Injury Surveillance Studies

Women's Pacific Four Series

Summary of Results: 2023

Colin Fuller and Aileen Taylor

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1 Introduction

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

The aims of these studies are to:

- record and analyse injuries and illnesses sustained by male and female players at individual competitions,
- identify changing patterns of injury during competitions, and
- bring injury-related areas of concern to the attention of World Rugby's Chief Medical Officer.

The data collected in injury surveillance studies are also used to address player welfare issues in a broader context.

The Pacific Four Series first took place in 2021 but was limited to USA and Canada as participants due to Covid-related travel restrictions imposed on the Australia and New Zealand teams. The Pacific Four Series achieved greater status in 2023, when it became one of the qualifying routes for the 2023 World Rugby women's WXV-1 and WXV-2 competitions. The 2023 Series is the first Pacific Four Series to be subject to World Rugby's ISS requirements.

2 Methods

All studies were 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 union (Fuller et al., 2007).

The definition of injury was: *'Any injury sustained during a Pacific Four match 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'*. Incidents where a player's absence from match play and/or training was caused by training activities, illness or other medical conditions not related to a Pacific Four match were not included. 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'.* Injuries were classified using the appropriate OSICS Code (Orchard et al., 2010). 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 'injured' until able to undertake full normal training and be available for match selection, whether or not actually selected. Medical staff were required to make an informed clinical judgement about players' fitness to train/play on those days when players were not scheduled to train or play. Injured players were followed up after the tournament to obtain their return-to-play date. The return-to-play dates for players with injuries that remained unresolved 90 days after the final match were estimated on the basis of the player's medical staff's clinical judgement and prognosis.

The complete lists of categories and sub-categories used for injury locations and types of injury are provided in the rugby injury consensus publication (Fuller et al., 2007).

Differences in players' anthropometric data were assessed using unpaired t-tests; differences in the incidences, mean severity and proportions of injuries were assessed using z-tests and differences in median severity using a Mann-Whitney U test. Trends in data values were assessed using linear regression. Statistical significance was accepted at the $p \leq 0.05$ level, although it is recognised that this could identify some differences that occurred by chance due to the number of statistical comparisons made in the report.

3 Data collection

Prior to the tournaments 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 were requested to record match injuries sustained during the Series; providing detailed information about each injury sustained (date of injury, date of return to play/training, 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/training date.

4 Results

The 2023 Pacific Four matches took place in various countries (Australia, Canada, Spain) over the period 1 April to 14 July 2023. This study recorded players' anthropometric data and match injuries for all 4 countries taking part in the Series (Australia, Canada, New Zealand, USA).

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 2023 Pacific Four Series. The forwards were significantly heavier ($p<0.001$), taller ($p<0.001$) and older ($p=0.007$) than the backs.

Table 1: Players' anthropometric data.

Year / Measure	**Mean** (*Standard deviation, number of players*)		
	Backs	***Forwards***	***ALL players***
2023			
Stature, cm	167.5 (6.7, 60)	174.7 (5.8, 66)	171.3 (7.2, 126)
Body mass, Kg	71.2 (6.9, 59)	88.0 (10.9, 64)	80.0 (12.4, 123)
Age, years	25.3 (3.4, 61)	27.0 (3.7, 67)	26.2 (3.6, 128)

4.2 Match injuries

As the number of reported injuries for this tournament was very small, extensive analysis of the data is not justified.

4.2a Incidence, severity and burden of injury

Only two match injuries meeting the study injury definition were reported (backs: 0; forwards: 2) over the six games played (backs: 112.0 player-match-hours; forwards: 128.0 player-match-hours; total match exposure: 240.0 player-match-hours). This corresponds to a total match incidence of 8.3 (injuries/1000 player-match-hours (backs: 0.0; forwards: 15.6). The injuries sustained were both minor injuries (mean severity: 5 days; median severity: 5 days).

The overall injury burden (Fuller, 2018) during the competition was low at 41.5 days-absence/1000 player-match-hours (backs: 0.0; forwards: 78.0).

4.2b Nature and cause of injury

One injury was a knee ligament sprain (7 days) and the other a finger fracture (3 days). The knee ligament sprain was sustained when the player was being tackled whilst the finger fracture was sustained when the player was tackling. Both injuries were sustained during the first half of games. The player sustaining the knee ligament injury was removed from play later in the game while the player sustaining the finger fracture completed the game.

6. References

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