RFU Community Rugby Injury Surveillance and Prevention Project

CRISP
2015-2016

Season Report
# Contents

Section 1 - Executive Summary .................................................................................................................. 2

OVERALL FINDINGS ................................................................................................................................. 2

CONCUSSION ........................................................................................................................................ 2

THE KNEE – HIGHEST BURDEN (NUMBER X TIME LOST PER INJURY) ...................................................... 2

THE SHOULDER – MOST BURDEN FOR UPPER LIMB .................................................................................. 2

THE TACKLE – MOST COMMON INJURY EVENT ....................................................................................... 2

THE SCRUM ............................................................................................................................................ 3

CRISP INJURY PREVENTION WARM-UP STUDY ....................................................................................... 3

THE CRISP PROJECT - RESOURCES .......................................................................................................... 3

Section 2 - Introduction ................................................................................................................................. 4

2.1. Methods and definitions ...................................................................................................................... 5

Section 3 - Time-loss injury information ..................................................................................................... 6

3.1. Overall injury rate and severity .......................................................................................................... 6

3.4. Site of injury ....................................................................................................................................... 10

3.6. Injury diagnoses ................................................................................................................................. 11

3.6. Events associated with injury .......................................................................................................... 18

3.7. Effect of playing position on injury ................................................................................................... 23

3.8. Timing of injuries .............................................................................................................................. 25

Section 4 - Physical characteristics of community rugby union players ...................................................... 27

Section 6 - Future directions of Community rugby injury surveillance ......................................................... 28

Section 7 - Publications and Reports .......................................................................................................... 29

Section 8 - Acknowledgements .................................................................................................................. 31
SECTION 1 - EXECUTIVE SUMMARY

OVERALL FINDINGS

- The overall injury rate in community rugby during season 2015-16 was stable compared with previous seasons with approximately one missed-match injury in every three team games.
- A single player would have to play 43 games to sustain one injury.
- The injury rate within community rugby decreases as you move down the league structure.
- One-week time-loss injury rate in men's senior community rugby are approximately half that reported for Premiership rugby.
- On average two players per team will be unavailable for match play each week throughout the season due to injury.

CONCUSSION

- There was no change in the incidence of reported concussions during season 2015-16 compared with the season 2014-15.
- The incidence of concussion has increased since the launch of the ‘Headcase’ concussion education programme in 2013. Therefore this increase in recent seasons may be due to the promotion of concussion awareness through RFU ‘Headcase’, the increased profile of this injury through the media, and the lower threshold for suspecting concussion.
- There was one concussion for every 24 team games (or 1 in every 12 matches)
- 76% of all concussions were sustained in the tackle.

THE KNEE – HIGHEST BURDEN (NUMBER X TIME LOST PER INJURY)

- The knee was the second most commonly injured site, but injuries to this site were the most severe in terms of matches missed. Therefore knee injuries account for the greatest total of matches missed.
- Injury prevention exercises that target the lower limb were included in the CRISP warm-up study during season 2015-16. The results of this study are reported separately.

THE SHOULDER – MOST BURDEN FOR UPPER LIMB

- The shoulder is the third most commonly injured site, with a high mean severity (matches missed). Therefore shoulder injuries account for the most matches missed for an upper limb site.

THE TACKLE – MOST COMMON INJURY EVENT

- The tackle was associated with about half (47%) of all injuries.
- When the player is tackling, the most commonly injured sites are the head and shoulder. Good tackling technique has the potential to reduce injuries to these areas.
- Strategies to reduce injuries to the tackled player should include conditioning exercises for the knee and ankle.
**THE SCRM**

- Accounts for 4% of all one-week time-loss injuries (13 injuries in total).

Since changes in the scrum engagement at the start of season 2013-14:
- The overall incidence of scrum injuries has remained stable compared with previous seasons.
- There has been a consistently higher incidence of injuries to the hooker over seasons 2013-14 to 2015-16 compared with 2009-10 to 2013-12, but no changes for other playing positions.

**CRISP INJURY PREVENTION WARM-UP STUDY**

- During the 2015-16 season, the CRISP Project incorporated the first ever large-scale study of an injury prevention warm-up in community rugby union, with the intention to reduce the number and severity of injuries in participating clubs.
- The study showed that a warm-up comprising exercises designed to target specific injury sites and types was successful in reducing injuries to the head (concussion) and lower limb, but resulted in an increase to injuries to the shoulder.
- The full results of this study will be reported separately.

**THE CRISP PROJECT - RESOURCES**

**Webpages - http://go.bath.ac.uk/rfu-crisp - contain:**

- Project information for new and existing clubs
- Previous CRISP annual reports and scientific publications
- Priority areas identified for injury prevention
- RFU and World Rugby coach education and injury prevention resources
SECTION 2 - INTRODUCTION

An injury surveillance programme for community rugby union…

With the increasing attention on injuries in rugby union in recent years, it has become ever more important that injuries in the game are appropriately monitored in order that number and type are appropriately reported. While there is a growing understanding of the nature and causes of match injuries which occur in rugby union, historically, much of this information has been derived from the elite game. However it may not be appropriate to assume that injuries in the elite game reflect those in community rugby, mainly due to differences in player skill and physical characteristics and match demands. Furthermore, it is also possible that with the range of playing abilities across all community rugby there will be scope for differing injury patterns. Men’s community rugby union in England represents the largest senior male playing population in the world and therefore an injury surveillance programme to accurately report on the number and types of injuries in this diverse range of playing levels was conceived.

The Community Rugby Injury Surveillance and Prevention (CRISP) Project is managed by a team at the University of Bath and funded by the RFU as part of the RugbySafe research strand. The Project involves the voluntary participation of a large sample of English clubs across RFU playing levels 3-9 who provide information on injuries which occur during 1st XV matches. The primary purpose of this Project is to identify injury patterns within community rugby to understand more about such factors as the number of injuries and types of injuries occurring, how they happen and how they might be reduced.

CRISP: An evolving Project…

The CRISP project has now been running for eight consecutive rugby season and is the longest running large-scale injury surveillance programme of any community sport in the UK. During this period, the Project has continuously monitored the incidence and nature of match play injuries with this accumulated data providing increasingly greater certainty of the injury pattern occurring in the game. In addition, the Project has also progressed to provide additional information on player physical characteristics and how different attributes may affect the risk of injury. Our work over the 2015-16 season has for the first time introduced and investigated how intervention strategies might be used to reduce injuries.

Providing information to make an impact…

The information generated by the CRISP Project has been used to inform a number of injury management and prevention strategies and provides a comparison of injury risk compared with the Professional game. Now that the Project has run over multiple seasons, data has the potential to detect changes in injury patterns over time, either in response to law changes, education programmes or the evolving progression of the game. Information is used in a number of educational resources within the RFU’s RugbySafe player welfare and wellbeing programme, while the academic quality of the Project has been demonstrated through a number of academic publications and conference presentations (see Section 7).

By any measure, the CRISP Project is one of the world’s leading research programmes in community sport.
2.1. Methods and definitions

This report provides a summary of the Community Rugby Injury Surveillance Project (CRISP) data for the 2015-16 season, including some comparisons with previous season. For the purposes of comparisons between different levels of community rugby, playing levels were grouped as follows:

<table>
<thead>
<tr>
<th>RFU Levels</th>
<th>3/4</th>
<th>5/6</th>
<th>7/8/9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of clubs</td>
<td>7</td>
<td>15</td>
<td>36</td>
</tr>
</tbody>
</table>

All clubs participated in this Project voluntarily having responded to advertisement material. Only injuries sustained during match play were reported with medical personnel at each club submitting the following information for each 1st team match:

### Time-loss injury information

A time-loss injury was defined as one which caused the injured player to miss at least one match (eight days or greater absence from playing). This injury information is presented in Section 3 of the report.

### Injury incidence

Time-loss injury data is presented as the number of injuries per 1000 player-hours of match exposure. This is a standardised method of presenting injury information so that data can be compared between different groups with a different number of matches. It is calculated by:

\[
\text{Injury Incidence} = \left( \frac{\text{Number of Injuries}}{\text{Number of matches} \times \text{number of players (15)} \times \text{match duration (1.33 hours)}} \right) \times 1000
\]

### Injury severity

In this study, the severity of the injury is recorded in terms of the amount of time that the player is absent from match play (number of matches missed). For time-loss injuries in this study, a minimum of one match will have been missed.

### Recurrent injury

A recurrent injury is one of the same site and same type as the original injury and occurs after the player has made a full return to match play following the original injury.

### Statistical significance

In this report, a result is deemed to be significant if the probability that the result has happened by chance is less than 5%. The use of 95% confidence intervals (CI) provides an estimate of reliability of the value (i.e. small intervals means a very reliable estimate).

All methods and definitions used in this study comply with those outlined in the consensus statement for injury definitions and data collection procedures for studies of injuries in rugby union (Fuller et al 2007).
SECTION 3 - TIME-LOSS INJURY INFORMATION

3.1. Overall injury rate and severity

For the 2015-16 season, information from 1409 matches was included, in which 502 time-loss injuries were reported (any injury resulting in 8 days or greater absence from match play). The information presented in Table 3.1 and Figure 3.1 demonstrates that the overall injury rate over the seven seasons has not changed. Small fluctuations in injury incidence are within the expected natural variation from season to season based on the data over seven seasons.

Table 3.1. Match injury incidence and severity for time-loss injuries over multiple seasons.

<table>
<thead>
<tr>
<th>Season</th>
<th>Player match hours</th>
<th>Match injuries</th>
<th>Injuries per 1000 player hours (95% CI)</th>
<th>Number of matches per injury per team</th>
<th>Number of matches per injury per player</th>
<th>Average matches missed/injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-10</td>
<td>22540</td>
<td>385</td>
<td>17.1 (15.4-18.8)</td>
<td>2.9</td>
<td>44</td>
<td>6.1</td>
</tr>
<tr>
<td>2010-11</td>
<td>32820</td>
<td>539</td>
<td>16.4 (15.0-17.8)</td>
<td>3.0</td>
<td>46</td>
<td>7.0</td>
</tr>
<tr>
<td>2011-12</td>
<td>37100</td>
<td>645</td>
<td>17.4 (16.0-18.7)</td>
<td>2.9</td>
<td>43</td>
<td>6.5</td>
</tr>
<tr>
<td>2012-13</td>
<td>24040</td>
<td>399</td>
<td>16.6 (15.0-18.2)</td>
<td>3.0</td>
<td>45</td>
<td>7.0</td>
</tr>
<tr>
<td>2013-14</td>
<td>32180</td>
<td>613</td>
<td>19.0 (17.5-20.6)</td>
<td>2.6</td>
<td>39</td>
<td>6.4</td>
</tr>
<tr>
<td>2014-15</td>
<td>27020</td>
<td>496</td>
<td>18.4 (16.7-20.0)</td>
<td>2.7</td>
<td>41</td>
<td>6.0</td>
</tr>
<tr>
<td>2015-16</td>
<td>28180</td>
<td>502</td>
<td>17.8 (16.3-19.4)</td>
<td>2.8</td>
<td>42</td>
<td>7.2</td>
</tr>
</tbody>
</table>

2009-16  203880  3579  17.6 (17.0-18.1)  2.9  43  6.7

Figure 3.1. Injury incidence for CRISP over seven seasons. 2 standard deviations (2SD) above and below the mean incidence denote the range within which a natural variation in the data is expected.
Injury rate between different playing levels

While there appears to be a slightly higher injury incidence in level 3/4 compared with 5/6 and 7/8/9 (Table 3.2), this was not statistically different. Figure 3.2 also shows the injury incidence over six seasons of CRISP for the different playing levels. When the data for all seasons are combined, there is a significantly higher injury incidence for level 3/4 compared with levels 5/6 and 7/8/9 and also a higher incidence for level 5/6 compared with 7/8/9.

Table 3.2. Match injury incidence and severity for time-loss injuries between playing levels in season 2015-16.

<table>
<thead>
<tr>
<th>Playing level</th>
<th>Total number of matches</th>
<th>Total number of match injuries</th>
<th>Injuries per 1000 player hours (95% CI)</th>
<th>Number of matches for one injury</th>
<th>Mean severity (matches missed)</th>
<th>Mean player matches missed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 3/4</td>
<td>180</td>
<td>72</td>
<td>20.0 (15.4-24.6)</td>
<td>2.5</td>
<td>6.2</td>
<td>64</td>
</tr>
<tr>
<td>Level 5/6</td>
<td>406</td>
<td>137</td>
<td>16.9 (14.0-19.7)</td>
<td>3.0</td>
<td>6.7</td>
<td>61</td>
</tr>
<tr>
<td>Level 7/8/9</td>
<td>823</td>
<td>293</td>
<td>17.8 (15.8-19.8)</td>
<td>2.8</td>
<td>7.9</td>
<td>64</td>
</tr>
</tbody>
</table>

Table 3.2 also shows the ‘Mean player matches missed’, expressed in terms of the total number of occasions over the season that a club has players who are unavailable for match play due to injury (number of injuries x matches missed due to these injuries). For example a club with 10 injuries over the season, each of which results in 5 matches absence, would result in a total of 50 'player matches missed' over the season.

If a team was to play 30 matches over a season, the following number of injuries would be expected at each playing level:

<table>
<thead>
<tr>
<th>Playing Level</th>
<th>Number of injuries expected if a team was to play 30 matches in a season.</th>
<th>Number of injuries expected if a player was to play 30 matches in a season.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 3/4</td>
<td>12 injuries</td>
<td>0.8 injuries</td>
</tr>
<tr>
<td>Level 5/6</td>
<td>10 injuries</td>
<td>0.7 injuries</td>
</tr>
<tr>
<td>Level 7/8/9</td>
<td>11 injuries</td>
<td>0.7 injuries</td>
</tr>
</tbody>
</table>
Impact of injury rate and severity on player availability

When the incidence and severity (number of matches missed per injury) of injuries are considered, clubs are likely to have two players unavailable each week due to injury (Table 3.3).

Table 3.3. Possible impact of number and severity of injuries on player availability

<table>
<thead>
<tr>
<th>Playing level</th>
<th>Number of matches for one injury</th>
<th>Average number of matches missed per injury</th>
<th>Average number of players unavailable due to injury each week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 3/4</td>
<td>2.5</td>
<td>6.2</td>
<td>2</td>
</tr>
<tr>
<td>Level 5/6</td>
<td>3.0</td>
<td>6.7</td>
<td>2</td>
</tr>
<tr>
<td>Level 7/8/9</td>
<td>2.8</td>
<td>7.9</td>
<td>2</td>
</tr>
</tbody>
</table>

Management of time-loss injuries:

- The injured player was removed from play for 84% of all time-loss injuries (78% in 2013/14).
- 11 (3%) injuries required an ambulance. Therefore an ambulance was used for one in every 128 team games.
- 149 (32%) injuries were referred to a hospital. This equates to one player being referred to hospital every 9 team games.
- 54 (11%) injuries required surgery, equating to one in every 26 team games.
- 16% of all injuries were recurrences (those of the same site and injury diagnosis).
Community rugby compared with other playing populations

While there are some differences within different levels of community rugby (shown in Figures 3.2 and 3.3), the overall injury rate is considerably lower than that of International and Premiership rugby for injuries which cause the player to be absent from training or match play for 8 days or longer as shown in Figure 3.3.

![Bar chart showing injury rates for different levels of rugby](image)

**Figure 3.3.** A comparison of injury rates for different levels of community rugby with elite level and schools rugby.

3.4. Site of injury

The most commonly injured body site is the head, followed by the knee, shoulder, ankle and thigh (Figure 3.4). Knee injuries also account for the most days lost to injury due to the high severity (matches missed).

![Diagram showing the most common injury sites and the percentage of injuries at each site.]

SHOULDER: 13% (7.3) → HEAD: 17% (4.1)
KNEE: 16% (11.5) → CHEST: 4% (3.3)
ANKLE: 10% (7.3) → THIGH: 8% (6.4)
LOWER BACK: 3% (1.8) → LOWER LEG: 3% (6.0)
HAND: 3% (9.3)

Figure 3.4. The most common injury sites (and matches missed) for time-loss injuries in 2015-16.

Injured body region and playing level

When injured body sites are grouped into regions, Figure 3.5 demonstrates that the lower limb accounts for the most injuries and this region also appears to account largely for the higher injury incidence in level 3/4 clubs.

![Bar chart showing injury incidence per 1000 player hours by body region and playing level.]

Figure 3.5. Injury incidence according to body region by playing level for all time-loss injuries in 2015-16.
3.6. Injury diagnoses

The top five most common injury diagnoses (site and general injury type – left hand column) for all clubs are presented in Figure 3.6, along with most specific diagnoses (right hand column) for each general injury. It should be noted that Figure 3.6 represents only 48% of all injuries and there is a large range of different diagnoses accounting for the remaining 52%.

Injury diagnoses (site and general injury type) for the three different community playing level groups are shown below in Figure 3.7.

<table>
<thead>
<tr>
<th>Site and general injury classification</th>
<th>Specific injury diagnoses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee joint/ligament sprain (13%)</td>
<td>Knee ligament only (3%)</td>
</tr>
<tr>
<td></td>
<td>Anterior cruciate ligament (3%)</td>
</tr>
<tr>
<td></td>
<td>Knee cartilage (3%)</td>
</tr>
<tr>
<td>Head neural</td>
<td>Concussion (12%)</td>
</tr>
<tr>
<td>Shoulder joint/ligament sprain (9%)</td>
<td>Shoulder ligament/dislocation (6%)</td>
</tr>
<tr>
<td></td>
<td>Acromioclavicular joint injury (3%)</td>
</tr>
<tr>
<td>Ankle joint/ligament sprain (3%)</td>
<td>Ankle ligament only (2%)</td>
</tr>
<tr>
<td></td>
<td>Ankle lateralligament strain (4%)</td>
</tr>
<tr>
<td></td>
<td>Ankle medial ligament strain (4%)</td>
</tr>
<tr>
<td>Thigh muscle strain (6%)</td>
<td>Hamstring strain (4%)</td>
</tr>
<tr>
<td></td>
<td>Thigh muscle strain only (2%)</td>
</tr>
</tbody>
</table>

**Figure 3.6.** Top 5 injury diagnoses in rank order for all playing levels combined over season 2015-16. Numbers within brackets denote percentage of all injuries in each level.

**Notes:**

- ‘Joint/ligament injuries’ include all diagnoses for ligament, jar/joint, dislocations and cartilage injuries.
- In ‘Specific injury diagnoses’ knee and ankle ‘ligament only’ pertain to occasions when the diagnosis was only described as ligamentous. Although these are not specific diagnoses, they are included in this section to show the proportion in relation to other more specific diagnoses.
Figure 3.7. Top 5 injury diagnoses in rank order for the three different playing levels, for season 2015-16. Numbers within brackets denote percentage of all injuries for each diagnosis.
Concussion

Concussion incidence and severity
Concussion accounted for 12% of all time-loss injuries, equating to 1 concussion in every 24 team games (Table 3.4) that a team plays or 1 in every 12 matches (involving two teams). The rate of injury is higher at level 3/4 (1 in very 13 team games) compared with 5/6 (1 in every 25 team games) and 7/8/9 (1 in every 29 team games). Approximately 900 teams play each week within levels 3-9, which likely results in around 37 concussions each week across these levels and around 900 in total per season.

Table 3.4. Concussion incidence and severity between playing levels in season 2015-16.

<table>
<thead>
<tr>
<th>Playing level</th>
<th>Total number of matches</th>
<th>Total number of concussions</th>
<th>Concussions per 1000 player hours (95% CI)</th>
<th>Number of team games for one concussion</th>
<th>Mean severity (matches missed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 3/4</td>
<td>180</td>
<td>14</td>
<td>3.9 (1.9-5.9)</td>
<td>13</td>
<td>4.1</td>
</tr>
<tr>
<td>Level 5/6</td>
<td>406</td>
<td>16</td>
<td>2.0 (1.0-2.9)</td>
<td>25</td>
<td>3.1</td>
</tr>
<tr>
<td>Level 7/8/9</td>
<td>823</td>
<td>28</td>
<td>1.7 (1.1-2.3)</td>
<td>29</td>
<td>3.2</td>
</tr>
<tr>
<td>All Levels</td>
<td>1406</td>
<td>58</td>
<td>2.1 (1.52.6)</td>
<td>24</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Concussion management and treatment
Table 3.5 shows how concussions were managed following a match, according to which medical professional the concussed player were referred to.

Table 3.5. Percentage of concussions referred to practitioners including a comparison with 2013-14 and 2014-15.

<table>
<thead>
<tr>
<th>Playing level</th>
<th>Sports Therapist</th>
<th>Physiotherapist</th>
<th>Hospital</th>
<th>GP</th>
<th>Specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 3/4</td>
<td>14</td>
<td>36</td>
<td>7</td>
<td>29</td>
<td>7</td>
</tr>
<tr>
<td>Level 5/6</td>
<td>19</td>
<td>13</td>
<td>63</td>
<td>25</td>
<td>6</td>
</tr>
<tr>
<td>Level 7/8/9</td>
<td>4</td>
<td>29</td>
<td>29</td>
<td>39</td>
<td>4</td>
</tr>
<tr>
<td>2015-16 - All</td>
<td>10</td>
<td>26</td>
<td>33</td>
<td>33</td>
<td>5</td>
</tr>
<tr>
<td>2014-15 - All</td>
<td>14</td>
<td>25</td>
<td>34</td>
<td>32</td>
<td>3</td>
</tr>
<tr>
<td>2013-14 - All</td>
<td>25</td>
<td>33</td>
<td>27</td>
<td>15</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: A concussed player may have received treatment from more than one of the above practitioners.
**Concussions over multiple seasons**

The incidence of concussion has been higher in 2014-15 and 2015-16 than in previous seasons. This may represent a real increase in injury risk in the last two seasons but may also be due to the raised awareness and diagnosis of this type of injury through the RFU 'Headcase' initiative which has been promoted extensively through the community game since January 2013. The high profile of concussion in the media may have also been a factor in raising awareness for both players and club staff. Considering that the overall risk for any type of injury has remained stable it is likely that increased awareness and education which has also resulted in a lower threshold for the suspicion of concussions is the primary reason for the reported increase. The increase in incidence for concussion in this report is also in line with recent increases in reported concussions in Premiership rugby.

![Graph showing incidence of reported concussions over seven seasons for all playing levels combined](image1)

**Figure 3.8.** Incidence of reported concussions over seven seasons for all playing levels combined, including the mean incidence over this period with upper and lower limits of 2 standard deviations.

![Graph showing incidence of reported concussions over seven seasons for each playing level](image2)

**Figure 3.9.** Incidence of reported concussions over seven seasons for each playing level.
**Match events associated with concussion**
For season 2015-16, the tackle was reported as the injury event for 76% of all concussions (Table 3.6).

Table 3.6. Percentage of concussions relating to match events for 2015-16 season.

<table>
<thead>
<tr>
<th>Event</th>
<th>Tackled</th>
<th>Tackling</th>
<th>Ruck</th>
<th>Collision (accidental)</th>
<th>Maul</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of concussions</td>
<td>33</td>
<td>43</td>
<td>10</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

**Concussion incidence by positional group**
The incidence of concussion in forwards was 2.1 per 1000 player match hours, 95% CI 1.3-2.8 compared with 1.8 per 1000 player match hours, 95% CI 1.1-2.6 for backs. However, this was not a statistically significant difference.

**Concussion and returning to play**
There was an average of 3.4 matches missed per concussion injury. The proportion of concussions according to the number of matches missed is shown in Figure 3.10. New regulations introduced in March 2014, permit the concussed player to return at the earliest after 19 days, when the enhanced care setting (criteria are described on the following page) is not available. This would result in concussed players missing a minimum of 2 matches (assuming there is one match each week). However, for 10% of cases, the concussed player returned to play following the absence of just one match (a total of 14 days absence). While this is a reduction from the 18% reported in season 2014/15, it appears likely that some players are still returning prematurely to match play.

In terms of different playing levels, 64% of all concussed players at level 3/4 returned after missing one or two matches, while this was 31 and 29% for level 5/6 and level 7/8/9.

![Figure 3.10](image)

Figure 3.10. The percentage of concussions for different numbers of matches missed. 'UK': Return to play date not reported.
Concussion - Return to play guidelines

The routine return to play pathway for adult players who do not have access to the enhanced care setting is shown in Figure 3.1. Specific guidelines on the pathways for concussed adult players returning to play can be accessed via the RFU's Headcase resource: http://www.englandrugby.com/mm/Document/General/General/01/32/13/39/4RecoverandReturntoPlay-2016_English.pdf

Figure 3.11. Return to play pathway for concussed adult players not in an enhanced care setting.

Criteria for the enhanced care setting:

1. There is a doctor with training and experience in the management of concussion/traumatic brain injury available to closely supervise the player’s care and GRTP, and clear the player prior to return to play

   and

2. There is a structured concussion management programme in place including:
   a. Baseline SCAT 3/or Computerised Psychometric/Cognitive testing of players.
   b. Clinical serial multimodal concussion assessment of players post head impact event
   c. Formalised GRTP programme with regular SCAT 3 or equivalent assessments recorded in players' medical records.
   d. Access to neuropsychology/neurology/neurosurgery specialists if required.
Catastrophic injury

No catastrophic injuries were reported by any participating clubs over the 2015-16 season. Historically only one ‘near miss’ catastrophic injury (cervical fracture) has been reported (2013-14 season) by participating clubs since the inception of the CRISP Project. While this injury was potentially catastrophic, excellent on-pitch and hospital treatment has allowed the injured player to make a full recovery. As such, the incidence of this type of severe injury has been shown to be low, with an incidence of 0.0049 injuries per 1000 player hours or one injury per 10,206 team games.
3.6. Events associated with injury

For the 2015-16 season, 67% of all time-loss injuries were sustained during contact events (Figure 3.12). Specific sections below provide further information on injury events of particular interest.

![Injury event](image)

**Figure 3.12.** The incidence of injuries for specific match events for all playing levels combined

### The Tackle

- The tackle (both being tackled and tackling) was the most common injury event accounting for 47% of all injuries (21% through being tackled; 26% through tackling).
- The head was the body site most commonly injured in the tackle (26% of all tackle injuries), followed by the shoulder (21%), knee (18%) and ankle (6%).
- Figure 3.13 shows that while the upper limb was more susceptible to injury when the player was tackling, the tackled player sustained more injuries to the lower limb.
- Tackle injuries resulted in an average of 7.9 matches absence (Tackled: 8.9 matches and Tackling: 7.2 matches missed) compared with a mean severity of 7.2 matches missed for all injuries.
Figure 3.13. Percentage distribution by body regions for time-loss injuries sustained when being tackled and when tackling.

Figure 3.14 shows that while a high percentage of concussions were sustained for all tackles, the higher proportion of lower limb injuries to the tackled player appear to be knee and ankle joint/ligament injuries and the primary upper limb injuries to the tackling player are in the shoulder, head/face and hand.

Figure 3.14. Top five most common injury diagnoses for the player being tackled and the player tackling in season 2015-16. Numbers in brackets denotes the percentage of all tackled or tackling injuries.
The Scrum

Scrum injuries for the 2015-16 season, accounted for only 3% (13 injuries) of the total number. The new scrum engagement laws which were introduced for the season 2013-14, provide an interesting drop in the injuries sustained in the scrum over seasons 2013-14 to 2015-16 in comparison with previous seasons. Figure 3.15 shows the scrum injury incidence over seven seasons and while there some fluctuations, the incidence is statistically stable over the period. Furthermore, there is no statistical difference between the incidence of scrum injuries when mean data for seasons before new engagement laws (2009-13: 0.61 injuries per 1000 player hours) are compared with the seasons following (2013-16: 0.63 injuries per 1000 player hours).

![Figure 3.15. Incidence of scrum injuries reported over seven seasons. Note: 2 standard deviations (2SD) above and below the mean incidence denote the range within which a natural variation in the data is expected. The vertical line denotes the change in scrum engagement laws for season 2013-14.]

Further information scrum injuries

- There were 3 scrum injuries reported for level 3/4 (collapsed scrum), with 6 for level 5/6 and 4 for level 7/8/9.
- The severity of scrum injuries was a mean of 7.4 matches absence (similar to the mean for any injury type).
- 12 injuries occurred to front row players (loose head prop: 3 injuries, hooker: 4 injuries, tight head prop: 5 injuries) with one injury sustained by a second row.
- There was a range of types of injury sustained in the scrum distributed between the shoulder (2 injuries), neck (1 injury), chest (2 injuries), knee (2 injuries) and lower back (2 injuries), lower leg (2 injuries), ankle (1 injury).
- Collapsed scrums resulted in injuries to the shoulder (2 injuries), knee (2 injuries) chest and lower back (each 1 injury).
Comparing scrum injuries before and after new scrum engagement laws.

Figure 3.16 compares the incidence of scrum injuries sustained by each forward position combined for seasons 2013-14 to 2015-16 compared with the mean for seasons 2009-10 to 2012-13. Although there were no differences in the overall incidence for scrum injuries following the new scrum laws introduced in season 2013-14, there is a statistically higher injury incidence of injuries sustained by the hooker when the combined incidence for seasons 2013-14 to 2015-16 are compared with the combined incidence from previous seasons (2009-2013).

**Figure 3.16.** The injury incidence for each forward position in the scrum. Data is combined for seasons 2009-10 to 2012-13 (light grey bars) and for seasons 2013-14 to 2015-16 (black bars).
**Non-contact injuries**

- Overall, non-contact injuries accounted for 20% of all injuries.
- Of non-contact events, running was found to be the most common injury event (7% of all injuries).
- Hamstring injuries accounted for 4% of all injuries.
- The CRISP Website has more information on hamstring injury prevention strategies.
3.7. Effect of playing position on injury

When the injuries for all playing level groups were combined, there was no a statistical difference in the incidence of time-loss injuries in forwards (17.6 injuries per 1000 player hours) compared with backs (16.9 injuries per 1000 player hours) or between any specific positional groups (Figure 3.17).

![Figure 3.17: Comparison between positional groups for injury incidence. Forwards: Front row: loose head and tight head props, hooker, Second row: left and right locks; Back row: open side and blind side flankers, No. 8; Backs: Inside backs: outside half, inside centre, outside centre; outside backs: left and right wings, full back.](image)

**Playing position and severity**

The mean number of matches missed for an injury to a forward is 6.4, compared with 8.2 for a back.

**Playing position and injury event**

Forwards and backs sustained 83% and 70%, respectively of all injuries in contact events. It is likely that these findings are due to forwards competing in more contact events during a match compared with backs and therefore the risk of injury per event may not be different for forwards and backs.
Playing position and injury type

The information summarised in Figures 3.18 and 3.19, shows moderate differences in the types of injury sustained by forwards and backs. Forwards tend to sustain more upper limb injuries (shoulder and hand) possibly because they are involved in more contact events, while the higher number of thigh muscle strains (mostly hamstring) may be a results of more high intensity running demands.

![Bar chart comparing injury incidence per 1000 player hours for forwards and backs by body region.](image)

**Figure 3.18.** Comparison between forwards and backs for injury incidence by different body regions.

![Injury diagnoses for forwards and backs.](image)

**Figure 3.19.** The top specific injury diagnoses for forwards and backs (numbers in brackets denote percentages of total injuries for forwards and backs).
3.8. Timing of injuries

Season month and incidence

Figure 3.20 demonstrates a trend towards more injuries at the beginning of the season and after the Christmas break. Furthermore this injury pattern is consistent in both contact and non-contact injuries and more specifically for tackle and running events.

The exact reason for higher injury incidences at the beginning of the season and after the Christmas break is unknown but both of these periods are preceded by less competitive match play compared with other months of the season. Only 16 matches were played by all 58 clubs between 19th Dec and 9th January, suggesting that there is a three-week period during which there is little match play and potentially limited training. This could result in the players losing match fitness over this period.

There are also other factors which should be considered for early season injuries:

- Harder pitches at the start of the season resulting in higher ground impacts
- Those players who sustain injuries at the start of the season may be those who are more susceptible to injury and therefore are removed from the pool of players exposed to the risk of injury for subsequent matches.
- Figure 3.22 shows that injuries early in the season resulted in more matches missed.

![Figure 3.20. Incidence of time-loss injuries over each month of the 2015-16 rugby season.](image)

*Note: Due to very small numbers of matches and injuries reported during August and September, injury incidences for these months have been excluded.*
Season month and injured body region

Figure 3.21 shows that lower limb injuries contribute largely to the higher injury incidence at the start of the season, while the incidence in January appears to be a result of a combination of injuries to all body regions.

Figure 3.21. Incidence of time-loss injuries for each body region over each month of the 2015-16 rugby season. Note: Injury incidences for August and September have been excluded due to very small numbers of matches and injuries.

Season month and injury severity

Figure 3.22. Mean number of matches missed per injury over each month of the 2015-16 rugby season. Note: Injury incidences for August and September have been excluded due to very small numbers of matches and injuries.
Each participating club provides anthropometric characteristics for their squad players. Table 4.1 shows the age, height and mass for community club players of different playing levels, compared with similar information reported previously for Premiership players*. The data demonstrates a trend for players to be taller and heavier as the playing level increases.

<table>
<thead>
<tr>
<th></th>
<th>Forwards</th>
<th>Backs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premiership</td>
<td>25.6</td>
<td>24.8</td>
</tr>
<tr>
<td>Level 3/4</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Level 5/6</td>
<td>27</td>
<td>26</td>
</tr>
<tr>
<td>Level 7/8/9</td>
<td>27</td>
<td>25</td>
</tr>
<tr>
<td><strong>Height (cm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premiership</td>
<td>189</td>
<td>182</td>
</tr>
<tr>
<td>Level 3/4</td>
<td>186</td>
<td>181</td>
</tr>
<tr>
<td>Level 5/6</td>
<td>183</td>
<td>180</td>
</tr>
<tr>
<td>Level 7/8/9</td>
<td>183</td>
<td>180</td>
</tr>
<tr>
<td><strong>Mass (Kg)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premiership</td>
<td>111</td>
<td>91</td>
</tr>
<tr>
<td>Level 3/4</td>
<td>106</td>
<td>88</td>
</tr>
<tr>
<td>Level 5/6</td>
<td>102</td>
<td>87</td>
</tr>
<tr>
<td>Level 7/8/9</td>
<td>100</td>
<td>86</td>
</tr>
</tbody>
</table>


Figure 4.1. Player anthropometric characteristics for different levels of community rugby and compared with data previously reported for Premiership rugby players*.
SECTION 6 - FUTURE DIRECTIONS OF COMMUNITY RUGBY INJURY SURVEILLANCE

Continued injury surveillance

The community rugby injury surveillance project has now been established over multiple seasons. This information provides an increasingly large number of injuries to further our confidence of injury patterns at this level of rugby. Additionally, this information provides the opportunity to compare injury trends over consecutive seasons. In this way, it is possible to examine the potential influence of law changes or the effects of any other methods of intervention on injury patterns.

The results provided in this report are only relevant to the men’s community games and it would not be appropriate to be generalised to different playing levels and groups. Therefore, with proven methods established for the men’s community game, it is recommend that similar programmes are expanded into various playing groups and levels of the women’s game and sevens.
The information collected by the community rugby injury surveillance project has resulted in a number of Journal publications and conference communications.

**Journal publications**


**Conference communications:**


SECTION 8 - ACKNOWLEDGEMENTS

Many thanks to the coaches and sports injury staff at all participating clubs in the Community Rugby Injury Surveillance Project for 2015-16.

Level 3/4: Bury St Edmunds, Dorking, Harrogate, Hartpury College, Otley, Preston Grasshoppers Sedgley Park

Level 5/6: Barnstaple, Bolton, Cobham, Coney Hill, Grove, Kendal, Kettering, Old Haberdashers, Reading, Scunthorpe, Sidcup, Stoke-on-Trent, Tottonians, Witney, Worcester Wanderers


Community Rugby Injury Surveillance Team

Dr Simon Roberts - Research Associate, Department for Health, University of Bath
Mr Matthew Attwood - Postgraduate Research Student, Department for Health, University of Bath
Prof Keith Stokes - Department for Health, University of Bath (Lead Investigator)
Dr Mike England - RFU Community Rugby Medical Director
Dr Karen Hood - RFU Community Rugby Medical Manager
Ms Rachel Brown - RFU Player Welfare Manager

© 2009 Rugby Football Union. The RFU Rose is an official trade mark of the Rugby Football Union and is the subject of extensive trade mark registration world wide.