Injury Surveillance Report

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based on the 2023-2024 Season – Super Cup (Men)

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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 Competitions[1–4], as well as in Rugby Europe Championship 2023.

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 Europe Competitions.
- To identify injury trends.
- 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 Rugby Europe Super Cup.

2. METHODS

This 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[5].

The definition of injury was: 'Any injury sustained during the 2023 men's Rugby Europe Championship 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[6]. The study also recorded the injury location, type and cause together with the event leading to the injury.

The 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 Europe Super Cup 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[5].

The study only focus in 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, the purpose of the epidemiological study was outlined to each participating team. The player's 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 injuries sustained during each match. 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) was also recorded by a member of each team medical staff. The injury was understood as finish when an injured player's return-to-play date.

Black Lion, Bohemia Rugby Warriors, Brussels Devils, Castilla y Leon Iberians, Delta, Lusitanos, Romanian Wolves and Tel-Aviv Heat were involved in the Men's Rugby Europe Super Cup 2023.

4. RESULTS

Tel-Aviv Heat were not able to participate in the study due to the conflict taking place in Israel during this period. The 7 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[5].

4.1. Players' anthropometric data

The total sample population involved in the study was 348 players; anthropometric data were provided for 192 players. Table 1 summarises the numbers and anthropometric data for these players, categorised as backs, forwards and all players.

Table 1. Players' anthropometric data			
Measure	Mean (± standard deviation)		
	Backs	Forwards	All players
Players (n)	158	190	348
Stature (cm)	181,8 (5,8)	186,1 (6,4)	184,0 (6,5)
Body Mass (kg)	87,5 (9,2)	106,9 (10,3)	97,2 (13,5)
Age (years)	24,7 (4,1)	25,6 (4,4)	25,1 (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 RESC 2023.

The total number of injuries sustained was 28 (backs: 11; forwards: 17) and the total match exposure was 800,0 player-hours (backs: 373; forwards: 427). The overall match incidence was 35,0 injuries/1000 match hours (backs: 29,5 forwards: 39,8).

Table 2. Match injury frequency, match exposure volume, and match injury incidence			
Measure	Backs	Forwards	All players
Injuries (n)	11	17	28
Match Exposure (player-match-hours)	373	427	800
Incidence (95% confidence interval)	29,5 (12,3-46,7)	39,8 (21,3-58,4)	35,0 (22,3-47,7)

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 RESC 2023.

The mean severity of the study was 43,0 days missed. Backs missed 49,7 days, while forwards missed 38,6 days due to injuries.

The median severity was 26,0 days for all players and between positions, being 43,0 days for backs and16,0 days for forwards.

Table 3. Mean and median match injury severity (days lost)			
Measure	Severity (95% Confidence interval), days		
	Backs	Forwards	All players
Mean (95% confidence interval)	49,7 (18,0-81,4)	38,6 (19,7-57,5)	43,0 (24,7-61,3)
Median (95% confidence interval)	43,0 (15-71)	16,0 (0,0-33,0)	26,0 (11,0-41,0)

Table 4 summarises the proportion of match injuries by time-loss data for players, categorised as backs, forwards and all players, taking part in RESC 2023.

Moderate severity (8-28 days) was the most common representing 32,1% of all injuries, followed by severe (29-90 days) with 28,6%, minor (2-7 days) with 21,4% and major (> 90 days) with 17,9%. Backs suffered more moderate, severe and major injuries than forward, whilst forwards presented more minor injuries than backs.

Table 4. Proportion of match injuries by time-loss category			
Measure	Backs	Forwards	All players
Minor (2-7 days)	27,2 %	17,6 %	21,4%
Moderate (8-28 days)	18,1 %	41,1 %	32,1%
Severe (29-90 days)	36,3 %	23,5 %	28,6%
Major (>90 days)	18,1 %	17,6 %	17,9%

4.2.3. Injury burden

The total days-absence resulting from match injuries sustained during the RESC 2023 was 1203 days-absence (backs: 547; forwards: 656).

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[7,8].

The injury burden in the RESC was 1505 days lost/1000 player-hours (backs: 1466; forwards: 1536 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 RESC 2023. The most common anatomic location was the lower limb with 42,9%, followed by head/neck (34,1%) and upper limb (25,0%). Head/face was the most common injury location with 28,6% followed by shoulder/clavicle (17,6%) and knee (14,3%). For backs, the most frequent head/face (45,4%) and the knee (27,3%). Other location as shoulder/clavicle, lower leg and ankle had the same frequency (9,1%). Meanwhile forwards it was shoulder/clavicle (23,5%) followed by head/face (17,6%).

Table 5. Proportion of match injuries by injury location			
Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Head / Neck	**45,4 (16,0-74,8)**	**23,5 (3,3-43,7)**	**34,1 (16,5-51,7)**
Head/face	45,4 (16,0-74,8)	17,6 (0,0-35,7)	28,6 (11,9-45,3)
Neck/cervical spine	-	5,9 (0,0-17,1)	3,6 (0,0-10,5)
Upper limb	**9,1 (0,0-26,1)**	**35,3 (12,6-58,0)**	**25,0 (9,0-41,0)**
Shoulder/clavicle	9,1 (0,0-26,1)	23,5 (3,3-43,7)	17,6 (3,5-31,7)
Upper arm	-	-	-
Elbow	-	-	-
Forearm	-	-	-
Wrist/hand/fingers	-	11,8 (0,0-27,1)	7,1 (0,0-16,6)
Trunk	**-**	**-**	**-**
Ribs/upper back	-	-	-
Abdomen	-	-	-
Low back	-	-	-
Sacrum/pelvis	-	-	-
Lower limb	**45,4 (16,0-74,8)**	**41,1 (17,7-64,5)**	**42,9 (24,6-61,2)**
Hip/groin	-	-	-
Thigh, anterior	-	11,8 (0,0-27,1)	7,1 (0,0-16,6)
Thigh, posterior	-	5,9 (0,0-17,1)	3,6 (0,0-10,5)
Knee	27,3 (1,0-53,6)	5,9 (0,0-17,1)	14,3 (1,3-27,3)
Lower leg	9,1 (0,0-26,1)	5,9 (0,0-17,1)	7,1 (0,0-16,6)
Ankle	9,1 (0,0-26,1)	11,8 (0,0-27,1)	10,7 (0,0-22,1)
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 RESC 2023.

The most common injury types were the muscle/tendon injuries and joint/ligament with 32,1%, followed by other types with less frequency as bone (14,3%), skin (10,7%) and Central/Peripheral Nervous System (7,1%). According to that, backs presented more joint/ligament injuries (36,4%) than forwards while forwards presented more muscle/tendon injuries (41,2%) than backs. The most common specific injury types sustained by backs were fracture and sprain/ligament (18,2% respectively). Haematoma/bruise (23,5%), sprain/ligament (17.6%) and muscle strain/cramp (17,6%) were the most specific injuries presented by the forwards.

Table 6. Proportion of match injuries by injury type

Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Bone	**18,2 (0,0-41,0)**	**11,8 (0,0-27,1)**	**14,3 (1,3-27,3)**
Fracture	18,2 (0,0-41,0)	11,8 (0,0-27,1)	14,3 (1,3-27,3)
Other bone injury	-	-	-
C/PNS	9,1 (0,0-26,1)	5,9 (0,0-17,1)	7,1 (0,0-16,6)
Concussion	9,1 (0,0-26,1)	5,9 (0,0-17,1)	7,1 (0,0-16,6)
Nerve injuries	-	-	-
Joint (non-bone) / ligament	**36,4 (8,0-64,8)**	**29,4 (7,7-51,1)**	**32,1 (14,8-49,4)**
Dislocation / subluxation	9,1 (0,0-26,1)	5,9 (0,0-17,1)	7,1 (0,0-16,6)
Meniscus / Disc Injury	9,1 (0,0-26,1)	5,9 (0,0-17,1)	7,1 (0,0-16,6)
Sprain/ligament	18,2 (0,0-41,0)	17,6 (0,0-35,7)	17,9 (3,7-32,1)
Other	-	-	-
Muscle / tendon	**18,2 (0,0-41,0)**	**41,2 (17,8-64,6)**	**32,1 (14,8-49,4)**
Haematoma/bruise	9,1 (0,0-26,1)	23,5 (3,3-43,7)	17,9 (3,7-32,1)
Muscle strain/cramp	9,1 (0,0-26,1)	17,6 (0,0-35,7)	14,3 (1,3-27,3)
Tendon injury/tendinopathy	-	-	-
Other	-	-	-
Skin	**9,1 (0,0-26,1)**	**11,8 (0,0-27,1)**	**10,7 (0,0-22,1)**
Abrasion	-	-	-
Laceration	9,1 (0,0-26,1)	11,8 (0,0-27,1)	10,7 (0,0-22,1)
Other types	**9,1 (0,0-26,1)**	**-**	**3,6 (0,0-10,5)**
Visceral	-	-	-
Other	9,1 (0,0-26,1)	-	3,6 (0,0-10,5)

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 RESC 2023.

The most common injury was quadriceps muscle haematoma (10,7%) followed by concussion, MCL knee tear and glenohumeral luxation (7,1% respectively). Backs presented nasal fracture (18,2%) while forwards presented AC joint sprain (5,9%).

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	%
Nasal fracture	18,2	Quadriceps muscle haematoma	11,8	Quadriceps muscle haematoma	10,7
Concussion	9,1	Concussion	5,9	Concussion	7,1
Soleus strain	9,1	AC joint sprain	5,9	MCL knee tear	7,1
MCL tear knee	9,1	Soleus strain	5,9	Glenohumeral subluxation	7,1

Table 8 summarises the injuries with greatest burden for players, categorised as backs, forwards and all players, taking part in RESC 2023.

The injury with greatest burden was anterior elbow dislocation (7,8%), followed by patellar fracture (7,6%), anteroinferior shoulder dislocation (6,5%) and shoulder osteochondral lesion (5,3%).

The injury with greatest burden was anteroinferior shoulder dislocation (14,0%), followed by concussion (13,0%). 28,3% of total days missed in backs were due to anteroinferior shoulder dislocation, followed by retinal detachment (18,5%), while forwards suffered cervical disc injury (16,0%) followed by concussion (15,5%) and scaphoid fracture (15,1%).

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	%
Anteroinferior shoulder dislocation	28,3	Cervical disc injury	16,0	Anterioinferior shoulder dislocation	14,0
Retinal detachment	18,5	Concussion	15,5	Concussion	13,0
Nasal fracture	14,8	Scaphoid fracture	15,1	Cervical disc injury	8,5
Concussion	9,9	Fracture 4th metacarpal	10,7	Retinal detachment	8,2

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 RESC 2023.

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

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
Gradual	-	-	-

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 RESC 2023.

Contact mechanism represented 89,3% of all injuries while non-contact was 10,7%. Contact injuries were more common for backs (90,1%) than forwards (88,2%).

Table 10. Proportion of reported match injuries by cause of onset			
Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Contact	90,1 (72,5-100,0)	88,2 (72,9-100,0)	89,3 (77,9-100,0)
Non-contact	9,9 (0,0-27,5)	11,8 (0,0-27,1)	10,7 (0,0-22,1)

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 RESC 2023.

The most common match event leading to injury was tackling (35,7%), followed by being tackled (21,4%), collision, ruck and running (10,7% respectively). For backs, the most common match event leading to injury was tackling (54,5%), followed by being tackled (18,2%). For forwards, tackling and being tackled represented the most event leading to injury with 23,5% respectively followed by collision, ruck and running (11,8% respectively).

Table 11. Proportion of reported match injuries by match event leading to injury			
Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Collision	9,1 (0,0-26,1)	11,8 (0,0-27,1)	10,7 (0,0-22,1)
Kicking	-	-	-
Lineout	-	-	-
Maul	-	5,9 (0,0-17,1)	3,6 (0,0-10,5)
Ruck	9,1 (0,0-26,1)	11,8 (0,0-27,1)	10,7 (0,0-22,1)
Running	9,1 (0,0-26,1)	11,8 (0,0-27,1)	10,7 (0,0-22,1)
Scrum	-	5,9 (0,0-17,1)	3,6 (0,0-10,5)
Tackled	18,2 (0,0-41,0)	23,5 (3,3-43,7)	21,4 (6,2-36,6)
Tackling	54,5 (25,1-83,9)	23,5 (3,3-43,7)	35,7 (18,0-53,4)
Other/Not known	-	5,9 (0,0-17,1)	3,6 (0,0-10,5)

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 RESC 2023.

The highest number of match injuries happened during the second half (57,1%), specific during the 3rd quarter (39,3%), followed by the first and second (21,4% respectively), and the fourth (17,6%) finally.

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

Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
First half	**45,4 (16,0-74,8)**	**41,1 (17,7-64,5)**	**42,9 (24,6-61,2)**
First quarter	9,1 (0,0-26,1)	29,4 (7,7-51,1)	21,4 (6,2-36,6)
Second quarter	36,4 (8,0-64,8)	11,8 (0,0-27,1)	21,4 (6,2-36,6)
Second half	**54,6 (25,2-84,0)**	**58,9 (35,5-82,3)**	**57,1 (38,8-75,4)**
Third quarter	27,3 (1,0-53,6)	47,0 (23,3-70,7)	39,3 (21,0-57,4)
Fourth quarter	27,3 (1,0-53,6)	11,8 (0,0-27,1)	17,6 (3,5-31,7)

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