ORIGINAL RESEARCH ARTICLE

Nature and proportion of total injuries at the Stellenbosch Rugby Football Club: a comparison of the years 1973 - 1975 with 2003 - 2005

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Abstract

Objective. The purpose of this study was to compare the nature and proportion of total injuries occurring at Stellenbosch Rugby Football Club in Stellenbosch, South Africa, between the years 1973 - 1975 and 2003 - 2005.

Design. Retrospective, descriptive study.

Main outcome measures. Injured rugby players from the Stellenbosch Rugby Football Club from the different time periods were included in the study. Results from the 1973 - 1975 time period were obtained from two previously published articles (Roy, 1974; Van Heerden, 1976), while data from the 2003 - 2005 time period were available through the Stellenbosch University Rugby Injury Database.

Results. An increase in the proportion of head and facial injuries from 1973 - 1975 (21%) to 2003 - 2005 (42%) was found as well as a doubling in the proportion of concussions between the two time periods (12% - 23%). There was an overall decrease in total injuries between the two time periods.

Conclusion. The findings highlight the high and increased proportion of head and facial injuries in the game of rugby at the Stellenbosch Rugby Football Club. This is a matter that should be further investigated.

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Introduction

Following the 1995 Rugby World Cup, the game of rugby was introduced as a professional sport by the International Rugby Board (IRB). Rugby league had a large following and was tempting rugby union players with the promise of big salaries. The professionalism of rugby union was seen as the way to preserve the game and maintain the players. Despite the rule changes accompanying the professionalism of rugby, there has been a subsequent increase in rugby injuries.[1,6] Although this may not seem relevant for club players, the study of Garraway *et al*.[6] revealed increases in injuries for both senior club (amateur) and professional rugby players from the 1993 - 1994 season (pre-professional) to the 1997 - 1998 season (professional). It would appear that there is now a greater emphasis placed on players' speed, strength and endurance than before the professional era.[6]

The Stellenbosch Rugby Football Club (hereafter referred to as SRFC) is made up of five senior teams (including one women's team), five junior teams (three under-20 and two under-19 teams), as well as 45 hostel teams and has more than 1 200 registered players. SRFC also has a proud history of players who have proceeded to represent their province and country. In 1973[10] and 1974 - 1975,[12] research studies were conducted to investigate the nature and proportion of total injuries occurring during these seasons at SRFC. In 2003, the University's Rugby Injury Database was developed to log and organise rugby injury data from SRFC for further analysis.

Fellow researchers acknowledge a lack of a standardised definition of injury, which makes comparison between studies difficult.[1,3,6,7,9] However, regardless of the definition of injury used, the reported incidences of rugby injury remain among the highest in sport.[4] The major aim of this descriptive study was to compare the nature and proportion of total injuries occurring at SRFC between the years 1973 - 1975 and 2003 - 2005.

TABLE I. Number of hostel and club matches played, teams and total injuries for each year

Matches/injuries	1973	1974	1975	Total	2003	2004	2005	Total
Hostel matches (teams)	498 (52)	567 (51)	469 (52)	1 534	280 (46)	290 (46)	217 (45)	787
Club matches (teams)	123 (7)	74 (4)	76 (5)	273	226 (10)	210 (10)	166 (8)	602
Total matches	621	641	545	1 807	506	500	383	1 389
Total injuries	300	485	900	1 685	238	272	251	761

Methods

Subjects

The subjects for this study came from the time periods of 1973, 1974 - 1975 and 2003 - 2005. The study population for both time periods comprised rugby hostel and senior or junior club players from SRFC. Injured SRFC players were excluded from the study if the rugby player was injured during an away rugby match, if the injured rugby player did not play for a SRFC team or if the injury was not rugby-related. In the 1973 rugby season[10] the injured SRFC players were included if the rugby player was injured during a rugby match or practice and sought private medical treatment at the author's medical practice. The injured SRFC players for the 1974 - 1975 rugby season[12] were included if the rugby player was injured during a rugby match or practice resulting in medical treatment at Stellenbosch University's Student Health Services. The injured SRFC players of the 2003 - 2005 rugby season were included in the study if the rugby player was injured during a rugby match or practice resulting in medical treatment at the field.

Data collection

Injury definition: For the purposes of this study an injury was defined as an event which resulted in a player seeking medical assistance from the sports physician on duty at the rugby game or practice, regardless of whether the player stopped playing in the middle of the game or continued until the end before seeking the assistance.

Data source: The injury results of the 1973 and 1974 - 1975 SRFC rugby seasons published in 1974[10] and 1976[12] respectively were compared with the injury findings of the 2003 - 2005 rugby seasons. The nature and proportion of total injuries were investigated for the two time periods.

Measurement tool: All the research studies (i.e. Roy,[10] Van Heerden[12] and current) applied a questionnaire to collect the injury data. Although these questionnaires were not exactly the same, each provided information about the player regarding the date of injury, age, height, weight, team, competition or practice, weather conditions, playing surface, shoe and stud type, position, phase of play, as well as site and type of injury sustained. The 1973 and 1974 - 1975 data were obtained from research published in 1974[10] and 1976,[12] respectively. However, the data from these studies were the authors' published data and not the raw data. The 2003 - 2005 data were accessed through Stellenbosch University's Rugby Injury Database. The method used for the injury data collection of the 2003 - 2005 season involved the presence of a sports physician and two postgraduate biokinetics students during all home matches and contact practice sessions for on-site acquisition of injury information. The sports physician was responsible for the diagnosis of the injury and the students on duty for the recording of the necessary information.

Data resource: The number of matches played in 1973 - 1975 and 2003 - 2005 were calculated from SRFC Annual Reports for the respective years.

Injury categories: The category 'head and face' includes injuries of the head, face, nose, eye, ear, mouth and jaw but does not include injuries of the neck. The category 'shoulder' includes injuries of the shoulder and upper arm. The categories 'knee' and 'ankle' pertain to injuries of the knee and ankle respectively. These exact categories were used in the study of Van Heerden[12] when he compared his results with those of Roy.[10]

Statistics

The study is of a descriptive nature and it was decided to calculate the proportions of total injuries as percentages of the total injuries for the time periods of 2003 and 2004 - 2005, in keeping with those calculated by Roy[10] and Van Heerden[12] for the time periods of 1973 and 1974 - 1975, respectively.

Results

Table I indicates the number of matches played, the number of teams involved and proportion of total injuries sustained, for the years 1973 - 1975 and 2003 - 2005, for both hostel and club teams. In 1973 - 1975 there were considerably more hostel matches played than during 2003 - 2005. In 2003 - 2005, more club matches were played than during 1973 - 1975. Total match figures also include friendly matches. In total, more rugby matches were played during 1973 - 1975 (1 807 matches) than during 2003 - 2005 (1 389 matches). In 1973 - 1975 there were slightly more hostel teams and slightly fewer club teams than during 2003 - 2005. Considerably more injuries were sustained during the period of 1973 - 1975 compared with the 2003 - 2005 – more than double the amount.

Fig. 1 shows the most frequently injured anatomical site for the years 1973, 1974 - 1975, 2003 and 2004 - 2005.

In 2003 (41%) and 2004 - 2005 (42%) there was a doubling of the percentage of injuries for the category of head and face,

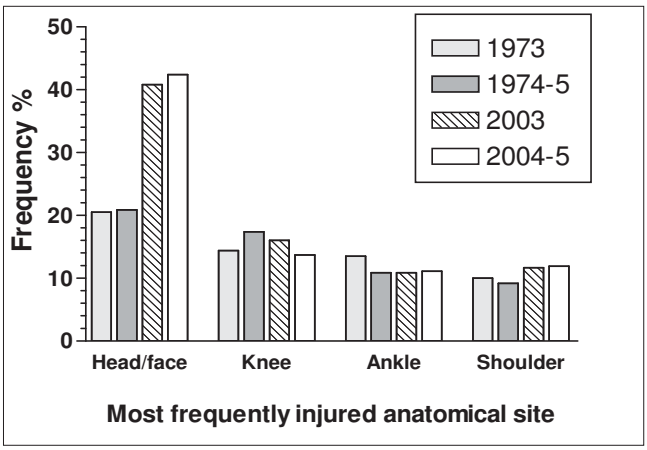

Fig.1. Most commonly injured anatomical site per year/ season.

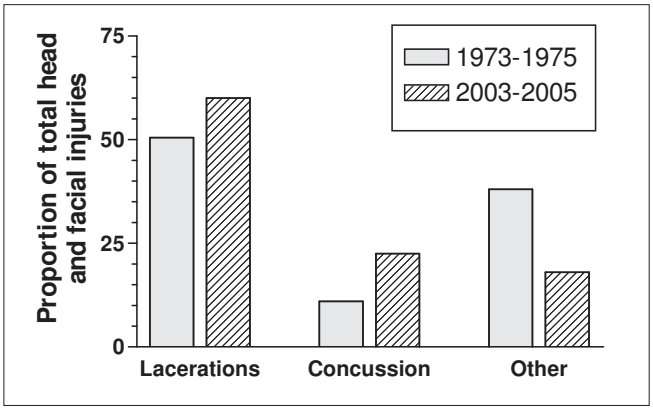

Fig. 2. Proportion of lacerations, concussions and other head and facial injuries.

while the percentage remained constant for 1973 (21%) and 1974 - 1975 (21%). The other three frequently injured sites have remained relatively stable, with some minor changes. There was a slight increase in the percentage of shoulder injuries in 2003 and 2004 - 2005 (12% and 12%, respectively) when compared with the 10% and 9% of the 1973 and 1974 - 1975 findings. The percentage of ankle injuries decreased from 14% in 1973 to 11% in 1974 - 1975. In 2003 and 2004 - 2005 the incidence is similar at 11% and 11% respectively. Slight fluctuations are evident with the knee injuries, which increased from 14% in 1973 to 17% in 1974 - 1975 while in 2003 they decreased from 16% to 14% in 2004 - 2005.

Fig. 2 depicts the breakdown of head and facial injuries into lacerations, concussions and other head and facial injuries for the time periods 1973 - 1975 and 2003 - 2005.

Lacerations increased from 51% in 1973 - 1975 to 61% in 2003 - 2005, and concussions doubled from 12% in 1973 - 1975 to 23% in 2003 - 2005. Other head and facial injuries decreased from 37% in 1973 - 1975 to 16% in 2003 - 2005.

Discussion

The descriptive nature of this study and the limited possibilities for statistical analysis of the data do not allow firm conclusions to be drawn from the results obtained. A few limitations were encountered in the collection, access and analysis of the data, yet despite these limitations, the study still provides some interesting information concerning the nature and proportion of total injuries occurring at SRFC 30 years following the initial two studies.

A total of 1 685 recorded injuries occurred between 1973 and 1975 compared with the total of 761 for 2003 - 2005. The difference in total matches, played between the two time periods, is 418 matches, with more matches being played between 1973 and 1975 (1 807) compared with 2003 - 2005 (1 389). Almost two and a half times more injuries occurred during 1973 - 1975. This is probably also an underestimation of injuries, due to the inclusion criteria used. Van Heerden[12] also states that 35% of these injuries occurred in 1974 and 65% in 1975.

According to the proportion of total injuries by anatomical site for the years 2003, 2004 and 2005, it is apparent that the head and face hold the highest percentage of injuries compared with the other anatomical sites, followed by the knee, shoulder, and then ankle. These specific categories were compared with the findings of Roy[10] and Van Heerden.[12] It would appear that there has been a large increase in the proportion of head and facial injuries between the three decades. The percentages for 1973 - 1975 doubled to 2003 - 2005. There was a 10% increase in the proportion of lacerations obtained in head and facial injuries, while the proportion of concussions has doubled.

On the topic of increased injuries since professionalism, Garraway *et al*.[6] state: '…changes in the laws of rugby union in recent years have been designed to encourage more open play. This has probably resulted in more tackles involving a higher degree of momentum or a greater degree of force'. Perhaps this accounts for the increase in the proportion of head and facial injuries observed. The other three sites (knee, ankle and shoulder) remained relatively stable with little fluctuations. The finding of head and face being the most commonly injured anatomical site is consistent with the studies of Targett,[11] Gabbett,[5] Bathgate *et al*.,[1] and Best *et al*.[2] Although the studies of Gabbett[5] and Best *et al*.[2] also included neck injuries in this category, this is not considered a problem. Should neck injuries have been added to the head and facial injuries investigated in this study, it would have only made the percentage higher.

It is possible that the slightly higher percentage of lacerations of the head and face, which was recorded during the 2003 - 2005 time period, was because of the increased strictness concerning injuries involving blood. It is also possible that the doubling of concussions that was observed is due to the stricter guidelines concerning a player who has become concussed, resulting in more accurate reporting of these injuries. Under the current IRB laws, concussed players are subject to a 'mandatory 3-week stand-down period' regardless of whether the concussion is considered mild or severe.[8] In contrast, in 1974, Roy[10] stated: 'There is at present no set rule as to who is responsible for ordering the removal of an injured player from the field… Permitting

a player with concussion to continue playing should not be tolerated.'

Conclusion

The three commonly injured sites of the knee, ankle and shoulder remained similar over the two time periods, 1973 - 1975 and 2003 - 2005, in contrast to the higher total injuries for 1973 - 1975 and increased proportion of head and facial injuries for 2003 - 2005. An increase in the proportion of these particular injuries took place over the last 30 years whereas the total number of injuries decreased. It is of concern to note that concussion injuries have doubled. Could this be due to poor tackling technique or some other skill which is lacking, or is it merely due to an increase in the reporting thereof? In order to obtain a better understanding of the findings observed, it would be beneficial to undertake further studies in this regard.

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