Injury Surveillance Report

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based on the 2024-2025 Season – U20 Championship (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 and U20 Tournaments[5].

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 at Rugby Europe Competitions.
- To identify injury trends in Rugby 7s and Rugby 15s.
- 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 U20 Championship.

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[6].

The definition of injury was: 'Any injury sustained during the 2024 Men's Rugby Europe U20 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[7]. 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 U20 Championship 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[6].

Only match injuries resulting in > 1 day of absence from training or match play 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); 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.

Belgium, Czech Republic, Germany, Netherlands, Poland, Portugal, Romania and Switzerland were involved in the Men's U20 Rugby Europe Championship 2024.

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[6].

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 Men's U20 Rugby Europe Championship 2024. The total sample population involved in the study was 212 players.

The total sample population for the study was 212 players (91 backs; 121 forwards). The mean age was 19,7 years (backs: 19,8 years; forwards: 19,7 years; p=0,558).

Table 1. Players' anthropometric data			
Measure	Mean (± standard deviation)		
	Backs	Forwards	All players
Players (n)	91	121	212
Age (years)	19,8 (0,8)	19,7 (0,7)	19,7 (0,7)

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 U20 Rugby Europe Championship 2024.

The total number of injuries sustained was 18 (backs: 7; forwards: 11) and the total match exposure was 960,0 player-hours (backs: 448; forwards: 512). The overall match incidence was 18,8 injuries/1000 match hours (backs: 15,6; forwards: 21,5).

Table 2. Match injury frequency, match exposure volume, and match injury incidence			
Measure	Backs	Forwards	All players
Injuries (n)	7	11	18
Match Exposure (player-match-hours)	448	512	960
Incidence (95% confidence interval)	15,6 (4,1–27,1)	21,5 (8,9–34,0)	18,8 (10,2–27,3)

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 U20 Rugby Europe Championship 2024.

The mean severity of the study was 61,9 days missed. Backs missed 58,0 days, while forwards missed 64,5 days due to injuries. The median severity was 21,0 days for all players and between positions, being 13,0 days for backs and 55,0 days for forwards. There were no significant differences between backs and forwards for either the mean (p= 0,899) or median severities (p=0,133).

Table 3. Mean and median match injury severity (days lost)			
Measure	Severity (95% Confidence interval), days		
	Backs	Forwards	All players
Mean (95% confidence interval)	58,0 (-49,9-165,9)	64,5 (15,0-113,9)	61,9 (17,5-106,4)
Median (95% confidence interval)	13,0 (3,0-48,0)	55,0 (18,0-84,0)	21,0 (13,0-58,0)

Table 4 summarises the proportion of match injuries by time-loss data for players, categorised as backs, forwards and all players, taking part in Men's U20 Rugby Europe Championship 2024.

Minor injuries (2–7 days) were more frequent in backs (42,9%) than forwards (18,2%), while severe injuries (29–90 days) were more common in forwards (36,4%). Moderate and major injuries showed similar proportions across both groups.

Table 4. Proportion of match injuries by time-loss category			
Measure	Backs	Forwards	All players
Minor (2-7 days)	42,9%	18,2%	27,8%
Moderate (8-28 days)	28,6%	27,3%	27,8%
Severe (29-90 days)	14,3%	36,4%	27,8%
Major (>90 days)	14,3%	18,2%	16,7%

4.2.3. Injury burden

The total days-absence resulting from match injuries sustained during the Men's U20 Rugby Europe Championship 2024 was 1115 days-absence (backs: 406; forwards: 709).

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[8,9].

The injury burden in the Men's U20 Rugby Europe Championship 2024 was 1164 days lost/1000 player-hours (backs: 905; forwards: 1387 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 U20 Rugby Europe Championship 2024.

Lower limb injuries were the most common in both backs (71,4%) and forwards (81,8%), accounting for 77,8% of all cases. Head/neck injuries were only reported in backs (28,6%), while upper limb injuries occurred exclusively in forwards (18,2%).

Backs sustained more ankle injuries (42,9%), while forwards had more knee injuries (45,5%). Head/face injuries were only reported in backs (28,6%), and shoulder/clavicle and lower leg injuries were only reported in forwards (18,2% and 9,1%, respectively).

Table 5. Proportion of match injuries by injury location			
Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Head / Neck	**28,6 (0,0–62,0)**	**-**	**11,1 (0,0–25,6)**
Head/face	28,6 (0,0–62,0)	-	11,1 (0,0–25,6)
Neck/cervical spine	-	-	-
Upper limb	**-**	**18,2 (0,0–41,0)**	**11,1 (0,0–25,6)**
Shoulder/clavicle	-	18,2 (0,0–41,0)	11,1 (0,0–25,6)
Upper arm	-	-	-
Elbow	-	-	-
Forearm	-	-	-
Wrist/hand/fingers	-	-	-
Trunk	**-**	**-**	**-**
Ribs/upper back	-	-	-
Abdomen	-	-	-
Low back	-	-	-
Sacrum/pelvis	-	-	-
Lower limb	**71,4 (38,0–100,0)**	**81,8 (59,0–100,0)**	**77,8 (58,6–97,0)**
Hip/groin	-	-	-
Thigh, anterior	-	-	-
Thigh, posterior	-	-	-
Knee	28,6 (0,0–62,0)	45,5 (16,0–74,9)	38,9 (16,4–61,4)
Lower leg	-	9,1 (0,0–26,1)	5,6 (0,0–16,1)
Ankle	42,9 (6,2–79,5)	27,3 (1,0–53,6)	33,3 (11,6–55,1)
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 Men's U20 Rugby Europe Championship 2024.

Joint/ligament injuries were the most common in both backs (57,1%) and forwards (63,6%). Muscle/tendon injuries followed, more frequent in forwards (27,3%) than backs (14,3%).

Sprain/ligament injuries were the most frequent for both backs (57,1%) and forwards (63,6%), representing 61,1% of all injuries. Haematoma/bruise and concussion were the next most common among backs, while fractures and haematomas stood out for forwards.

Table 6. Proportion of match injuries by injury type			
Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Bone	**-**	**9,1 (0,0–26,1)**	**5,6 (0,0–16,1)**
Fracture	-	9,1 (0,0–26,1)	5,6 (0,0–16,1)
Other bone injury	-	-	-
C/PNS	**14,3 (0,0–40,2)**	**-**	**5,6 (0,0–16,1)**
Concussion	14,3 (0,0–40,2)	-	5,6 (0,0–16,1)
Nerve injuries	-	-	-
Joint (non-bone) / ligament	**57,1 (20,5–93,8)**	**63,6 (35,2–92,1)**	**61,1 (38,6–83,6)**
Dislocation / Subluxation	-	-	-
Meniscus / Disc Injury	-	-	-
Sprain / Ligament	57,1 (20,5–93,8)	63,6 (35,2–92,1)	61,1 (38,6–83,6)
Other	-	-	-
Muscle / tendon	**14,3 (0,0–40,2)**	**27,3 (1,0–53,6)**	**22,2 (3,0–41,4)**
Haematoma / bruise	14,3 (0,0–40,2)	18,2 (0,0–41,0)	16,7 (0,0–33,9)
Muscle strain / cramp	-	9,1 (0,0–26,1)	5,6 (0,0–16,1)
Tendon injury / tendinopathy	-	-	-
Other	-	-	-
Skin	**14,3 (0,0–40,2)**	**-**	**5,6 (0,0–16,1)**
Abrasion	-	-	-
Laceration	14,3 (0,0–40,2)	-	5,6 (0,0–16,1)
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 U20 Rugby Europe Championship 2024.

The most common diagnosis for all players was ATF ligament sprain (33,3%). Among backs, it accounted for 42,9% of injuries, while in forwards it represented 27,3%. Other frequent injuries included ACL rupture, MCL knee injury, and knee haematoma, all with lower proportions.

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	%
ATF Ligament sprain	42,9	ATF Ligament sprain	27,3	ATF Ligament sprain	33,3
ACL rupture	14,3	MCL injury knee	18,2	ACL rupture	11,1
Concussion	14,3	ACL rupture	9,1	MCL injury knee	11,1
Knee Soft Tissue Haematoma	14,3	Proximal tibial fracture	9,1	Knee Soft Tissue Haematoma	11,1

ATF: Anterior Talofibular - ACL: Anterior cruciate ligament – MCL: Medial collateral ligament

Table 8 summarises the injuries with greatest burden for players, categorised as backs, forwards and all players, taking part in Men's U20 Rugby Europe Championship 2024.

For all players, anterior cruciate ligament (ACL) rupture accounted for the highest injury burden (52,0%), followed by ATF ligament sprain (17,0%), MCL knee injury (11,3%), and proximal tibial fracture (10,0%).

Among backs, most days lost were due to ACL rupture (78,8%), followed by ATF ligament sprain (16,5%). For forwards, the greatest burden came from ACL rupture (36,7%), MCL knee injury (17,7%), and ATF ligament sprain (17,3%).

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	%
ACL rupture	78,8	ACL rupture	36,7	ACL rupture	52,0
ATF Ligament sprain	16,5	MCL injury knee	17,7	ATF Ligament sprain	17,0
Concussion	3,2	ATF Ligament sprain	17,3	MCL injury knee	11,3
Knee Soft Tissue Haematoma	0,7	Proximal tibial fracture	15,8	Proximal tibial fracture	10,0

ATF: Anterior Talofibular - ACL: Anterior cruciate ligament – MCL: Medial collateral ligament

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 U20 Rugby Europe Championship 2024.

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 Men's U20 Rugby Europe Championship 2024.

Contact mechanism accounted for 83,3% of all injuries, while non-contact represented 16,7%. Contact injuries were more frequent in backs (100,0%) than in forwards (72,7%).

Table 10. Proportion of reported match injuries by cause of onset			
Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Contact	100,0	72,7 (46,4–99,0)	83,3 (66,1–100,0)
Non-contact	-	27,3 (1,0–53,6)	16,7 (0,0–33,9)

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 U20 Rugby Europe Championship 2024.

The most common causes of injury were being tackled (38,9%) and tackling (22,2%). Among backs, the leading cause was being tackled (57,1%), followed by tackling (28,6%). For forwards, injuries were

more evenly distributed, with being tackled (27,3%), running (18,2%), collision (18,2%), and tackling (18,2%) being the most frequent events.

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

Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
Collision	-	18,2 (0,0–41,0)	11,1 (0,0–25,6)
Kicking	-	-	-
Lineout	-	9,1 (0,0–26,1)	5,6 (0,0–16,1)
Maul	-	-	-
Ruck	-	-	-
Running	-	18,2 (0,0–41,0)	11,1 (0,0–25,6)
Scrum	-	9,1 (0,0–26,1)	5,6 (0,0–16,1)
Tackled	57,1 (20,5–93,8)	27,3 (1,0–53,6)	38,9 (16,4–61,4)
Tackling	28,6 (0,0–62,0)	18,2 (0,0–41,0)	22,2 (3,0–41,4)
Other (Not known)	14,3 (0,0–40,2)	-	5,6 (0,0–16,1)

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 U20 Rugby Europe Championship 2024.

Most injuries occurred in the first half (55,6%), with forwards more affected during this period (63,6%) compared to backs (42,9%). In the second half, backs showed a higher injury proportion (57,1%) than forwards (36,4%).

Injuries among backs were most frequent in the first (28,6%) and fourth quarters (42,9%), while forwards sustained more injuries in the second quarter (54,5%).

Table 12. Proportion of reported match injuries by time during match			
Measure	% (95% Confidence interval)		
	Backs	Forwards	All players
First half	**42,9 (6,2–79,5)**	**63,6 (35,2–92,1)**	**55,6 (32,6–78,5)**
First quarter	28,6 (0,0–62,0)	9,1 (0,0–26,1)	16,7 (0,0–33,9)
Second quarter	14,3 (0,0–40,2)	54,5 (25,1–84,0)	38,9 (16,4–61,4)
Second half	**57,1 (20,5–93,8)**	**36,4 (7,9–64,8)**	**44,4 (21,5–67,4)**
Third quarter	14,3 (0,0–40,2)	27,3 (1,0–53,6)	22,2 (3,0–41,4)
Fourth quarter	42,9 (6,2–79,5)	9,1 (0,0–26,1)	22,2 (3,0–41,4)

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