[Rugby 7s Olympic Qualifier (Women) – 2023]

Injury Surveillance Report

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1. Introduction

Understanding the incidence and nature of the injuries sustained during the practice of rugby is key in order to clarify the risks posed to players. Due to its nature as a contact sport, rugby, as well as ice hockey, lacrosse, and American football, has a higher injury incidence than non-contact sports. Through Injury Surveillance Studies in various competitions, it is possible to gain an understanding of how, where and when injuries happen, which is a fundamental requirement to advance player welfare standards across all ages and levels of the game.

Several Injury Surveillance Studies have been implemented previously in World Rugby 7s Competitions[1–3], but none were in the Rugby Europe 7s Competitions.

Rugby Europe is committed to implementing injury surveillance studies at all major Rugby Europe tournaments and to disseminate the results within the Rugby community.

The aims of these studies are:

- To record and analyze injuries sustained by men and women at the men's and women's Rugby 7s European Olympic Qualifier.

- To identify injury trends in Rugby 7s.

- To bring injury-related areas of concern to the attention of Rugby Europe's Chief Medical Officer and when appropriate to World Rugby's Chief Medical Officer.

This report continues the on-going study of Rugby Europe competitions by reporting injuries sustained during the men's and women's Rugby 7s European Olympic Qualifier.

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2. Methods

The study was conducted in accordance with the definitions and protocols described in the World Rugby approved consensus statement on definitions and procedures for injury surveillance studies in Rugby[4].

The definition of injury was: 'Any injury sustained during the 2023 women's Rugby 7s Olympic Qualifier matches that prevents a player from taking a full part in all normal training activities and/or match play for more than one day following the day of injury'. A recurrent injury was defined as 'An injury (as defined above) of the same type and at the same site as an index injury and which occurs after a player's return to full participation from the index injury'.

Specific injuries were classified using the OSICS 10 coding system[5]. Injury location, type and cause together with the event leading to the injury were also recorded.

Injury severity was determined by the number of days a player was injured: a player was deemed to be injured until he/she could undertake full, normal training and be available for match selection whether he/she was actually selected. Medical staff were informed to make an informed clinical judgment about a player's fitness to train/play on those days when players were not scheduled to train or play. Injured players were followed up after each tournament to obtain their return-to-play date: the return-to-play dates for players with injuries that remained unresolved 3 months after the final Tournament in the Rugby 7s Olympic Qualifier – 2023 were defined on the basis of the player's medical staff's judgment and prognosis. The complete lists of categories and sub-categories used for categorizing injury location and injury types are provided in the Rugby consensus publication[4].

Only match injuries resulting in > 1 day of absence from training or from the match were recorded in this study. The rest of the injuries that were not included in this definition were not recorded.

3. Data Collection

Prior to the tournament taking place, the purpose of the epidemiological study was outlined to each participating team. Each player's baseline anthropometric information was recorded: (playing position [back, forward]; date of birth; body mass [Kg]; stature [cm]); players joining a country's squad at a later date were added to the list of players and the anthropometric data recorded at the time the player joined the squad.

Medical staff prospectively recorded match injuries sustained during the tournament. A member of the team's medical staff also recorded detailed information about each injury (date of injury, date of return to play, location and type of injury, cause of injury, event leading to injury). The final piece of information recorded is normally an injured player's return-to-play date.

Belgium, Czech Republic, Germany, Great Britain, Italy, Norway, Poland, Portugal, Romania, Spain, Sweden and Turkey were involved in the Women's Rugby 7s European Olympic Qualifier.

4. Results

All participating teams reported data in accordance with the definitions and protocols described in the World Rugby approved consensus statement on definitions and procedures for injury surveillance studies in Rugby[4].

4.1 Players' anthropometric data

Table 1 summarises the numbers and anthropometric data for players, categorised as backs, forwards and all players, taking part in the Women's 7s European Olympic Qualifier 2023.

The total sample for the study was 155 players, 73 backs and 82 forwards. The mean age was 25,3 years (backs: 25,3 years; forwards: 25,3 years; *p value =0,929*). The average stature (cm) for all players was 167,6; forwards (169,0 cm) were taller than backs (165,9 cm) (*p value =0,002*). The body mass was 65,6 kg, forwards (68,1 kg) heavier than backs (62,3 kg) (*p value <0,001*).

Table 1. Players' anthropometric data

Measure	Mean (± standard deviation)		
	Backs	**Forwards**	**All players**
Players (n)	73	82	155
Stature (cm)	165,9 (6,4)	169,0 (5,9)	167,6 (6,4)
Body Mass (kg)	62,3 (6,4)	68,1 (6,5)	65,6 (7,1)
Age (years)	25,3 (4,1)	25,3 (4,5)	25,3 (4,3)

4.2 Match injuries

4.2.1 Injury incidence

Table 2 summarises the match injury frequency and incidence and match exposure data for players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

The total number of injuries sustained was 9 (backs: 7; forwards: 2) and the total match exposure was 111 player-hours (forwards: 48; backs: 63). The overall match incidence was 81,1 injuries/1000 match hours (backs: 111,1 forwards: 41,7).

Table 2. Match injury frequency, match exposure volume, and match injury incidence

Measure	Backs	Forwards	All players
Injuries (n)	7	2	9
Match Exposure (player-match-hours)	63	48	111
Incidence (95% confidence interval)	111,1 (33,5-188,7)	41,7 (0-98,2)	81,1 (30,3-131,9)

4.2.2 Injury severity

Table 3 summarises the mean and median match injury severity data for players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

The mean severity of the study was 36,8 days missed. Backs missed 40,2 days, while forward missed 25,0 days due to injuries.

The median severity was 34,0 days for all players.

Table 3. Mean and median match injury severity (days lost)

Measure	Severity (95% Confidence interval), days		
	Backs	**Forwards**	**All players**
Mean (95% confidence interval)	40,2 (6,3-74,2)	25,0 (0-2,91)	36,8 (10,6-63,1)
Median (95% confidence interval)	34,0 (7-48)	25,0 (4-46)	34,0 (7-48)

Table 4 summarises the proportion of match injuries by time-loss data for players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

Severe injuries (29-90 days) were the most common representing 44,4% of all injuries, followed by moderate (8-28 days) with 22,2% and minor (2-7 days) with 22,2% and major (> 90 days) with 11,1%. Backs suffered more moderate, severe, and major injuries than forwards.

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Table 4. Proportion of match injuries by time-loss category

Measure	Backs	Forwards	All players
Minor (2-7 days)	14,3%	50,0%	22,2%
Moderate (8-28 days)	28,6%	-	22,2%
Severe (29-90 days)	42,9%	50,0%	44,4%
Major (>90 days)	14,3%	-	11,1%

4.2.3 Injury burden

The total days-absence resulting from match injuries sustained during the Women's 7s European Olympic Qualifier 2023 was 332 days-absence (backs: 282; forwards: 50).

Injury burden, which is equal to injury incidence x mean severity, is an important ISS output measure, as it provides an overall indication of the risk of injury[6,7].

The injury burden in the Women's 7s European Olympic Qualifier 2023 was 2984 days lost/1000 player-hours (backs: 4466; forwards: 1043 days lost).

4.2.4 Injury location

Table 5 summarises the proportion of match injuries by injury location data for players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

The most common injury locations were the head/face (33,3%) followed by the ankle (22,2%), the knee (22,2%) and the shoulder injuries (22,2%). For backs, the most common injury locations were the head/face (28,6%), the shoulder (28,6%) and the knee injuries (28,6%). For forwards, the injury locations were the head/face (50,0%) and ankle (50,0%).

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Table 5. Proportion of match injuries by injury location

Measure	% (95% Confidence interval)		
	Backs	**Forwards**	**All players**
Head / Neck	28,6 (0,0-62,1)	50,0 (0,0-119,3)	33,3 (2,5-64,1)
Head/face	28,6 (0,0-62,1)	50,0 (0,0-119,3)	33,3 (2,5-64,1)
Neck/cervical spine	-	-	-
Upper limb	28,6 (0,0-62,1)	-	22,2 (0,0-49,4)
Shoulder/clavicle	28,6 (0,0-62,1)	-	22,2 (0,0-49,4)
Upper arm	-	-	-
Elbow	-	-	-
Forearm	-	-	-
Wrist/hand/fingers	-	-	-
Trunk	-	-	-
Ribs/upper back	-	-	-
Abdomen	-	-	-
Low back	-	-	-
Sacrum/pelvis	-	-	-
Lower limb	42,9 (6,2-79,6)	50,0 (0,0-119,3)	44,4 (11,9-76,9)
Hip/groin	-	-	-
Thigh, anterior	-	-	-
Thigh, posterior	-	-	-
Knee	28,6 (0,0-62,1)	-	22,2 (0,0-49,4)
Lower leg	-	-	-
Ankle	14,3 (0,0-40,2)	50,0 (0,0-119,3)	22,2 (0,0-49,4)
Foot/toe	-	-	-

4.2.5 Injury type

Table 6 summarises the proportion of match injuries by injury type for players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

The most common injury types were the joint / ligament injuries (55,5%) followed by concussions (22,2%).

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Table 6. Proportion of match injuries by injury type

Measure	% (95% Confidence interval)		
	Backs	**Forwards**	**All players**
Bone	14,3 (0,0-40,2)	-	11,1 (0,0-31,6)
Fracture	14,3 (0,0-40,2)	-	11,1 (0,0-31,6)
Other bone injury	-	-	-
C/PNS	14,3 (0,0-40,2)	50,0 (0,0-119,3)	22,2 (0,0-49,4)
Concussion	14,3 (0,0-40,2)	50,0 (0,0-119,3)	22,2 (0,0-49,4)
Nerve injuries	-	-	-
Joint (non-bone) / ligament	71,4 (41,9-100,9)	50,0 (0,0-119,3)	66,6 (35,8-97,4)
Dislocation / subluxation	-	-	-
Meniscus / Disc Injury	28,6 (0,0-62,1)	-	22,2 (0,0-49,4)
Sprain/ligament	42,8 (6,2-79,6)	50,0 (0,0-119,3)	44,4 (11,9-76,9)
Other	-	-	-
Muscle / tendon	-	-	-
Haematoma/bruise	-	-	-
Muscle strain/cramp	-	-	-
Tendon injury/tendinopathy	-	-	-
Other	-	-	-
Skin	-	-	-
Abrasion	-	-	-
Laceration	-	-	-
Other types	-	-	-
Visceral	-	-	-
Other	-	-	-
C/PNS: Central and Peripheral Nervous System			

4.2.6   Most common and highest risk injuries

Table 7 identifies the most common match injuries by injury diagnosis for players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

The most common injuries were concussion (22,2%) and anterior talofibular ligament sprain (22,2%).

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Table 7. The four most common injury diagnoses reported for backs, forwards and all players (% of all reported match injuries)

Backs		Forwards		All players	
Injury	%	Injury	%	Injury	%
Concussion	14,3	Concussion	50,0	Concussion	22,2
Anterior talofibular ligament sprain	14,3	Anterior talofibular ligament sprain	50,0	Anterior talofibular ligament sprain	22,2
Nasal fracture	14,3			Nasal fracture	11,1
Grade 1 MCL tear knee	14,3			Grade 1 MCL tear knee	11,1
Acromioclavicular joint sprain	14,3			Acromioclavicular joint sprain	11,1
Lateral meniscal tear	14,3			Lateral meniscal tear	11,1
Glenohumeral osteoarthritis	14,3			Glenohumeral osteoarthritis	11,1

Table 8 summarises the injuries with greatest burden for players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

The injury with greatest burden was anterior knee meniscal cartilage injury (35,5%), followed by concussion (24,4%), glenohumeral osteoarthritis (14,5%) and acromioclavicular joint sprain (10,5%).

Table 8. The four injury diagnoses with greatest burden reported for backs, forwards and all players (% of all reported days lost to match injuries)

Backs		Forwards		All players	
Injury	%	Injury	%	Injury	%
Knee Meniscal cartilage injury	41,8	Concussion	92,0	Knee Meniscal cartilage injury	35,5
Glenohumeral osteoarthritis	17,0	Ankle lateral ligament sprain	8,0	Concussion	24,4
Concussion	12,4			Glenohumeral osteoarthritis	14,5
Acromioclavicular joint sprain	12,0			Acromioclavicular joint sprain	10,5

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4.2.7   Injury onset

Table 9 summarises the proportion of match injuries by nature of onset data for players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

Acute onset was the only onset of injury with 100,0% versus 0,0% of gradual onset.

Table 9. Proportion of reported match injuries by nature of onset

Measure	% (95% Confidence interval)		
	Backs	**Forwards**	**All players**
Acute	100,0 (100,0-100,0)	100,0 (100,0-100,0)	100,0 (100,0-100,0)
Gradual	0,0 (0,0-0,0)	0,0 (0,0-0,0)	0,0 (0,0-0,0)

4.2.8   Cause of injury onset

Table 10 summarises the proportion of match injuries by cause of onset data for players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

Contact mechanism was the only cause of injury onset with 100,0% versus 0,0% of non contact.

Table 10. Proportion of reported match injuries by cause of onset

Measure	% (95% Confidence interval)		
	Backs	**Forwards**	**All players**
Contact	100,0 (100,0-100,0)	100,0 (100,0-100,0)	100,0 (100,0-100,0)
Non-contact	0,0 (0,0-0,0)	0,0 (0,0-0,0)	0,0 (0,0-0,0)

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4.2.9 Match events leading to injury

Table 11 summarises the match events causing the injuries suffered by players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

The most common match event leading to injury was tackling (66,6%), followed by being tackled (33,3%). Injuries only happened during the tackle (100,0%). For backs, the most common match event leading to injury was tackling (71,4%), followed by being tackled (28,6%). For forwards, there were as many injuries when tackling (50,0%) as when being tackled (50,0%).

Table 11. Proportion of reported match injuries by match event leading to injury

Measure	% (95% Confidence interval)		
	Backs	**Forwards**	**All players**
Tackling	71,4 (37,9-104,9)	50,0 (0,0-119,3)	66,6 (35,8-97,4)
Tackled	28,6 (0,0-62,1)	50,0 (0,0-119,3)	33,3 (2,5-64,1)
Running	-	-	-
Collision	-	-	-
Ruck	-	-	-
Maul	-	-	-
Scrum	-	-	-
Lineout	-	-	-
Kicking	-	-	-
Other/Not known	-	-	-

4.2.10 Time of injury

Table 12 summarises the proportion of reported match injuries by time during match for players, categorised as backs, forwards and all players, taking part in Women's 7s European Olympic Qualifier 2023.

The highest number of match injuries happened during the first half (77,7%). Moreover, backs also suffered more injuries during the first half (71,4%) and the two injuries suffered by forwards were in the first half (100,0%).

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Table 12. Proportion of reported match injuries by time during match

Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
First half	71,4 (37,9-104,9)	100,0 (100,0-100,0)	77,8 (20,2-135,4)
Second half	28,6 (0,0-62,1)	0,0 (0,0-0,0)	22,2 (0,0-79,8)

5. Acknowledgements

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6. References

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