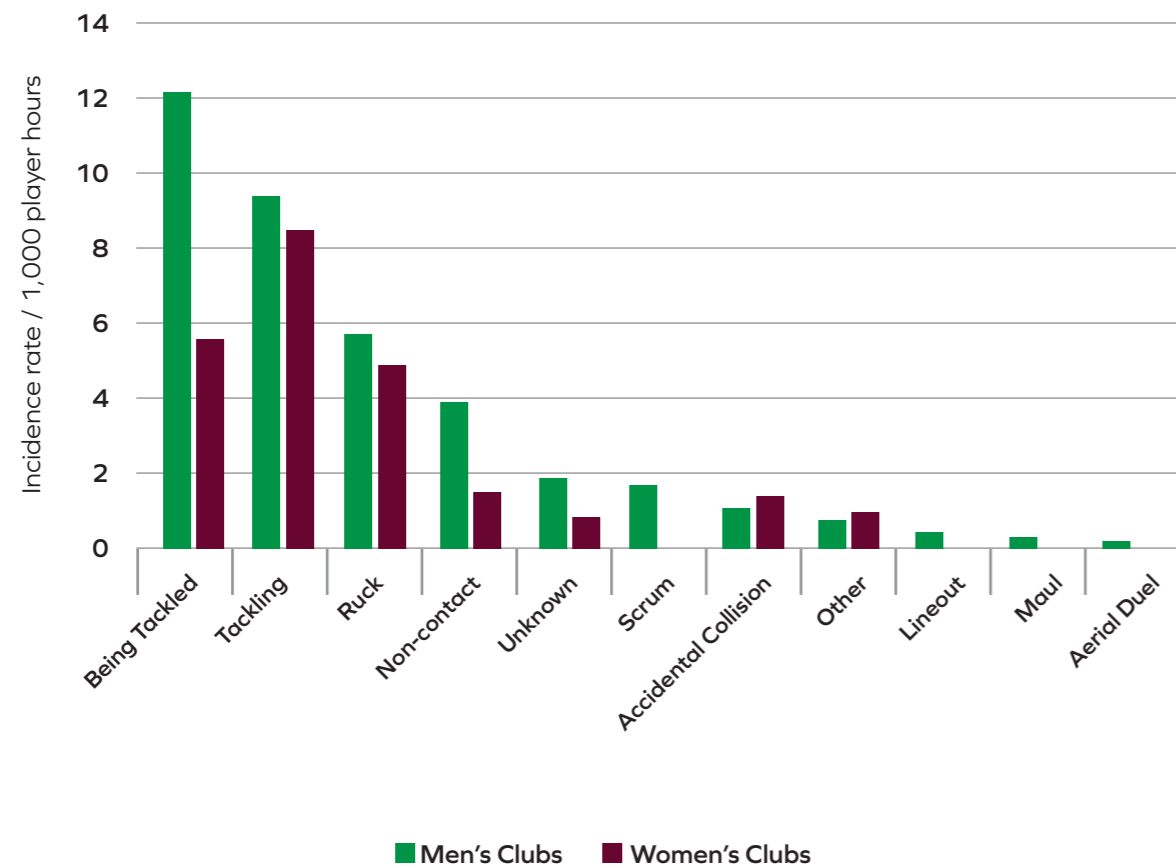


Figure 2: Injury event (IR/1,000 player hours)

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 strains and sprains have been the two most common types of injury in every season for the men's clubs, the 2023-2024 and the 2021-2022 season reported the men's clubs having sustained more sprains than strains. The women's clubs have reported more sprains in every season since 2017-2018.

The column labelled 'Other' refers to a small proportion of reported injuries including; joint fluid, hernia, or vascular injuries. Other injuries accounted for 3.5% of all men's and 2.6% of all women's injuries.

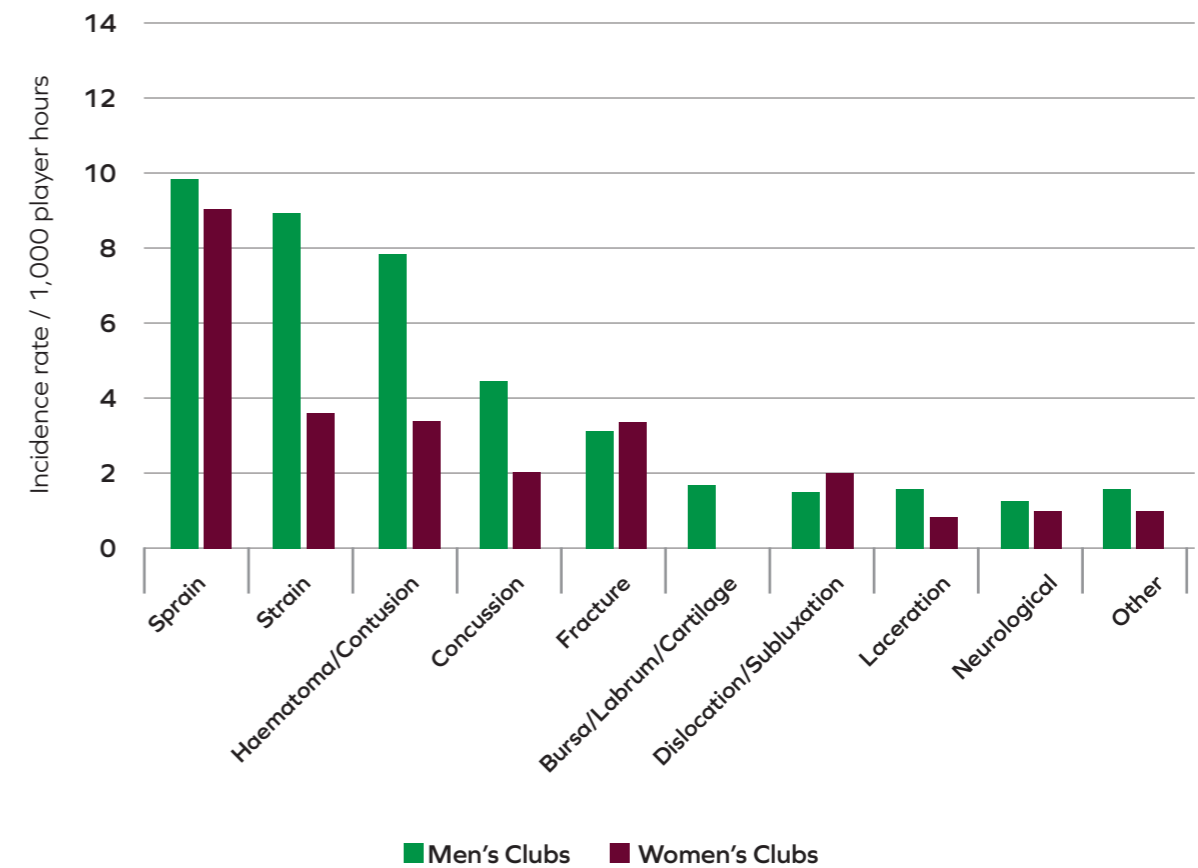


Figure 3: Nature of injury (IR/1,000 player hours)

3.6 Body Location of Match Injury

The shoulder was the most commonly injured body area in the men's clubs this season (2023-2024) accounting for 16% of injuries. Both the head and the knee were ranked second this season at 13% of all injuries respectively. The head and shoulder have both been within the three most common injury sites in each season to date.

In 2023-2024, at 3.3/1,000 player hours, the posterior thigh decreased in rate when compared to the all-time high in 2022-2023 (4.9/1,000 player hours). The posterior thigh saw its' second lowest rate of injury incidence reported in the men's clubs to date (2022-2023: 4.9; 2021-2022: 4.6; 2019-2020: 3.1; 2018-2019: 3.8; 2017-2018: 4.6/1,000 player hours).

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

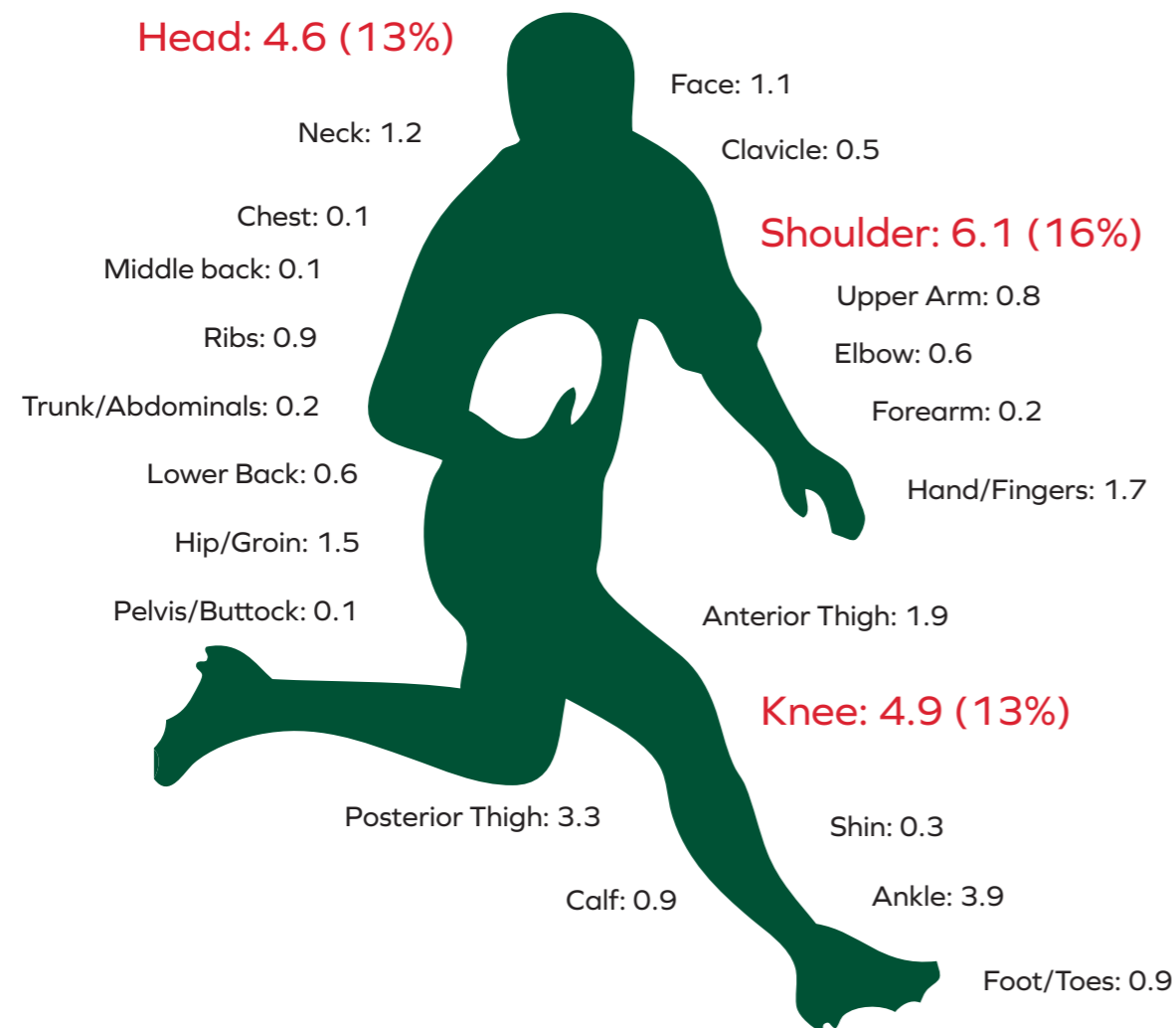


Figure 4(a): Location of injury for the men's clubs (IR/1,000 player hours)*

*accounts for separation of dual injuries and mathematical rounding

The ankle and knee were the most commonly injured areas in the women's clubs this season, each receiving 16% of injuries, followed by the head (14%).

While the ankle has been in the three most common injured locations in each season, the 2023-2024 season had the lowest rate since recording, matching the 2018-2019 season (2023-2024: 3.9; 2022-2023: 6.8; 2021-2022: 5.1; 2019-2020: 4.8; 2018-2019: 3.9; 2017-2018: 6.4/1,000 player hours).

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

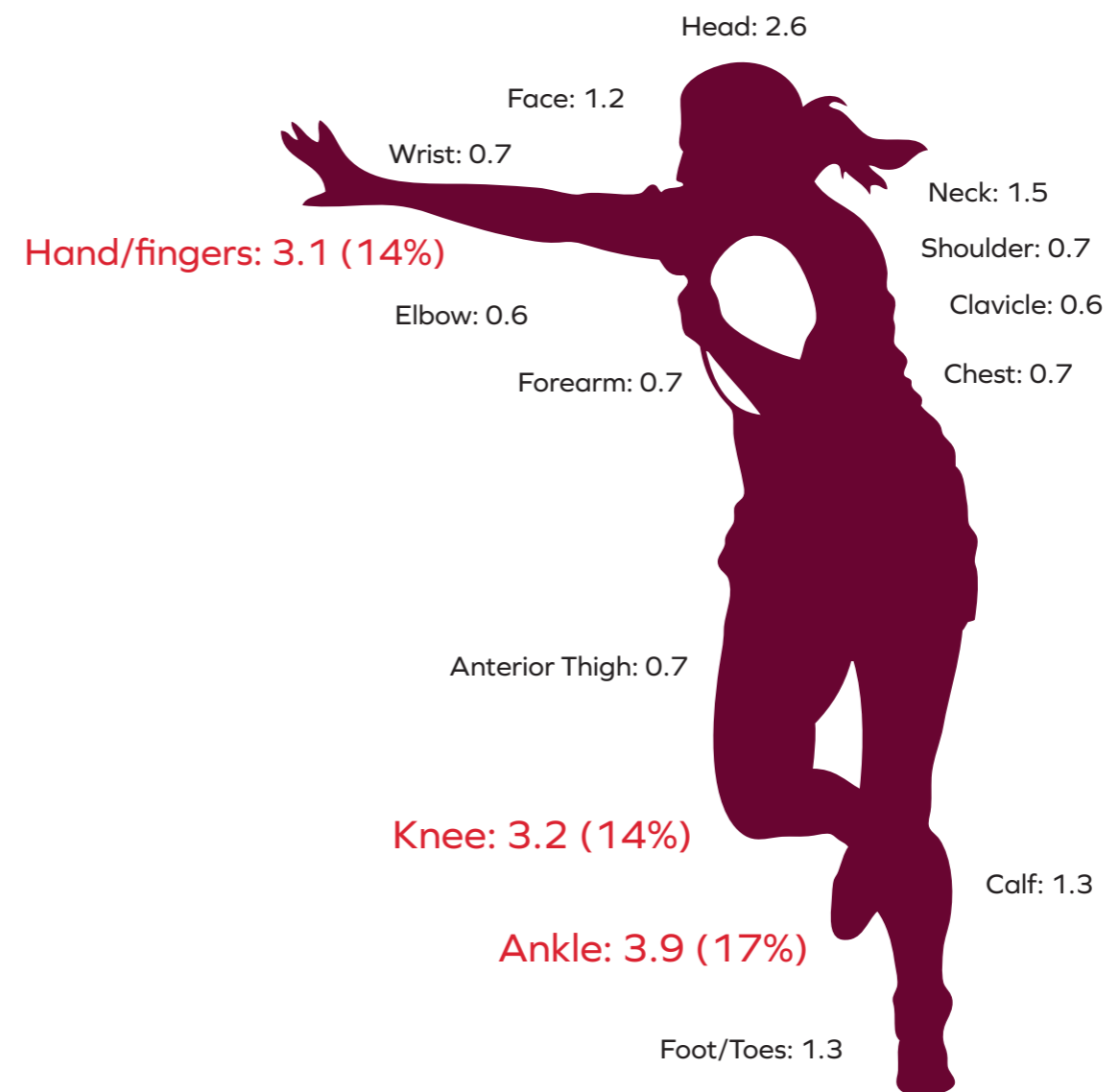


Figure 4(b): Location of injury for the women's clubs (IR/1,000 player hours)

*accounts for separation of dual injuries and mathematical rounding

3.7 Playing Position of Match Injury

Rugby player positions are split into 'forwards' (position no. 1-8) and 'backs' (position no. 9-15). In men's clubs, forwards sustained more reported injuries (55%) than the backs (45%) in the 2023-2024 season, in-line with the prior five seasons.

By position, the hooker (no. 2) reported the most injuries, accounting for 11% of all match time-loss injuries for the men's clubs. The tighthead prop (no. 3) and blindside flanker (no. 6) accounted for 10% and 9% of injuries respectively as seen in Figure 5(a).

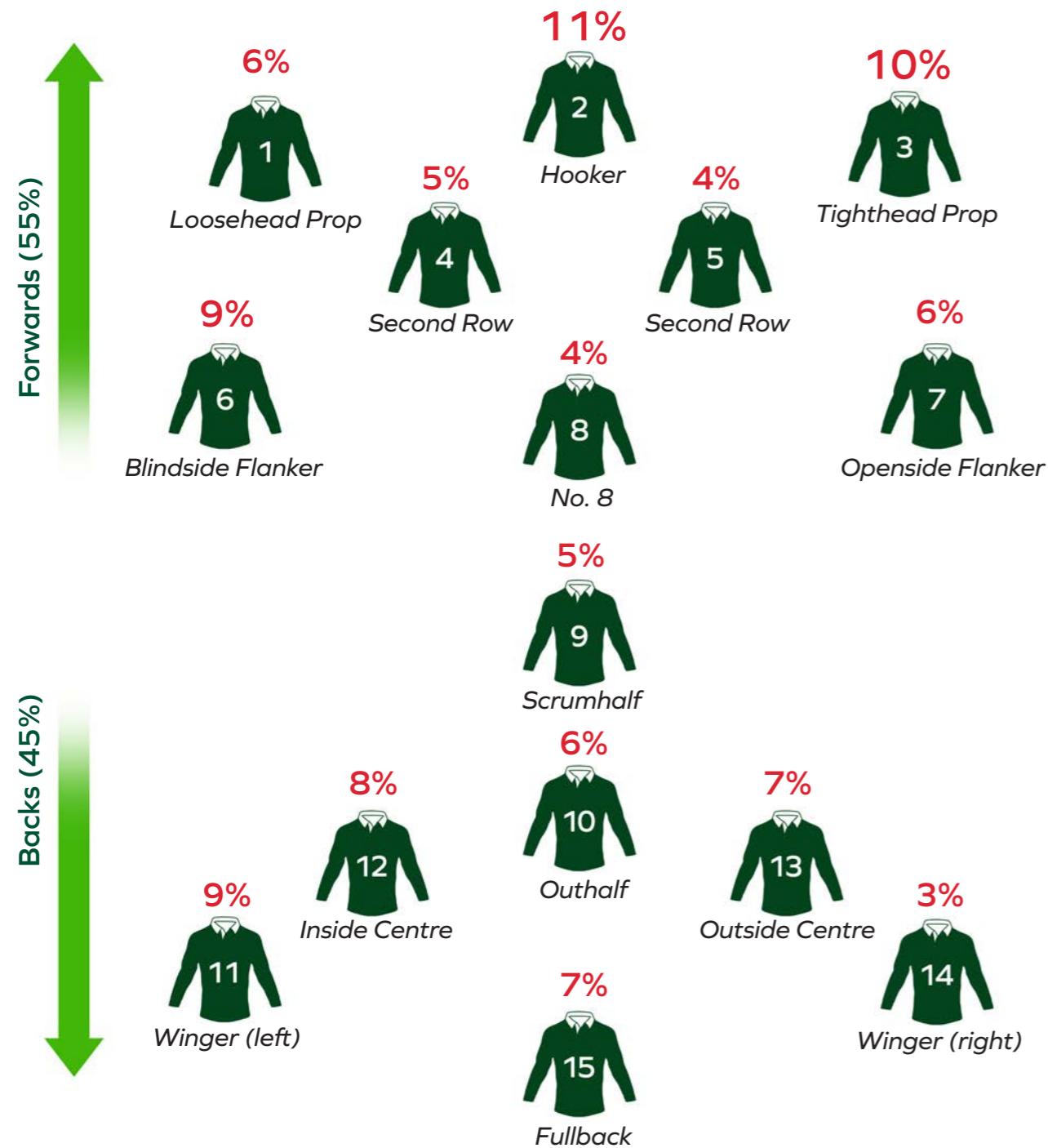


Figure 5(a): Percentage of injuries occurring per playing position in the men's clubs

Overall for the women's clubs, forwards sustained 73% of the injuries during the 2023-2024 season an increase compared to the previous 2022-2023 season (55%). The three positions that sustained the most injuries were the loosehead prop (no. 1), tighthead prop (no. 3) and lock (no. 4) with 14% of all reported injuries each. In the 2022-2023 season, the loosehead prop (no. 2), openside flanker (no. 7) and inside centre (no. 12) sustained the most injuries in the women's clubs with 10% each and 30% of all injuries.

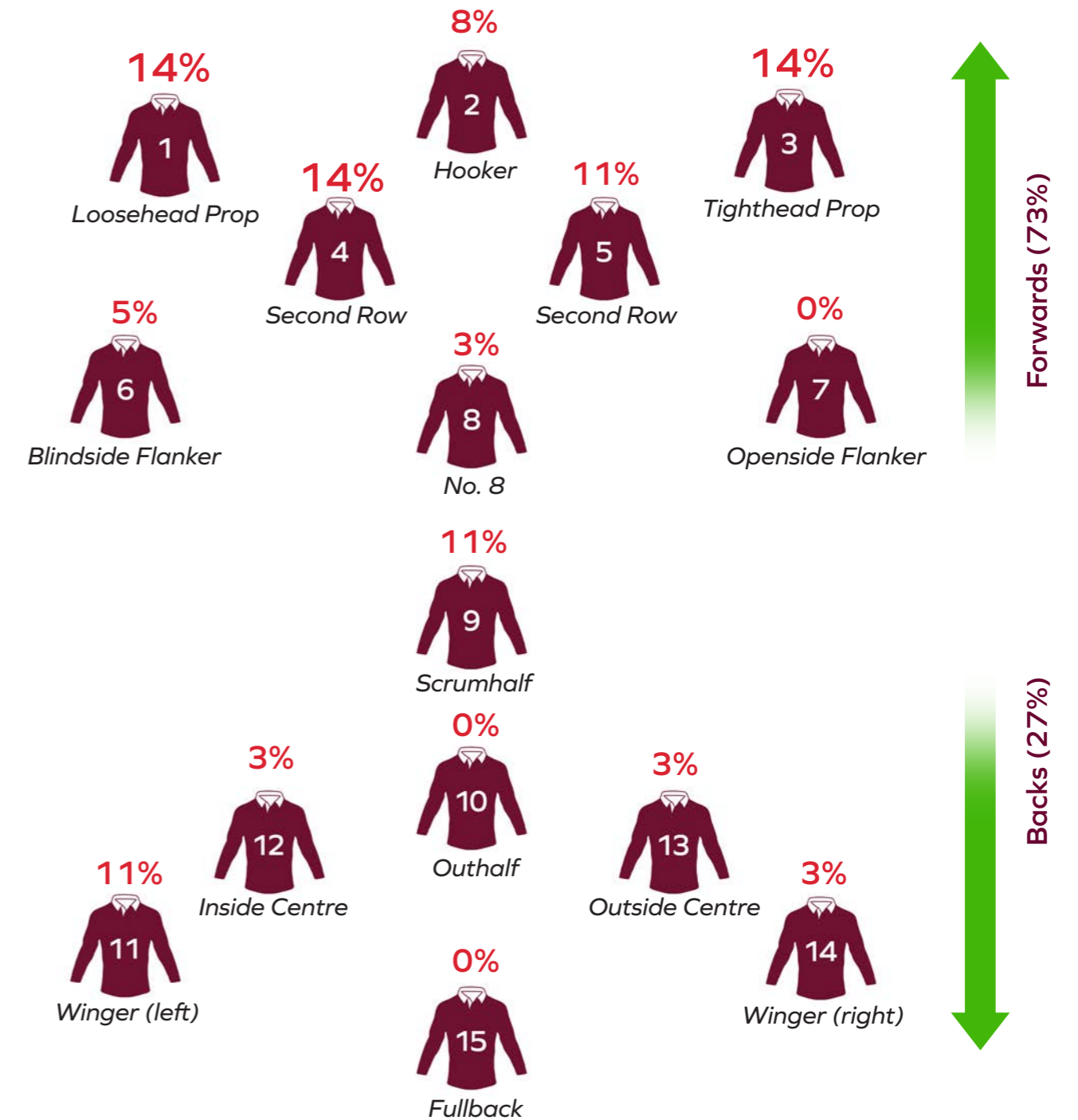


Figure 5(b): Percentage of injuries occurring per playing position in the women's clubs



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.⁽²⁾ In line with the 2019-2020, 2021-2022 and 2022-2023 seasons, 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.⁽²⁾ Slight injuries are discussed in more detail in sub-section 3.10.

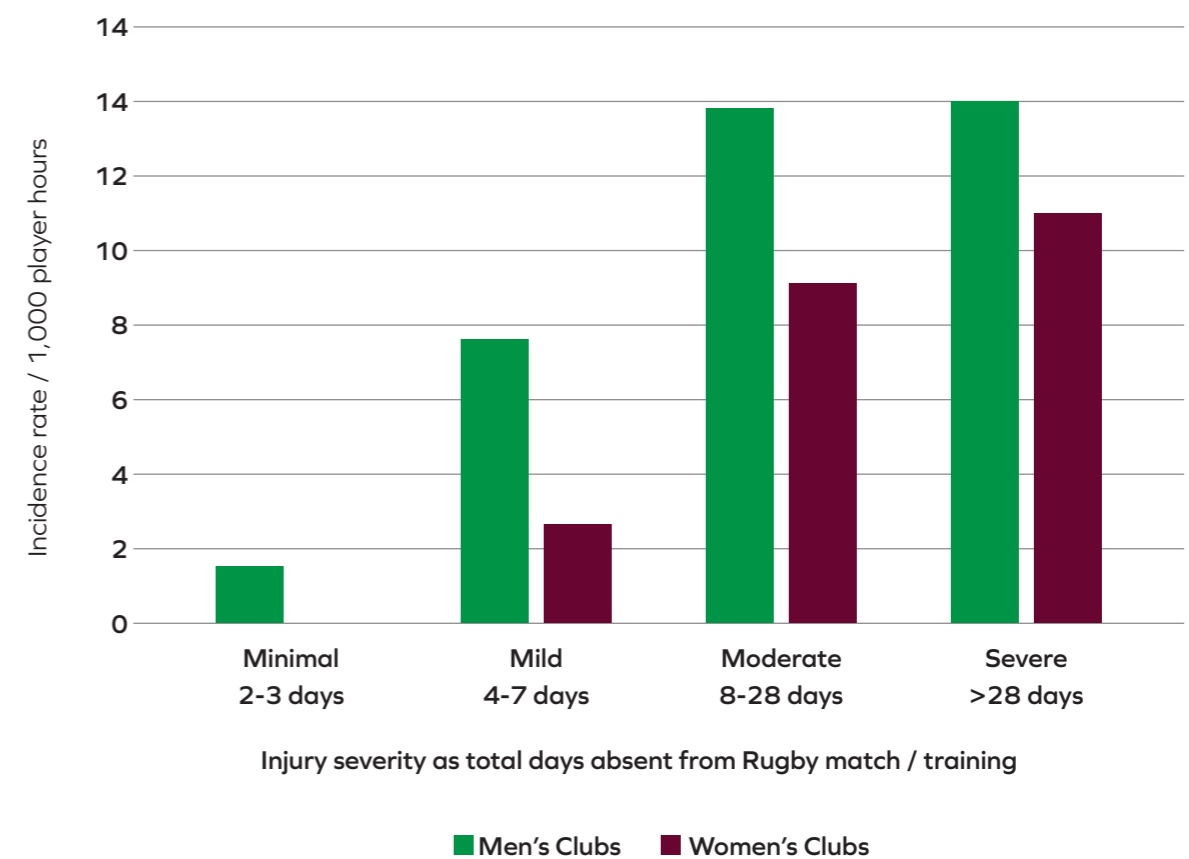


Figure 6: Injury severity of time-loss injuries (IR/1,000 player hours)

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]).

Shoulder dislocation/subluxation carried the greatest burden of all match injuries for the men's clubs (with 144 days/1,000 player hours) in 2023 -2024 compared to concussions carrying the greatest burden in 2022-2023 (273 days/1,000 player hours). For women's clubs, similar to the previous report, knee sprains carried the greatest injury burden (657 days/1,000 player hours) but were less burdensome compared to 2022-2023 (739 days/1,000 player hours).

Hamstring strains had the second greatest injury burden this season for men's clubs, with a rate of 120 days/1,000 player hours. For women's clubs, foot/toe fractures had the second greatest injury burden with a rate of 96 days/1,000 player hours. Hand/finger fractures and wrist dislocation/subluxation carried the same injury burden with 88 days/1,000 player hours.

For the men's clubs, concussions resulted in an average of 30 days' absence from Rugby match or training in 2023-2024, the same as in the 2022-2023 season (compared to 38 days in the 2019-2020 season and 27 days in 2021-2022).

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

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

	Diagnosis	Injury Burden	Average TDO
Men's Clubs	Shoulder dislocation/subluxation	144	136
	Hamstring strain	120	40
	Ankle sprains	115	35
	Concussions	115	30
Women's Clubs	Knee sprains	657	203
	Foot/toe fractures	96	161
	Wrist dislocation/subluxation	88	119
	Hand/finger fractures	88	70

3.10 Medical Attention Match Injury (slight injury)

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.⁽²⁾

During the 2023-2024 season, 8 medical attention injuries were recorded in the men's clubs, with none recorded for the women's clubs.

The overall team match medical attention injury incidence rates:

- Men's AIL clubs - 0.9/1,000 player hours
- Women's AIL clubs - 0.0/1,000 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	7	335	162	3232	1	0.3
Men's AIL 2	12	518	269	5367	7	1.3
Overall men's clubs	19	853	431	8598	8	0.9
Women's AIL	4	145	77	1536	0	0.0
Overall women's clubs	4	145	77	1536	0	0.0

*Incidence rate per 1,000 player hours

Lacerations had the highest incidence rate (0.3/1,000 player hours) for all types of medical attention injuries for the men's clubs matching the 2022-2023 season.

For the men's clubs, 50% of medical attention injuries were to the head, neck and face.

The tackle event accounted for the majority of medical attention injuries in the men's clubs (0.6/1,000 player hours) the most of which occurred to the tackler.

3.11 New & Recurrent Injury

The majority of all injuries were 'New' compared to 'Recurring'. For all medical attention injuries across the men's and women's clubs, 100% were new injuries. For time-loss injuries reported in the men's clubs, new injuries accounted for 94%, with 97% in the women's clubs recorded as new.

3.12 Other Match-day Related Injury

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

In the men's clubs, 17 warm-up injuries were reported, of which 12 were time-loss. Of these 12, 3 were from tackle events, 3 non-contact, 2 rucks, and 4 were unknown mechanisms. Contact mechanisms, tackle events, and rucks, were most responsible for warm-up injuries in the men's clubs (42%).

For the women's clubs, there were 2 warm-up injuries reported, both of which were time-loss. The mechanisms were a lineout and an accidental collision/contact.



4.0 Training Injury

4.1 Overall Time-loss Training Injury

For the 2023-2024 season, training injury data from the 23 clubs (19 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.⁽²⁾

The overall number of training injuries for the men's clubs was 79, while the overall number of training injuries for the women's clubs was 7.

Table 10 shows the overall number of training injuries 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 10: Training time-loss injuries (excluding slight injuries)

Division	No. Clubs	No. Players	No. Injuries
Men's AIL 1	7	335	48
Men's AIL 2	12	518	31
Overall men's clubs	19	853	79
Women's AIL	4	145	7
Overall women's clubs	4	145	7

4.2 Training Injury Classification

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

The most common injury diagnosis for the men's clubs was hamstring strains, accounting for 20% of all training time-loss injuries. This was followed by ankle sprains, accounting for 10%, and calf strains which accounted for 8% of training injuries. Shoulder sprains and knee sprains accounted for 5% of training injuries each.

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

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

Men's Clubs				
2023-24	2022-23	2021-22	2019-20	2018-19
Hamstring strains (20%)	Hamstring strains (18%)	Ankle sprains (20%)	Hamstring strains (23%)	Hamstring strains (13%)
Ankle sprains (10%)	Ankle sprains (11%)	Hamstring strains (16%)	Ankle sprains (13%)	Ankle sprains (12%)
Calf strains (8%)	Concussion (6%)	Groin strains (7%)	Calf strains (6%)	Calf/Achilles strains (10%)
-	-	-	Knee tendon strains (6%)	-
-	-	-	Quadriceps contusions (6%)	-

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

Women's Clubs				
2023-24*	2023-23	2021-22	2019-20	2018-19
Foot/toe strain (14%)	Shoulder strain (18%)	Ankle sprains (22%)	Finger fractures (29%)	Hamstring strains (18%)
Shin fracture (14%)	Ankle sprain (12%)	Hamstring strains (22%)	Sternoclavicular sprains (14%)	Concussions (18%)
Clavicle sprain (14%)	Foot/Toe sprain (12%)	-	Neck strains (14%)	-
Low-back strain (14%)	-	-	Wrist strains (14%)	-
Shoulder dislocation/subluxation (14%)	-	-	Lumbar herniation (14%)	-
Chest sprain (14%)	-	-	Finger nerve damage (14%)	-
Knee sprain (14%)	-	-	-	-

*accounts for mathematical rounding

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: 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 strain (17%)	Hamstring strain (26%)
Ankle sprain (10%)	Ankle sprain (10%)
Anterior thigh (10%)	Calf strain (10%)
-	Shoulder sprain (10%)

4.3 Body Location of Training Injury

Overall, the posterior thigh (20%) was the most common injury site in the men's clubs, followed by the ankle (13%). The 2022-2023 season's report showed similar rankings, with the posterior thigh (18%) and the ankle (11%) most common.

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

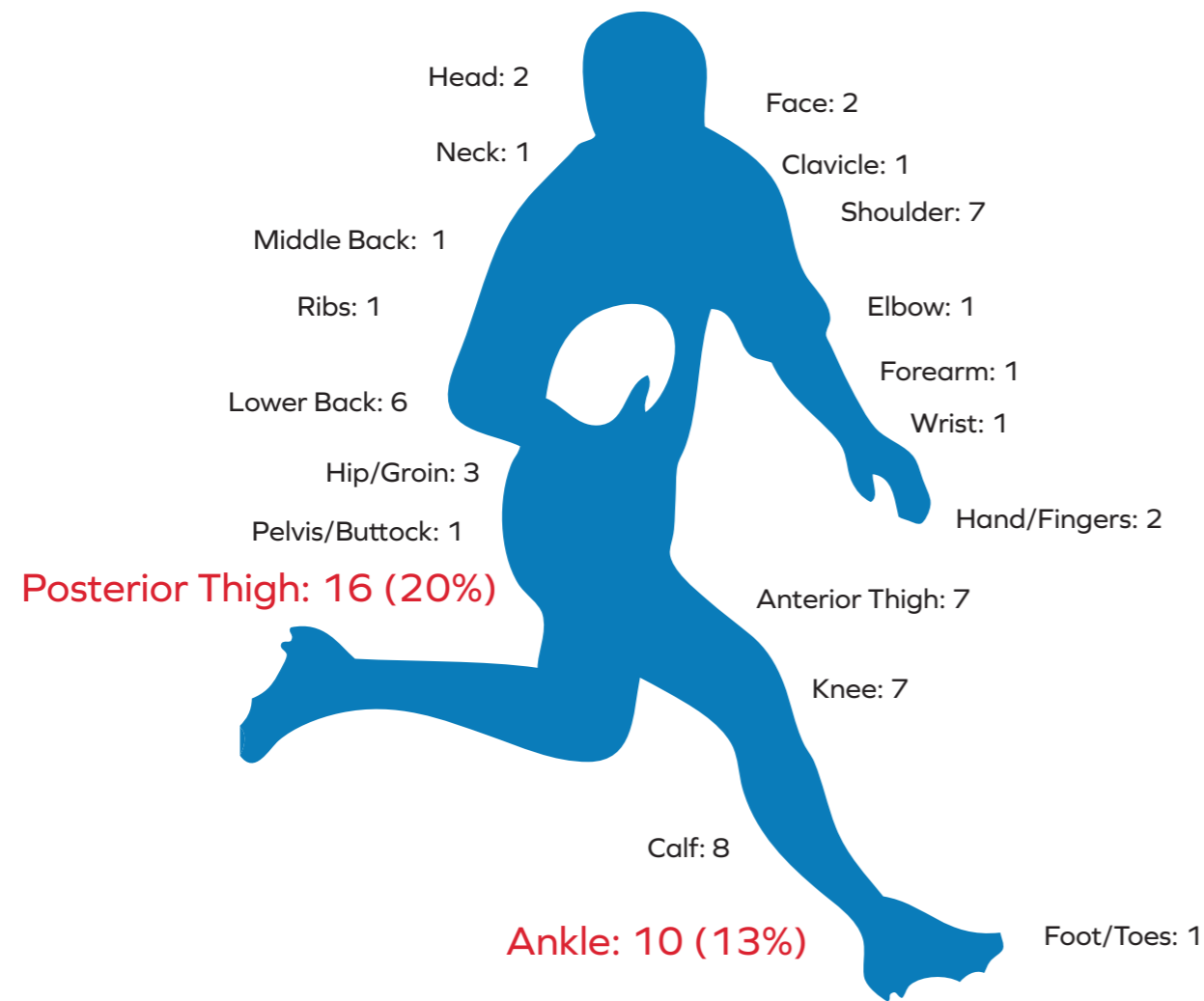


Figure 7(a): Location of training injury for the men's clubs (number of injuries)

The women's clubs saw an equal distribution of training injuries occur around all body locations.

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

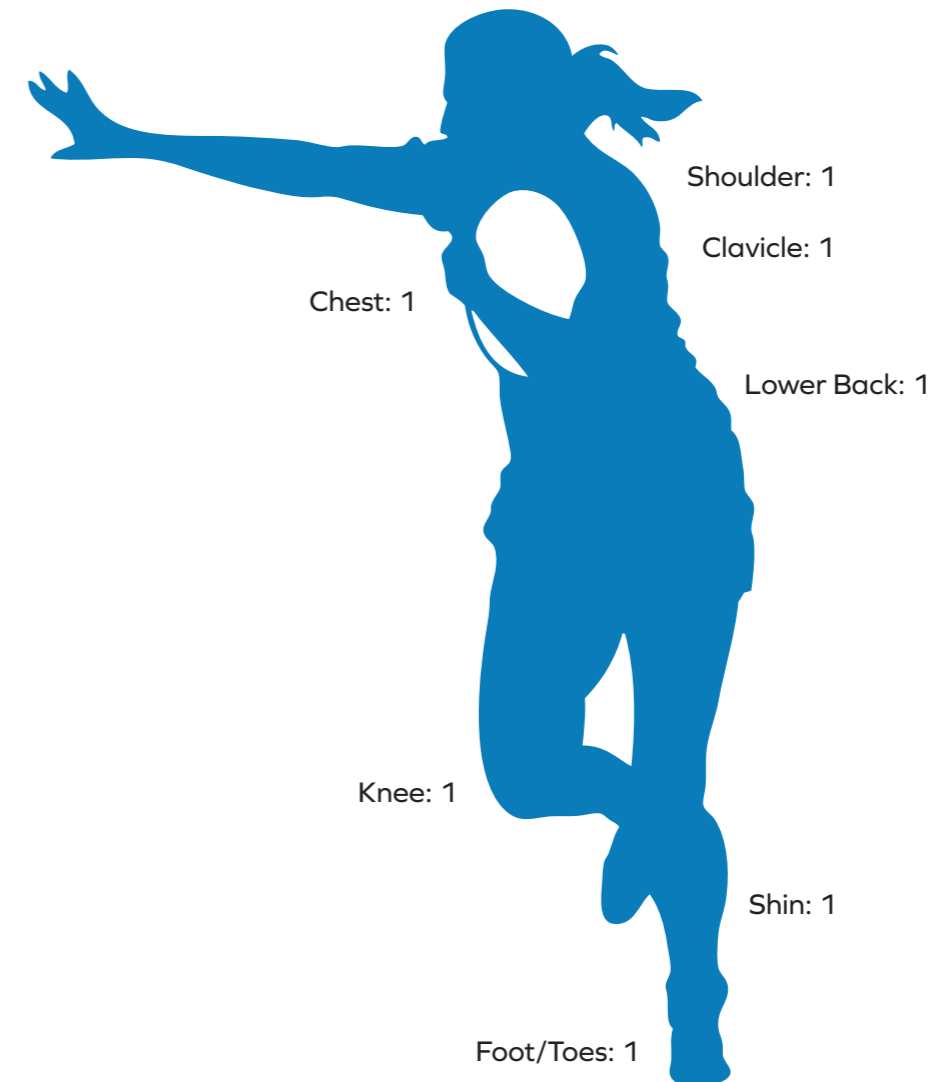


Figure 7(b): Location of training injury for the women's clubs (number of injuries)

4.4 Nature of Training Injury

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

In all six 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 2023-2024, similar to 2022-2023, women's clubs experienced most injuries as sprains and strains, with other seasons more evenly distributed across natures. Figure 8 represents data from this season.

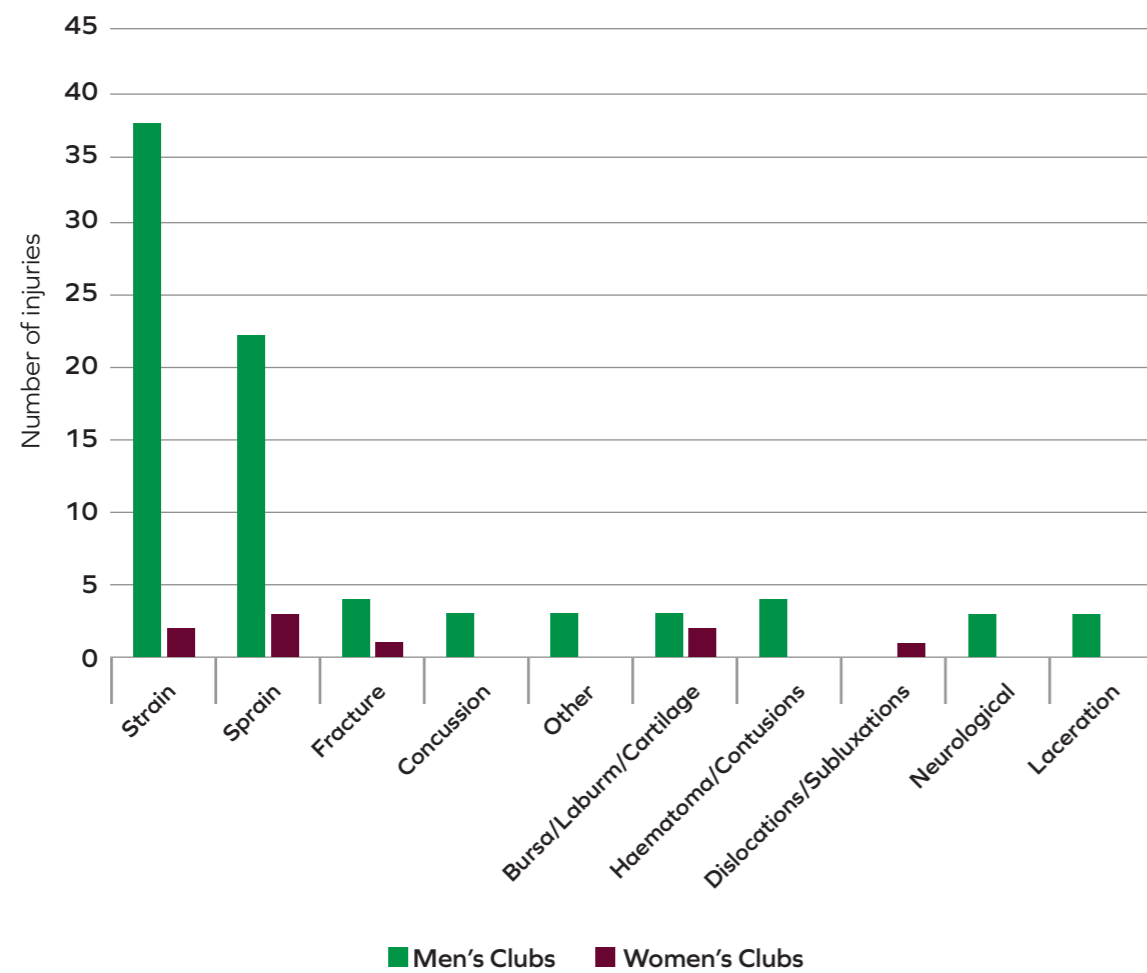


Figure 8: Nature of training injury (number of injuries)

4.5 Training Injury Event

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

The training event responsible for the most men's injuries this season, similar to 2022-2023, was non-contact mechanisms, accounting for 39%. The tackle event was second most common, with both the tackler and the ball carrier sustaining 9% of the injuries respectively. For women's clubs, being tackled was responsible for 71% of training injuries. Figure 9 represents the data from this season.

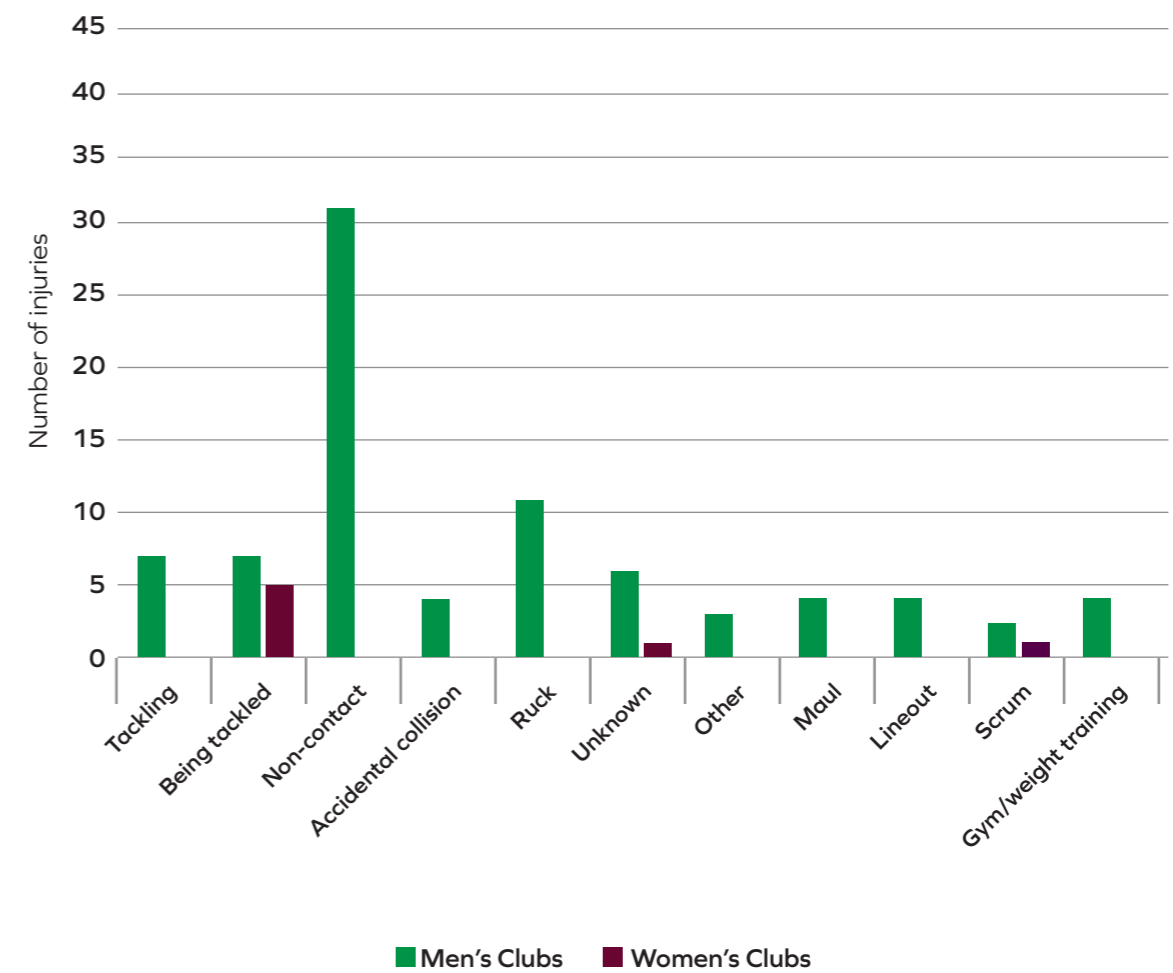


Figure 9: Training injury event (number of injuries)

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.⁽¹⁾ The majority of training injuries were moderate or severe, as shown in Figure 10. This is a similar distribution to the data from 2022-2023 and 2021-2022.

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.⁽²⁾ Slight injuries are discussed in more detail in sub-section 4.7.

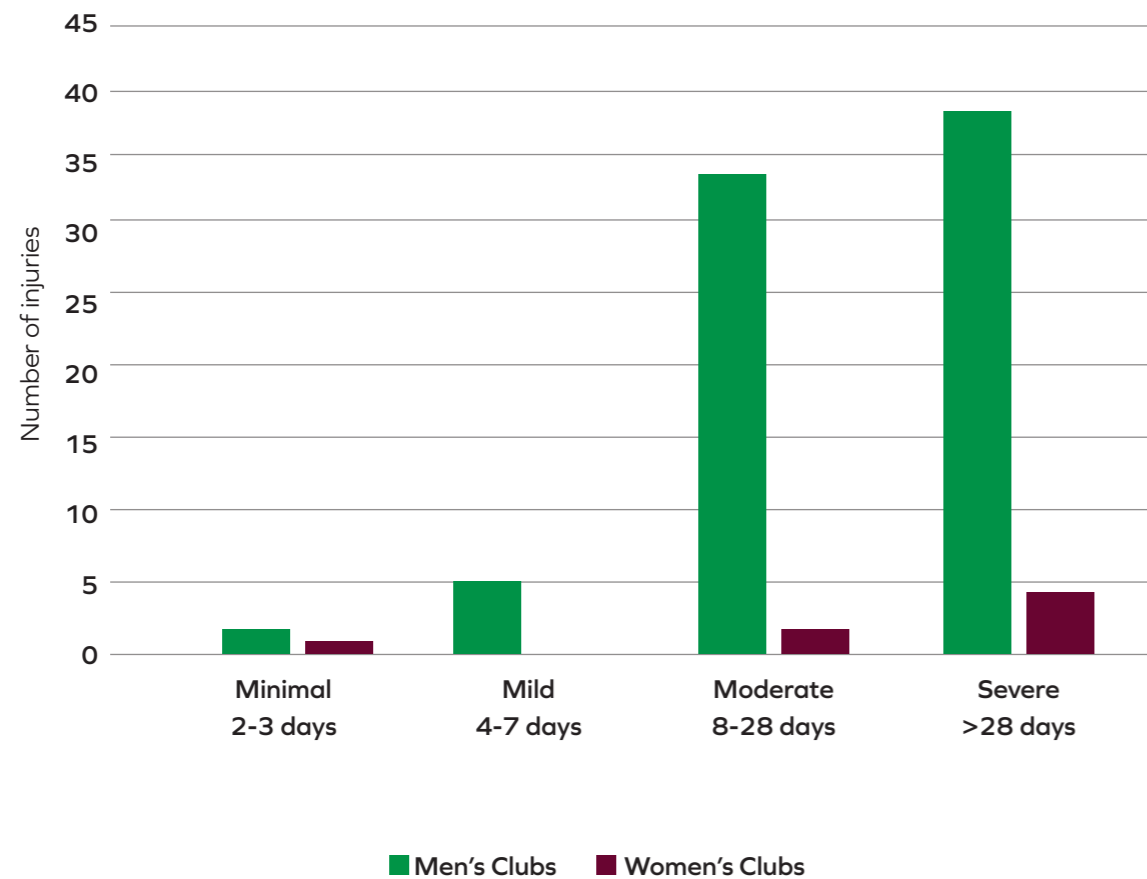


Figure 10: Training injury severity (number of injuries)

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]). Exposure was not measured in relation to training injuries, therefore 'days lost per 1,000 hours' could not be calculated. However, frequency of training injuries along with average total days off are reported in table 14.

For training injuries reported in the men's clubs, hamstring strains represented the highest frequency of diagnosis (20%) and had an average days' absence of 63 days. For the women's clubs, foot / toe strains (14%) had an average days' absence of 423 days.

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

	Diagnosis	Number of Injuries	Average TDO
Men's Clubs	Hamstring strain	16	63
	Ankle sprain	8	61
	Calf strains	6	64
Women's Clubs	Foot/toe strain	1	423
	Shin fracture	1	222
	Hand/finger fracture	1	105

4.8 Medical Attention Training Injury (slight injury)

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.⁽²⁾

During the 2023-2024 season, five medical attention injuries were 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 the 2022-2023 season reporting 3 and the 2021-2022 season reporting only 1 from men's clubs. The 2019-2020 season reported 1 injury each for both men and women, and the 2018-2019 season reported 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	19	853	5
Women's Clubs	4	145	0



5.0 Future Directions of the IRIS Project

Following five successful seasons of the IRISweb system, the IRIS project continued and completed its sixth season of data collection during the 2023-2024 campaign. Recruitment continued in the men's AIL across both Division One and Division Two, expanding a greater reach across Ulster and Connacht. Recruitment in the women's clubs will continue to expand across the women's AIL. The Irish Rugby Football Union has opted in to the World Rugby Tackle Height Law Trial that will run for two years across adult amateur and also age-grade (schools) Rugby.

The IRIS Project began a study in the senior amateur club 2021-2022 season measuring injury epidemiology and programme adherence for 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 programme, ENGAGE prepares players for the immediate training ahead and duration of the competitive matches across the season. IRIS plan to explore this programme in the underage school's game in future seasons, with a heightened focus on coach support for programme delivery.

The IRIS project has also commenced surveillance into contact-related breast injuries and exercise-induced breast pain in adult female players in Ireland and internationally. This information will help inform all involved in the women's game regarding the prevalence of breast pain and injury and raise knowledge and awareness. In 2024 IRIS also commenced a collaboration with University of Pittsburgh Medical Center (UPMC Ireland) to further explore concussion symptoms, recovery duration and treatment. This collaborative project aligns to the work of IRIS and will over the coming four years enhance our understanding of concussion treatments within the Irish amateur Rugby context.





6.0 Glossary of Terms

Ankle sprains are ligament tears (sprains) of any ligament in the ankle joint, inclusive of lateral (outside of joint), medial (inside of joint) and syndesmosis sprains (also called high ankle sprains). 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.

Calf/Achilles strain refers to a tear of one or more of the muscle groups located on the posterior aspect (back) of the lower leg.

Finger nerve damage refers to an injury to any nerve(s) located in the fingers.

Finger sprain refers to a tear of the ligaments that connect the bones of the finger joints.

Foot/toe sprain refers to a tear of the ligaments that connect the bones of the foot joints.

Fracture refers to a partial or complete break in the continuity of bone.

Groin strain refers to a tear of primarily the iliopsoas or adductor muscle group.

Haematoma/contusion refers to a bruise located anywhere in the body.

Hamstring strain refers to a tear of the muscle group located on the posterior aspect (back) of the thigh.

Knee sprains are inclusive of tears to any ligament of the knee joint (inclusive of anterior cruciate ligament or ACL, posterior cruciate ligament or PCL, medial collateral ligament or MCL, and lateral collateral ligament or LCL).

Knee tendon strain is a tear to one of the two tendons in the knee joint (patellofemoral or quadriceps tendon).

Laceration refers to a cut or tear in the skin.

Lumbar herniation refers to damage to the discs that are located between each of bones in the lower back. The most common type of injury to the lumbar discs are tearing or bulging.

Neck strain is a tear to one of the muscles or tendons in the neck region.

Quadriceps contusion is a deep bruise in the muscle group at the front of the thigh.

Shoulder dislocation/subluxation refers to either partial or complete separation of the humerus (upper arm bone) from the glenoid fossa (shoulder socket).

Shoulder sprain refers to a tear in one of the ligaments in the glenohumeral (shoulder) joint.



7.0 Publications and Conferences

7.1 Journal Publications

Bibby K., Kenny I.C., Cahalan R., Purtill H. and Comyns T.M. (2024). Contact Breast Injuries Among Female Athletes – a Systematic Review. *Sports Medicine*. 54(7), 1921-1930, <https://doi.org/10.1007/s40279-024-02027-y>

Tondelli, E., Zabalov, S., Kenny, I.C. and Comyns, T.M. (2024). Differences and correlations between horizontal-vertical single-leg jumps performance, dynamic balance and ankle dorsiflexion range of motion in male amateur rugby players according to playing positions. *Journal of Bodywork & Movement Therapies*. 38, 281-288. DOI: 10.1016/j.jbmt.2024.01.033

Guilfoyle L., Kenny I.C., O'Sullivan K., Campbell M.J., Warrington G.W., Glynn L.G. and Comyns T.M. (2024) Coaches of youth field-sports as delivery agents of injury prevention programmes: how are we training the trainers? A systematic scoping review. *British Journal of Sports Medicine*. 58(3), 114-153. doi: 10.1136/bjsports-2023-106934

Tondelli, E., Zabalov, S., Comyns T.M. and Kenny I.C. (2023). Effect of COVID-19 lockdown on injury incidence and burden in amateur Rugby Union. *Physical Therapy in Sport*. 59, 85-91. doi: 10.1016/j.ptsp.2022.12.005

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. (2022). Risk Factors for Acute Ankle Sprains in Field-Based, Team Contact Sports: a Systematic Review. *The Physician and Sportsmedicine*. 51(6), 517-530. <https://doi.org/10.1080/00913847.2022.2093618>

Leahy T.M., Kenny I.C., Campbell M.J., Warrington G.D., Cahalan R., Harrison A.J., Lyons M., Glynn L.G., O'Sullivan K., Purtill, H. and Comyns T.M. (2023). Injury Trends for School Rugby Union in Ireland: The Need for Position-specific Injury-prevention Programs. *Sports Health*. 15(1), 131-141. <https://doi.org/10.1177/19417381221078531>

Griffin, A., Kenny, I.C., Comyns, T.M., Purtill H., Tiernan C., O'Shaughnessy E. and Lyons, M. (2021). Training load monitoring in team sports: A practical approach to addressing missing data. *Journal of Sports Sciences*. 39(19), 2161-2171. <https://doi.org/10.1080/02640414.2021.1923205>

Leahy T.M., Comyns T.M., Campbell M.J., Warrington G.D., Cahalan R., Harrison A.J., Lyons M., Glynn L.G., Purtill, H. and Kenny I.C. (2021). The Epidemiology of Shoulder Injuries in Irish Schoolboy Rugby Union. *Orthopaedic Journal of Sports Medicine*. 9(8), e-collection. DOI: 10.1177/23259671211023431

Yeomans C., Kenny I.C., Cahalan R., Warrington G.D., Harrison A.J., Purtill H., Lyons M., Campbell M.J., Glynn L.G. and Comyns T.M. (2021). Injury trends in Irish amateur Rugby Union; an epidemiological comparison of male and female Rugby-related injuries. *Sports Health*. 13(6), 540-547. <https://doi.org/10.1177/1941738121997145>

Griffin, A., Kenny, I.C., Comyns, T.M. and Lyons, M. (2020). The development and evaluation of a training monitoring system for amateur Rugby Union. *Applied Sciences*. 10(21), 1-25. <https://doi.org/10.3390/app10217816>

Kearns J., Ross A.M., Walsh D.R., Cahalane R.M., Hinchion R., Ryan M.C., Conway E., Comyns T.M., Kenny I.C., McGourty K.D. and Mulvihill J.J.E. (2020). A blood biomarker cohort study with clinical correlation to diagnose sports related concussion in elite rugby and monitor recovery. *BMJ Open Sports and Exercise Medicine*. 6(1): e000948, <http://dx.doi.org/10.1136/bmjsem-2020-000948>

Griffin, A., Kenny, I.C., Comyns, T.M. and Lyons, M. (2020). Training load monitoring in amateur Rugby Union: A survey of current practices. *The Journal of Strength and Conditioning Research*. 35(6), 1568-1575 doi: 10.1519/JSC.0000000000003637

Griffin, A., Kenny, I.C., Comyns, T.M. and Lyons, M. (2020) The Relationship Between the Acute:Chronic Workload Ratio and Injury and its Application in Team Sports: A Systematic Review. *Sports Medicine*. 50(3), 561-580. doi: 10.1007/s40279-019-01218-2

Leahy T.M., Kenny I.C., Campbell M.J., Warrington G.D., Cahalan R., Harrison A.J., Lyons M., Glynn L.G., Purtill, H. and Comyns T.M. (2019). Injury Surveillance and Prevention Practices across Rugby Schools in Ireland. *Physical Therapy in Sport*. 43, 134-142. doi: <https://doi.org/10.1016/j.ptsp.2020.02.006>

Yeomans C., Comyns T.M., Cahalan R., Hayes K., Costello V., Warrington G.D., Harrison A.J., Lyons M., Campbell M.J., Glynn L.G. and Kenny I.C. (2019). The relationship between physical and wellness measures and injury in amateur Rugby Union players. *Physical Therapy in Sport*. 40, 59-65. doi: <https://doi.org/10.1016/j.ptsp.2019.08.012>

Leahy T.M., Kenny I.C., Campbell M.J., Warrington G.D., Cahalan R., Harrison A.J., Hayes K., Lyons M., Glynn L.G., and Comyns T.M. (2019). Injury Surveillance in Schools Rugby: An overview of Injury Epidemiology & Surveillance Practices. *Physical Therapy in Sport*. 38, 170-78. doi: 10.1016/j.ptsp.2019.05.005

Yeomans, C., Kenny, I.C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Glynn, L.G. and Comyns, TM (2019). The design, development, implementation and evaluation of IRISweb; A rugby specific web-based injury surveillance system. *Physical Therapy in Sport*. 35, 79-88. doi:10.1016/j.ptsp.2018.11.007

Yeomans, C., Comyns, T.M., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J. and Kenny, I.C. (2018) Current injury monitoring and player education practices in Irish amateur Rugby Union. *Physical Therapy in Sport*. 33, 27-32. doi: 10.1016/j.ptsp.2018.06.008

Yeomans, C., Kenny, I.C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Comyns, TM (2018). The incidence of injury in amateur male Rugby union: a systematic review and meta-analysis. *Sports Medicine*. 48(4), 837-848. doi: 10.1007/s40279-017-0838-4

7.2 Conference Communications

Kenny, I.C., Billingham, T., Cahalan, R., Warrington, G., O'Sullivan, K., Yeomans, C., Glynn, L.G., Lyons, M., Purtill, H., Mulvihill, J.J.E., Campbell, M.J., Bibby, K. & Comyns, T.M. (2024) Five Year Analysis of Playing Surface Injuries in Female and Male Adult Amateur Community Rugby Union. Submitted to the 20th SASMA South African Sports Medicine Association 2024 Conference, 17-19 October, Stellenbosch, South Africa.

Comyns,T.C., Guilfoyle, L., Dolan, P., Bibby, K., Cahalan, R., Warrington, G., O'Sullivan, K., Glynn, L.G., Lyons, M., Purtill, H., Mulvihill, J.J.E., Campbell, M.J., & Kenny, I.C. (2024) Comparison of Training Injuries in Male Adult Amateur Community Rugby Union and Schoolboy Rugby Union in Ireland. Submitted to the 20th SASMA South African Sports Medicine Association 2024 Conference, 17-19 October, Stellenbosch, South Africa.

Cahalane, R., Comyns,T.C., Guilfoyle, L., Dolan, P., Bibby, K., Warrington, G., O'Sullivan, K., Glynn, L.G., Lyons, M., Purtill, H., Mulvihill, J.J.E., Campbell, M.J., & Kenny, I.C. (2024) Comparison of Match Injuries in Male Adult Amateur Community Rugby Union and Schoolboy Rugby Union in Ireland. Submitted to the 20th SASMA South African Sports Medicine Association 2024 Conference, 17-19 October, Stellenbosch, South Africa.

Guilfoyle L., Kenny I.C., O'Sullivan K. & Comyns C. (2024) What we don't know can hurt us: the under-reporting of coach education characteristics in sports injury prevention. Submitted to the 20th SASMA South African Sports Medicine Association 2024 Conference, 17-19 October, Stellenbosch, South Africa.

Bibby K., Comyns T.C., Cahalan R., Purtill H. and Kenny I.C. (2024) An International Investigation on Exercise Induced Breast Pain and Contact Breast Injuries among Female Rugby Union Players. Submitted to the 20th SASMA South African Sports Medicine Association 2024 Conference, 17-19 October, Stellenbosch, South Africa.

Warrington, G.D., McGrath, E., Comyns, T.M., Cahalan, R., Yeomans, C., and Kenny, I.C. (2024) Comparison of Women's and Men's Injury Epidemiology in Amateur Rugby Union. Submitted to the 20th SASMA South African Sports Medicine Association 2024 Conference, 17-19 October, Stellenbosch, South Africa.

Comyns, T.M. (2024) ENGAGE: Development and implementation of the ENGAGE injury prevention programme with Irish amateur and schoolboy rugby players. Invited talk. Proceedings of the UK Collaborating Centre on Injury and Illness Prevention in Sport (UKCCIIS) International Conference 2024, 8-9 July 2024, Edinburgh, Scotland.

Guilfoyle, L., Comyns, T.M., O'Sullivan, K. and Kenny, I.C. (2024) "Tell me what you want, what you really, really want": Rugby Union coach preferences for education and support in injury prevention. Proceedings of the UK Collaborating Centre on Injury and Illness Prevention in Sport (UKCCIIS) International Conference 2024, 8-9 July 2024, Edinburgh, Scotland.

Power, L.C., Comyns, T.M., Mulvihill, J.J.E., Collins, M.W., Kontos, A.P. and Kenny, I.C., (2024) Sports-related concussion frequency and time-loss in Irish adult amateur and schools underage rugby training and matches. Proceedings of the 2024 All Ireland Postgraduate Conference in Sport Science, Physical Activity and Physical Education, 22 May 2024, ATU Galway, Ireland.

Kenny, I.C., Power, L.C., Mulvihill, J.J.E., Collins, M.W., Kontos, A.P. and Comyns, T.M. (2024) Concussion Time-Loss Severity in Amateur Rugby Union. Proceedings of the TREAT sport-related concussion Conference, 20-21 April 2024, Pittsburgh, USA.

Power, L.C., Kenny, I.C., Mulvihill, J.J.E., Collins, M.W., Kontos, A.P. and Comyns, T.M. (2024) Whole body injury and time-loss following sports related concussion in Irish amateur Rugby players over a competitive season. Proceedings of the TREAT sport-related concussion Conference, 20-21 April 2024, Pittsburgh, USA.

Griffin, A., Kenny, I.C., Comyns, T.M., Tiernan, C. and Lyons, M. (2024) Practical considerations for the use of pre-session subjective wellness as a tool for injury risk mitigation in amateur Rugby Union. Submitted to the European College of Sport Science Conference 2024, 2-5 July 2024, Glasgow, UK.

Bibby K., Comyns T.M., Cahalan R., Warrington G.D., Purtill H. and Kenny, I.C. (2024) A Silent Injury - Breast Pain And Injury Among Female Rugby Union Players. Proceedings of the 71st ACSM American College of Sports Medicine Conference 2024, 28 May – 31 June 2024, Boston, USA.

Bibby, K., Kenny, I.C., Cahalan, R. and Comyns T.M. (2023) Impact related breast injuries among female athletes – a systematic review. Proceedings of the National Sport & Human Performance Conference 2023, 29 September 2023, Limerick, Ireland.

Kenny, I.C., Billingham, T., Dolan, P., Cahalan, R., Warrington, G.D., Yeomans, C., Glynn, L., Campbell, M.J., Lyons, M., Harrison, A.J., Purtill, H., Mulvihill, J.J.E. and Comyns, T.M. (2023) Four Year Analysis of Playing Surface Relationship to Injuries in Adult Amateur Rugby Union. Proceedings of the National Sport & Human Performance Conference 2023, 29 September 2023, Limerick, Ireland.

Guilfoyle, L., Comyns, T.M., O'Sullivan, K. and Kenny, I.C. (2023) Mechanism of Injury in Irish Schoolboy Rugby Union: How much does contact contribute? Proceedings of The Royal College of Surgeons Ireland Faculty of Sports and Exercise Medicine (RCSI FSEM) Conference 2023, 15 September 2023, Dublin, Ireland.

Guilfoyle, L., Comyns, T.M., O'Sullivan, K. and Kenny, I.C. (2023) Ligament sprain injuries in Irish Schoolboy Rugby Union. Proceedings of the Irish Society of Chartered Physiotherapists ISCP Conference 2023, 13 October 2023, Galway, Ireland.

Bibby, K., Kenny, I.C., Cahalan, R. and Comyns T.M. (2023) Are existing injury surveillance systems in Rugby Union capable of reporting and monitoring breast injuries? Proceedings of the Irish Society of Chartered Physiotherapists ISCP Conference 2023, 13 October 2023, Galway, Ireland.

Billingham, T., Comyns, T.M., Mulvihill, J.J.E., Dolan, P., Yeomans, C., Viviers, P.L. and Kenny, I.C. (2023) Concussion and Subsequent Injuries In Amateur Community Rugby Union. Proceedings of the 70th ACSM American College of Sports Medicine Conference 2023, 30 May – 2 June 2023, Denver, USA.

Comyns, T.M., Purtill, H., Warrington, G.D., Cahalan, R., O'Sullivan, K., Glynn, L.G., Campbell, M.J., Lyons, M., Harrison, A.J., Yeomans, C., Dolan, P. and Kenny, I.C. (2023) Comparison Of Amateur Rugby Match-injury Incidence Rates Between Pre And Post Covid-19 Lockdown Seasons. Proceedings of the 70th ACSM American College of Sports Medicine Conference 2023, 30 May – 2 June 2023, Denver, USA.

Dolan, P., Comyns, T.M., Glynn, L.G., Purtill, H. and Kenny, I.C. (2023) A Customized Warm-up Design And Controlled Feasibility Trial In Adult Amateur Rugby Union. Proceedings of the 70th ACSM American College of Sports Medicine Conference 2023, 30 May – 2 June 2023, Denver, USA.

Guilfoyle, L., Leahy, T., Comyns, T.M., O'Sullivan, K. and Kenny, I.C. (2023) Injury Trends Across Two Seasons Of Senior Cup Schoolboy Rugby Union In Ireland. Proceedings of the 70th ACSM American College of Sports Medicine Conference 2023, 30 May – 2 June 2023, Denver, USA.

Kenny, I.C., Billingham, T., Dolan, P., Cahalan, R., Warrington, G.D., Yeomans, C., Glynn, L., Campbell, M.J., Lyons, M., Harrison, A.J., Purtill, H., Mulvihill, J.J.E. and Comyns, T.M. (2023) Characteristics of Injury in Rugby Union on Artificial and Natural Playing Surfaces. Proceedings of the 70th ACSM American College of Sports Medicine Conference 2023, 30 May – 2 June 2023, Denver, USA.

Warrington, G.W., Leahy, T., Cahalan, R., Glynn, L.G., Campbell, M.J., Lyons, M., Harrison, A.J., Purtill, H., Kenny, I.C. and Comyns, T.M. (2023) Characteristics of Training Injuries in School-Boy Rugby Union in Ireland. Proceedings of the 70th ACSM American College of Sports Medicine Conference 2023, 30 May – 2 June 2023, Denver, USA.

Guilfoyle, L., Comyns T.M., O'Sullivan and Kenny I.C. (2023) Tackle-event injuries in Irish Schoolboy Rugby Union: A closer look. Proceedings of the 2023 All Ireland Postgraduate Conference in Sport Science, Physical Activity and Physical Education, 26 May 2023, Cork, Ireland.

Bibby, K., Kenny, I.C., Cahalan, R. and Comyns T.M. (2023) An investigation into existing injury surveillance systems in Rugby Union and their capability to report and monitor breast injuries. Proceedings of the 2023 All Ireland Postgraduate Conference in Sport Science, Physical Activity and Physical Education, 26 May 2023, Cork, Ireland.

Yeomans, C., Comyns, T.M., Kenny, I.C. and Liston, M. (2022) Concussion knowledge and attitudes in elite Rugby Union in Ireland. Submitted for presentation at the IBIA International Brain Injury Association 14th World Congress on Brain Injury, 29 March – 1 April 2023, Dublin.

Dolan P., Comyns T.M., Glynn L.G., Yeomans C. and Kenny I.C. (2022) An Evidence-Supported Warm-up Design and Feasibility Trial in Adult Amateur Rugby Union. Proceedings of the 2022 All Ireland Postgraduate Conference in Sport Science, Physical Activity and Physical Education, 9 September 2022, Dublin, Ireland.

Li Y. and Kenny I.C. (2022) Comparison of injury for non-contact sports (track) versus contact sports (rugby). Proceedings of the 69th ACSM American College of Sports Medicine Conference 2022, 31 May - 4 June 2022, San Diego, USA.

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.

Yeomans, C., Comyns, T.M., Cahalan, R., Warrington, G.D., Harrison, A.J., Purtill, H., Lyons, M., Campbell, M.J., Glynn, L.G. and Kenny, I.C. (2021) A Comparison of Injuries between Male and Female Amateur Rugby Union Players. International Olympic Committee (IOC) World Conference on Prevention of Injury & Illness in Sport, 25-27 November 2021, Monaco.

Dolan P., Comyns T.M., Glynn L.G., Yeomans C. and Kenny I.C. (2021) A 3 Year Investigation of Match Injuries in Amateur Rugby Union. Proceedings of the European College of Sport Science Conference 2020, 8-10 September 2021, Cologne, Germany.

Griffin, A., Kenny, I.C., Comyns, T.M. and Lyons, M. (2021). Training load monitoring in team sports: a practical approach to addressing missing data. Proceedings of the European College of Sport Science Conference 2020, 8-10 September 2021, Cologne, Germany. [Shortlisted for Young Investigator Award]

Yeomans C., Kenny I.C., Comyns T.M. and Van Dyk N. (2021) The Burden of Injury, from Amateur to Elite Women's Rugby Union. Proceedings of the Women In Sport & Exercise Conference 2021 (WISE), 19-22 April 2021, Worcester, UK.

Dolan P., Comyns T.M., Glynn L.G., Yeomans C. and Kenny I.C. (2021) Distinction Between Women's and Men's Amateur Rugby Union Match Injury: A 3 year Examination. Proceedings of the Women In Sport & Exercise Conference 2021 (WISE), 19-22 April 2021, Worcester, UK.

Murphy G. and Kenny I.C. (2021) A Qualitative Investigation into the Individual Injury Burden of Amateur Rugby Player. Proceedings of the 2021 All-Ireland Conference of Undergraduate Research (AICUR), 24 March 2021, Limerick, Ireland.

Leahy T.M., Kenny I.C., Campbell M.J., Warrington G.D., Cahalan R., Harrison A.J., Lyons M., Glynn L.G., O'Sullivan K. and Comyns T.M. (2021) Upper limb injuries in Irish Schoolboy Rugby Union. Proceedings of the 68th ACSM American College of Sports Medicine Conference 2021, 1 - 5 June 2021, Washington D.C., USA.

Griffin, A., Kenny, I.C., Comyns, T.M. and Lyons, M. (2020). The development and evaluation of a training monitoring system for amateur Rugby Union. Proceedings of the 2020 Australian Strength and Conditioning Association (ASCA) Conference on Applied Strength and Conditioning, 19-29 November 2020, (virtual), Australia.

Griffin, A., Kenny, I.C., Comyns, T.M. and Lyons, M. (2019). Training load monitoring in amateur Rugby Union: A survey of current practices. Accepted for presentation at the European College of Sport Science Conference 2020, 3-6 July 2020, Prague, Czech Republic.

Griffin, A., Kenny, I.C., Comyns, T.M. and Lyons, M. (2019). The relationship between the acute:chronic workload ratio and injury and its application in team sports: a systematic review. Proceedings of the British Association of Sport and Exercise Sciences (BASES) Conference 2019, 19-20 November 2019, Leicester, UK.

Leahy T.M., Kenny I.C., Campbell M.J., Warrington G.D., Cahalan R., Harrison A.J., Lyons M., Glynn L.G., and Comyns T.M. (2019) Injury Surveillance in School Rugby Union in Ireland. Proceedings of the SASMA South African Sports Medicine Association BRICSCESS BRICS Council of Exercise and Sports Science 2019 Congress. 10-13 October 2019, Cape Town, South Africa.

Yeomans, C., Kenny, I.C., Cahalan R., Costello V., Warrington G.D., Cahalan R., Harrison A.J., Lyons M., Glynn L.G., and Comyns T.M. Relationship between physical and wellness baseline screening measures and seasonal amateur Rugby injury. ACSM Annual Conference. Florida. May 2019.

Warrington G.D., Yeomans C., Comyns T.M., Cahalan R., Glynn L.G., Harrison A.J., Hayes K., Lyons M., Campbell M.J., Kenny I.C. Developing a Rugby-specific injury surveillance project. ACSM Annual Conference. Florida. May 2019.

Comyns T.M., Yeomans C., Cahalan R., Warrington G.D., Glynn L.G., Harrison A.J., Hayes K., Lyons M., Campbell M.J., Kenny I.C. Injury Surveillance in Amateur Rugby in Ireland. ACSM Annual Conference. Florida. May 2019.

Kenny I.C., Yeomans C., Cahalan R., Warrington G.D., Glynn L.G., Campbell M.J., Harrison A.J., Hayes K., Lyons M., Comyns T.M. Comparison of Injury in Male and Female Amateur Rugby Union. ACSM Annual Conference. Florida. May 2019.

Griffin, A., Kenny, I.C., Comyns, T.M. and Lyons, M. (2019). A comparison of the rolling average and exponentially weighted moving average models for calculating the acute:chronic workload ratio: a systematic review. AIPG Conference. Athlone IT. May 2019.

Leahy, T.M., Kenny I.C., Campbell M.J., Warrington G.D., Cahalan R., Harrison A.J., Lyons M., Glynn L.G., and Comyns T.M. A Systematic review of injury epidemiology and surveillance practices in school Rugby. AIPG Conference. Athlone IT. May 2019.

Yeomans, C., Comyns, T.M., Cahalan, R., Hayes, K., Costello, V., Warrington, G.D., Harrison, A.J., Lyons, M., Campbell, M.J., Glynn, G. L., Kenny, I.C. Injury Risk Profiling in Irish Amateur Rugby Union. AIPG Conference. Athlone IT Ireland. May 2019

Yeomans, C., Kenny, C. I., Cahalan, R., Warrington, D. G., Harrison, J. A., Hayes, K., Lyons, M., Campbell, J. M., Glynn, G. L., Comyns, M. T. Injuries in Irish Amateur Rugby AUDGPI Annual Conference. Ireland. 2019.

Leahy, T.M., Kenny, I.C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Glynn, L.G. & Comyns, T.M. (2019) IRIS Schools Methods and Aims. Irish Rugby Football Union – Irish Rugby Injury Surveillance Schools' Injury Surveillance and Prevention Workshop 2019. 17 January 2019, Limerick, Ireland.

Yeomans, C., Kenny, I.C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Glynn, L.G. & Comyns, T.M. (2019) Irish Rugby Injury Surveillance Season 2017/18 Results. Irish Rugby Football Union – Irish Rugby Injury Surveillance Schools' Injury Surveillance and Prevention Workshop 2019. 17 January 2019, Limerick, Ireland.

Kenny, I.C., Comyns, T.M., Yeomans, C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., & Glynn, L.G. (2019) Irish Rugby Injury Surveillance. Irish Rugby Football Union – Irish Rugby Injury Surveillance Schools' Injury Surveillance and Prevention Workshop 2019. 17 January 2019, Limerick, Ireland.

Yeomans, C., Comyns, T.M., Cahalan, R., Warrington, G.D., Glynn, L.G., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J. & Kenny, I.C. (2018) 'Seasonal Injury Incidence in Irish Amateur Rugby Union'. Poster presentation at the Health Research Institute, Research Day. University of Limerick, Limerick, Ireland

Kenny, I.C. & Comyns T.M. Invited plenary speakers. Kenny, I.C., Yeomans, C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Glynn, L.G., & Comyns, T.M. (2018) 'Injury Surveillance in Irish Rugby 'The Irish Rugby Injury Surveillance (IRIS) Project'. 6th World Congress of Sports & Exercise Medicine. 3-4 November 2018, Dublin, Ireland.

Yeomans, C., Comyns, T.M., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Kenny, I.C. 'Injury Monitoring and Player Education: a Survey of Current Practices in Irish Amateur Rugby Union'. ACSM Annual Congress. Minneapolis U.S.A, May 2018.

Yeomans, C., Comyns, T.M., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Kenny, I.C. 'Injury Surveillance in Irish Rugby, 'The Irish Rugby Injury Surveillance (IRIS) Project'. FSEM Spring Study Day University of Limerick, Ireland, March 2018.

Yeomans, C., Cahalan, R., Kenny, I.C., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J. and Comyns, T.M. 'The Irish Rugby Injury Surveillance (IRIS) Project: a meta-analysis of global injury incidence and a survey of Irish injury surveillance and prevention strategies'. Health Research Symposium. University Hospital Limerick, Ireland, November 2017.

Yeomans, C., Kenny, I.C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Comyns, T.M. 'The Incidence of Injury in Amateur Rugby union: a Systematic Review and Meta-analysis'. All-Ireland Postgraduate Conference. Carlow I.T. Ireland, April 2017.

Griffin, A., Kenny, I.C., Comyns, T.M. and Lyons, M. (2019). A comparison of the rolling average and exponentially weighted moving average models for calculating the acute:chronic workload ratio: a systematic review. AIPG Conference. Athlone IT. May 2019.

Leahy, T.M., Kenny I.C., Campbell M.J., Warrington G.D., Cahalan R., Harrison A.J., Lyons M., Glynn L.G., and Comyns T.M. A Systematic review of injury epidemiology and surveillance practices in school Rugby. AIPG Conference. Athlone IT. May 2019.

Yeomans, C., Comyns, T.M., Cahalan, R., Hayes, K., Costello, V., Warrington, G.D., Harrison, A.J., Lyons, M., Campbell, M.J., Glynn, G. L., Kenny, I.C. Injury Risk Profiling in Irish Amateur Rugby Union. AIPG Conference. Athlone IT Ireland. May 2019

Yeomans, C., Kenny, C. I., Cahalan, R., Warrington, D. G., Harrison, J. A., Hayes, K., Lyons, M., Campbell, J. M., Glynn, G. L., Comyns, M. T. Injuries in Irish Amateur Rugby AUDGPI Annual Conference. Ireland. 2019.

Leahy, T.M., Kenny, I.C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Glynn, L.G. & Comyns, T.M. (2019) IRIS Schools Methods and Aims. Irish Rugby Football Union – Irish Rugby Injury Surveillance Schools' Injury Surveillance and Prevention Workshop 2019. 17 January 2019, Limerick, Ireland.

Yeomans, C., Kenny, I.C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Glynn, L.G. & Comyns, T.M. (2019) Irish Rugby Injury Surveillance Season 2017/18 Results. Irish Rugby Football Union – Irish Rugby Injury Surveillance Schools' Injury Surveillance and Prevention Workshop 2019. 17 January 2019, Limerick, Ireland.

Kenny, I.C., Comyns, T.M., Yeomans, C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., & Glynn, L.G. (2019) Irish Rugby Injury Surveillance. Irish Rugby Football Union – Irish Rugby Injury Surveillance Schools' Injury Surveillance and Prevention Workshop 2019. 17 January 2019, Limerick, Ireland.

Yeomans, C., Comyns, T.M., Cahalan, R., Warrington, G.D., Glynn, L.G., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J. & Kenny, I.C. (2018) 'Seasonal Injury Incidence in Irish Amateur Rugby Union'. Poster presentation at the Health Research Institute, Research Day. University of Limerick, Limerick, Ireland

Kenny, I.C. & Comyns T.M. Invited plenary speakers. Kenny, I.C., Yeomans, C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Glynn, L.G., & Comyns, T.M. (2018) 'Injury Surveillance in Irish Rugby 'The Irish Rugby Injury Surveillance (IRIS) Project'. 6th World Congress of Sports & Exercise Medicine. 3-4 November 2018, Dublin, Ireland.

Yeomans, C., Comyns, T.M., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Kenny, I.C. 'Injury Monitoring and Player Education: a Survey of Current Practices in Irish Amateur Rugby Union'. ACSM Annual Congress. Minneapolis U.S.A, May 2018.

Yeomans, C., Comyns, T.M., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Kenny, I.C. 'Injury Surveillance in Irish Rugby, 'The Irish Rugby Injury Surveillance (IRIS) Project'. FSEM Spring Study Day University of Limerick, Ireland, March 2018.

Yeomans, C., Cahalan, R., Kenny, I.C., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J. and Comyns, T.M. 'The Irish Rugby Injury Surveillance (IRIS) Project: a meta-analysis of global injury incidence and a survey of Irish injury surveillance and prevention strategies'. Health Research Symposium. University Hospital Limerick, Ireland, November 2017.

Yeomans, C., Kenny, I.C., Cahalan, R., Warrington, G.D., Harrison, A.J., Hayes, K., Lyons, M., Campbell, M.J., Comyns, T.M. 'The Incidence of Injury in Amateur Rugby union: a Systematic Review and Meta-analysis'. All-Ireland Postgraduate Conference. Carlow I.T. Ireland, April 2017.

8.0 References

- 1) Fuller, C. W. (2007). Managing the risk of injury in sport. *Clinical Journal of Sport Medicine*, 17(3), 182-187.
- 2) Fuller, C. W., Molly, M. G., Bagate, C., Bahr, R., Brooks, J. H., Donson, H., Kemp, S. P., McCrory P., McIntosh, A. S., Meeuwisse, W. H., Quarrie, K. L., Raftery, M. & Wiley, P. (2007). Consensus statement on injury definitions and data collection procedures for studies of injuries in Rugby Union. *Br J Sports Med*, 41, 328-31.
- 3) International Olympic Committee Injury and Illness Epidemiology Consensus Group, Bahr, R., Clarsen, B., Derman, W., Dvorak, J., Emery, C. A., ... & Khan, K. M. (2020). International Olympic Committee Consensus Statement: Methods for Recording and Reporting of Epidemiological Data on Injury and Illness in Sports 2020 (Including the STROBE Extension for Sports Injury and Illness Surveillance (STROBE-SIIS)). *Orthopaedic journal of sports medicine*, 8(2), 2325967120902908.

Photographic Credits

- Page iii © Bryan Keane 02355699
- Page iv © Ben Brady 02346812
- Page v © Nick Elliott 02475817
- Page 4 © Laszlo Geczo 02434863
- Page 5 © Tom Maher 02434954
- Page 8 © Tom Maher 02373803
- Page 11 © Laszlo Geczo 02435000
- Page 21 © Tom Maher 02436030
- Page 25 © Bryan Keane 02412822
- Page 36 © Leah Scholes 02364824
- Page 38 © Lorraine O'Sullivan 02158091
- Page 39 © Ben Brady 02215854
- Page 41 © Ben Brady 02421199

