

A Systematic Review of Type of Injury Among Rugby Union Players



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Abstract Rugby union is a full-contact sport that the rate of injuries is higher. Multiple studies discovered rate and type of injuries occurred in rugby union influenced by many factors. Hence, the aim of this study is to identify the type of injury occur in rugby union and identify the comparison of approach on leading to injury. In addition, the study is also able to ascertain injury rate based on player position. Therefore, the study was conducted by systemic review on previous articles and journals, then the data will analyze by meta-analysis method. The result shown probability of injury occurs as high as 57.2% per 1000 player-hours. The results also showed that most of the injuries were soft muscle injuries and position of player did not influence the injuries rate and type.

Keywords Rugby union · Injury

1 Introduction

International Rugby Board (IRB) started to introduce professionalism in October 1995 Rugby World Cup 1995, where the player started to register as a professional player. The governing body IRB started to provide a financial reward to a professional rugby player in order to sustain the game quality. However, Ref. [1] states that due to professionalism involvement, the rugby players need to meet the physical and mental standard as well as show the pace and strength expected of a full-time athlete. Nevertheless, the Ref. [2] state that a standard expectation has also affected the majority of amateur players. Hence, the injury pattern and rate are becoming difficult

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to control among the players. According to Ref. [3], rugby resulted in the highest injury in sport where (198 cases/10,000 h) it is nearly double as basketball injury rate (103 cases/10,000 h). Nevertheless, updated that rugby still at the highest rate of injury followed by soccer and field hockey [4].

A different type of injury coming from different approaches of body contact in a rugby game. The damage can lead from mild to severe injury, categorized as foul play, tackle, scrum, and many more. The tackle has been reported in many articles that the action of the play that resulting in most injuries [5]. However, some research reported to have a high incidence of foul play. In addition, physical factor such as fatigueness has been suggested as one of the main influences to a rugby injury and only happen within a time of the game. The researcher believes that more injuries should occur during the second half of a match when players are fatigued [6].

Therefore, identifying the type of injury and comparing the different type of approach leading to injury in rugby union stand to be advanced via a reviewing number of articles and journals in meta-analysis of eligible studies. The aim of this systematic review is to examine the brief idea of the different type of injury in rugby union. This analysis will be limited to prospective studies only. Our main objectives are to determine the comparison of different approaches leading to injury and reviewing the most dangerous approach in rugby union that supported by past articles.

2 Method

2.1 Research Design

This research design is a systematic review, journals related to injury in rugby union were reviewed. The data collected and look from multiple studies. In addition, resources are mostly reviewing the specific demand samples and subjects to produce the topic requirement. The journals or sources are searching and analyze from the related question. The methodology part of the review will be listed in the databases and citation list. Examples of search database used were EMBASE, SPORTDiscus, PubMed, and Web of Sciences. In this research design, there are no participant and treatment involved. The brief summary of the type of injury coming from articles that revising the same sport (rugby union), where participants were controlled and have been properly briefed and tested. The related articles will provide the type of injury and approach that lead to injury, which will be the main focus of this journal review. Hence, this research design will help the journal review to generate the new idea and issue that are related to the future.

2.2 Sample

The samples are collected from previous journals and articles, then it will be extracted and analyzed for the review. This research sample will be utilizing the online search engine PubMed, EMBASE, and SPORTDiscus in October 2015. We then hand-researched the references from the related topic from key systemic reviews and prior study on rugby union.

2.3 Data Collection

The data collection for this journal is coming from different sources (direct.com, journal sport science and medical.com and many more), where the liability of the sources is very liable and established. The strategy during the journal searching in PubMed and adapted it for EMBASE: ((rugby union[tiab]) AND ((injury OR issue OR problem OR accident OR concussion OR bruise OR dislocation OR fracture OR sprain OR strain OR contusion OR hematoma OR laceration OR broken)) AND ((type OR mechanism OR tackle OR scrum OR approach OR professional OR amateur).

The documents are mostly downloaded in PDF format and then it will be categorized into different categories. The journal selection initially searches by title and the abstract reviewed looking for rugby injury and related field. Then they studied and marked as potentially beneficial to the study. The journal must contain the valuable information fitting the criteria. The information and text were then retrieved electronically online. The inclusion was primary search on rugby with an incidence on the type injury and mechanism of injury.

2.4 Reliability and Validity

Of the 500 studies found through online database, we only selected 30 which are included in the final review. The procedure of exclusion is given in the flow diagram given (Refer Fig. 1).

3 Results and Discussion

Studies recounted match injury rates as per 1000 player-hours. The probability percentage provided by six studies reported that injuries might occur as high as 57.2% per 1000 player-hours. The average probability of injury for one player can get up to 68%, where minimal probability can get up to 6% (Refer Table 1).

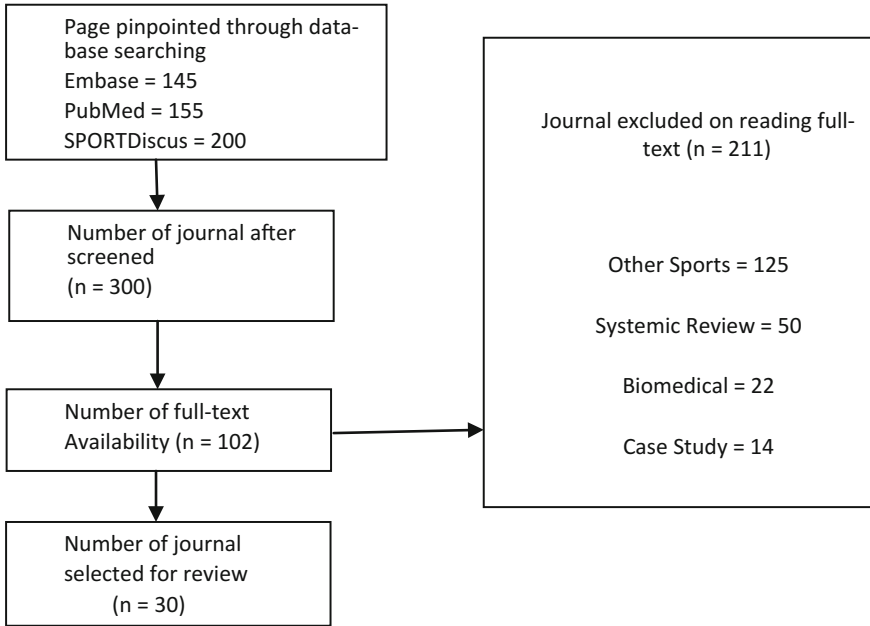


Fig. 1 Flowchart of literature selection

3.1 Type of Injury

Soft tissue and closed injuries accounted for almost half percent of all injuries. These were further subdivided into contusion/hematoma (46%) and joint/ligament sprains/tears (47.2%). Other types of injury included fractures (27%), dislocations/subluxations (10.8%), and concussions (24.6%) (Table 2).

3.2 Phases of Play

It is reported that phases of play (mechanism) play an important factor leading to different types of injury. In total, tackle, which contain tackling and being tackled reported as the majority rate in injuries (39.6–64%). It is measured that active tackling (16.5–65.0%) consisted of higher rate than active tackling (18.5–40%). It is followed by ruck and maul with injuries rate (8.3–31.5%) after tackling and being tackled. Lastly, injuries rate produced by scrum (2.0–36.0%) is the last phases of play in rugby union (Table 3).

Table 1 Probability of injury in percentage

Author and year of publication	Number of injuries	Total time exposure	Injury incidence (95% CI were given)	Average probability of a player getting injured
Fuller (2011)	190	3320 player-hour	57.2 (49.6–66.0) injuries per 1000 player-hours	63
Gabbett (2008)	62	1092 player-hour	56.8 (42.6–70.9) injuries per 1000 player-hours	68
Haseler (2010)	210	1636 player-hour	11.9 (4.1–19.6) injuries per 1000 player-hours	9
Nathan (1983)	10	2700 player-hour	3.7 injuries per 1000 player-hours	6
Nicol (2011)	26	2406 player-hour	10.8 injuries per 1000 player-hours	10
Roux (1987)	353	50 126 player-hour	7.0 injuries per 1000 player-hours	12

^aAll the information provided in their research itself (6 studies)

Table 2 Percentage of type of Injury

Injury	Percentage of all injuries (%)	Number of studies
Fracture	3.0–27.0	9
Ligament injuries, sprains and strains	15.7–47.2	7
Dislocation and subluxation	0.5–10.8	6
Laceration, contusion and haematoma	2.7–46.0	7
Concussion	2.2–24.6	10

^aData provided by 10 studies

Table 3 Percentage of phases of play that lead to injury

Phase of play	Percentage of all injuries	Number of studies
All tackle	39.6–64.0	9
Active tackle	18.5–40.0	8
Recipient of tackle	16.5–65.0	8
Scrum	2.0–36.0	9
Ruck/maul	8.3–31.5	7

^aData provided by 9 studies

Table 4 Injury percentage by player

Player position	Percentage of all injuries
Forwards	43.8–56.3
Backs	43.6–56.3

^aData provided by 9 studies

3.3 *Player Position*

Based on 13 studies reported that the data provide in two different types of positions (forward and back) in rugby union that lead to the injury are measurable (refer Table 4). The injury rate provided showed that the injuries occurred between two different positions 43.8–56.3% and 43.–56.35% of all injuries are slightly different.

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3.4 *Site of Injury*

The highest possible parts where injuries may occur are lower extremity compared to the upper extremity. Based on 5 studies, injury occurs in upper limb and lower limb, which ranged from 19.3–38.4% and started from 3.4–46.8%.

4 Discussion

This study focuses on brief overview on the type of injury in rugby union and comparison on different approaches that leads to injury. Rugby has been well known full contact sport yet wear a little or no protective gear. Due to term professional involves the financial reward are given to the professional rugby player. Therefore, they need to achieve a standard strength and performance in training and competition. Reference [1] states that due to the high expectation, injury rate become uncontrolled. This is because the amateurs are very limited in experience where it leads to injury. Relevance to the percentage of probability for a player to get an injury is more than half (68) percent per 1000 player-hours. Therefore, the grade of professionalism in sport does play a significant role in many things especially the injury rate when it comes to rugby union [6].

Injuries in rugby have become very familiar with its own nature of the game, where body contact is vital to win a match. Reference [6] mention that the reason why injury in rugby union is higher due to the speed of the game, player are bigger

and fitter, tackling is harder and tactical are complicated. The mechanism of injury is very complicated, and the vigorous impact during the game and training depends on the area being hit [3]. Majority of injury resulted from contact phases of play, where the studies have proven almost 65% of injury resulted from being tackled. However, the position of the player does not influence the injury percentage based on this systemic review. Therefore, understanding the phases of play that lead to injury may identify the amount of damage physically to the player and type of injury.

Previous research describes that the most percentage of the injuries located at the lower part of the body, 25% of injuries in knee consider severe [6]. Which supported by previous studies where ligament injuries, sprains and strains have the highest injury chances (47%). Although more severe injuries such as fractures and concussions are commonly reported [7]. The approaches in rugby such as scrums and tackle above shoulder may lead to upper body damages and severe medical injuries. Furthermore, the head is the most sensitive part of the body where the damages in rugby are very common [2]. In addition, the injuries resulted from scrums and bad tackle may also lead to serious neck injury [7]. Based on five studies, injury occur in upper limb and lower limb, ranging from 19.3–38.4% and started from 3.4–46.8%. Therefore, the phases of play in rugby can lead to upper limb injuries and possible severe medical issue.

5 Conclusion

It is theoretically accepted that rugby union is a physical sport and contributes to physical injuries. However, it is also associated with higher injury risk when it comes to rugby union and professionalism. Rugby is the physical sport that causes various types of injury where ligament, sprain, and strain are considered the highest injury ratio. It is believed that based on this systemic review, being tackled is the highest rate in phases of play. Lastly, player position did not influence the rate of injury based on this study. Nevertheless, a player with the proper training and good exposure may help the player avoid from getting injuries. Thus, understanding the different type of injury appear in rugby union may beneficial to first aider and prevention system in lesser the injuries rate to occur.

References

1. Garraway, M., Lee, J., Hutton, S., Russell, E., & Macleod, D. (2000). Impact of professionalism on injuries in rugby union. *Journal of Sport Medicine*. <https://doi.org/10.1136/bjism.34.5.348>.
2. Kay, E., Kakarla, P., Macleod, D., & McGlashan, T. (1990). Oro-facial and dental injuries in club rugby union players. *Journal of Sport Medicine*. <https://doi.org/10.1136/bjism.24.4.271>.
3. Silver, J. (1992). Injuries of the spine sustained during rugby. *Journal of Sport Medicine*. <https://doi.org/10.1136/bjism.26.4.253>.

4. Junge, A., Cheung, K., Edward, T., & Dvorak, J. (2004). Injuries in youth amateur soccer and rugby payers comparison of incidence and characteristic. *Journal of Sport Medicine*. <https://doi.org/10.1136/bjism.2002.003020>.
5. Scher, A. (1991). Catastrophic rugby injuries of the spinal cord: changing patterns of injury. *Journal of Sport Medicine*. <https://doi.org/10.1136/bjism.25.1.57>.
6. Bathgate, A., Best, J., Craig, G., & Jamieson, M. (2001). A prospective study of injuries to elite Australian rugby union player. *Journal of Sport Medicine*. <https://doi.org/10.1136/bjism.2007.037499>.
7. McCoy, G. F., Piggot, J., Macafee, A. L., & Adair, I. V. (1984). Injuries of the cervical spine in schoolboy rugby football. *The Bone & Joint Journal*, *66*(4), 500–503.