

[Rugby 7s Olympic Qualifier (Men) – 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.

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 men’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 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, France, Georgia, Germany, Great Britain, Ireland, Italy, Lithuania, Poland, Portugal, and Spain were involved in the Men'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 Men's 7s European Olympic Qualifier 2023.

The total sample for the study was 155 players, 73 backs and 82 forwards. The mean age was 24,6 years (forwards: 24,6 years; backs: 24,5 years; *p value* =0,919). The average stature (cm) for all players was 183,1; forwards (185,3 cm) were taller than backs (180,7 cm) (*p value* <0,001). The body mass was 88,8 kg, forwards (92,7 kg) heavier than backs (84,3 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)	180,7 (5,5)	185,3 (6,6)	183,1 (6,5)
Body Mass (kg)	84,3 (5,8)	92,7 (8,2)	88,7 (8,3)
Age (years)	24,5 (3,8)	24,5 (3,8)	24,5 (3,8)

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 Men's 7s European Olympic Qualifier 2023.

The total number of injuries sustained was 7 (forwards: 2; backs: 5) and the total match exposure was 111,1 player-hours (forwards: 47,6; backs: 63,5). The overall match incidence was 63,0 injuries/1000 match hours (backs: 78,8 forwards: 42,0).

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

Measure	Backs	Forwards	All players
Injuries (n)	5	2	7
Match Exposure (player-match-hours)	63	48	111
Incidence (95% confidence interval)	79,4 (12,6-146,1)	41,7 (0,0-98,2)	63,1 (17,8-108,3)

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 Men's 7s European Olympic Qualifier 2023.

The mean severity of the study was 52,5 days missed. Backs missed 38,0 days, while forward missed 89,0 days due to injuries.

The median severity was 35,0 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)	38,0 (0,0-90,9)	89,0 (0,0-737,0)	52,5 (4,5-100,6)
Median (95% confidence interval)	22,0 (7,0-112,0)	89,0 (38,0-140,0)	35,0 (7,0-112)

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

Minor severity (2-7 days) was the less common representing 14,3% of all injuries, after moderate (8-28 days), severe (29-90 days) and major (> 90 days) with 28,6% each. Forwards suffered more severe and major injuries than backs, whilst backs presented more minor and moderate injuries than forwards.

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

Measure	Backs	Forwards	All players
Minor (2-7 days)	20,0%	-	14,6%
Moderate (8-28 days)	40,0%	-	28,6%
Severe (29-90 days)	20,0%	50,0%	28,6%
Major (>90 days)	20,0%	50,0%	28,6%

4.2.3 Injury burden

The total days-absence resulting from match injuries sustained during the Men's 7s European Olympic Qualifier 2023 was 368 days-absence (forwards: 178; backs: 190).

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 Men's 7s European Olympic Qualifier 2023 was 3313 days lost/1000 player-hours (backs: 3017; forwards: 3711 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 Men's 7s European Olympic Qualifier 2023. The most common injury locations were the head/face (42,8%) followed by the lower leg (14,3%), the knee (14,3%) and the abdomen (14,3%). For backs, the most common injury locations were the head/face (60,0%) followed by the abdomen (20,0%) and the knee (20,0%). For forwards, the two injuries locations were the shoulder (50,0%) and lower leg (50,0%).

Table 5. Proportion of match injuries by injury location

Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Head / Neck	60,0 (17,1-102,9)	-	42,8 (6,1-79,5)
Head/face	60,0 (17,1-102,9)	-	42,8 (6,1-79,5)
Neck/cervical spine	-	-	-
Upper limb	-	50,0 (0,0-119,3)	14,3 (0,0-40,2)
Shoulder/clavicle	-	50,0 (0,0-119,3)	14,3 (0,0-40,2)
Upper arm	-	-	-
Elbow	-	-	-
Forearm	-	-	-
Wrist/hand/fingers	-	-	-
Trunk	20,0 (0,0-55,1)	-	14,3 (0,0-40,2)
Ribs/upper back	-	-	-
Abdomen	20,0 (0,0-55,1)	-	14,3 (0,0-40,2)
Low back	-	-	-
Sacrum/pelvis	-	-	-
Lower limb	20,0 (0,0-55,1)	50,0 (0,0-119,3)	28,6 (0,0-62,1)
Hip/groin	-	-	-
Thigh, anterior	-	-	-
Thigh, posterior	-	-	-
Knee	20,0 (0,0-55,1)	-	14,3 (0,0-40,2)
Lower leg	-	50,0 (0,0-119,3)	14,3 (0,0-40,2)
Ankle	-	-	-
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 Men's 7s European Olympic Qualifier 2023.

The most common injury types were the concussions (42,8%), followed by the muscle / tendon injuries (28,6%) and joint/ligament injuries (28,6%).

Table 6. Proportion of match injuries by injury type

Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Bone	-	-	-
Fracture	-	-	-
Other bone injury	-	-	-
C/PNS	60,0 (17,1-102,9)	-	42,8 (6,1-79,5)
Concussion	60,0 (17,1-102,9)	-	42,8 (6,1-79,5)
Nerve injuries	-	-	-
Joint (non-bone) / ligament	20,0 (0,0-55,1)	50,0 (0,0-119,3)	28,6 (0,0-62,1)
Dislocation / subluxation	-	50,0 (0,0-119,3)	14,3 (0,0-40,2)
Meniscus / Disc Injury	-	-	-
Sprain/ligament	20,0 (0,0-55,1)	-	14,3 (0,0-40,2)
Other	-	-	-
Muscle / tendon	20,0 (0,0-55,1)	50,0 (0,0-119,3)	28,6 (0,0-62,1)
Haematoma/bruise	-	-	-
Muscle strain/cramp	20,0 (0,0-55,1)	-	14,3 (0,0-40,2)
Tendon injury/tendinopathy	-	50,0 (0,0-119,3)	14,3 (0,0-40,2)
Other	-	-	-
Skin	-	-	-
Abrasions	-	-	-
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 Men's 7s European Olympic Qualifier 2023.

The most common injury was concussion (42,8%), followed by achilles tendon rupture (14,3%), MCL rupture (14,3%), truncal muscle strain (14,3%) and anteroinferior shoulder instability with labral lesion (14,3%).

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	60,0	Achilles tendon rupture	50,0	Concussion	42,8
MCL injury knee	20,0	Anteroinferior shoulder instability with labral lesion	8,8	Achilles tendon rupture	14,3
Truncal muscle strain	20,0			MCL injury knee	14,3
				Truncal muscle strain	14,3
				Anteroinferior shoulder instability with labral lesion	14,3

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

The injury with greatest burden was anterior instability of shoulder (38,0%), followed by MCL injury knee (30,4%), concussion (15,2%) and achilles tendon injury (10,3%).

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	%
MCL Injury knee	59,0	Anteroinferior instability of shoulder	78,6	Anteroinferior instability of shoulder	38,0
Concussion	29,4	Achilles tendon injury	21,4	MCL Injury knee	30,4
Truncal Muscle Strain	11,6			Concussion	15,2
				Achilles tendon injury	10,3

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 Men'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 Men's 7s European Olympic Qualifier 2023.

Contact mechanism represents 85,7% of all injuries while non-contact was 14,3%. Contact injuries were the most common for backs (100,0).

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)	50,0 (0,0-119,3)	85,7 (59,8-111,6)
Non-contact	0,0 (0,0-0,0)	50,0 (0,0-119,3)	14,3 (0,0-40,2)

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 Men's 7s European Olympic Qualifier 2023.

The most common match event leading to injury was tackling (57,1%), followed by being tackled (14,3%), running (14,3%) and collision (14,3%). For backs, the most common match event leading to injury was tackling (60,0%), followed by being tackled (20,0%) and collision (20,0%). For forwards, the match events leading to injury were tackling (50,0%) and running (50,0%).

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

Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Tackling	60,0 (17,1-102,9)	50,0 (0,0-119,3)	57,1 (20,4-93,8)
Tackled	20,0 (0,0-55,1)	-	14,3 (0,0-40,2)
Running	-	50,0 (0,0-119,3)	14,3 (0,0-40,2)
Collision	20,0 (0,0-55,1)	-	14,3 (0,0-40,2)
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 Men's 7s European Olympic Qualifier 2023.

The highest number of match injuries happened during the second half (71,4%). Both, forwards (100,0%) and backs (60,0%), suffered more injuries during the 2nd half.

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

Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
First half	40,0 (0,0-82,9)	0,0 (0,0-0,0)	28,6 (0,0-62,1)
Second half	60,0 (17,1-102,9)	100,0 (100,0-100,0)	71,4 (37,9-104,9)

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