Rugby RIO™: Internet-Based Surveillance of US High School Rugby Injuries

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Objectives

- Describe Rugby RIO™
- Present Rugby RIO™ Findings
- Discuss Recommendations for Injury Prevention
- Discuss Recommendations for Future High School Rugby Injury Surveillance
Rugby RIO™

- Injury surveillance among US high school rugby players during the 2005 and 2006 spring seasons

- Goals
  - Document incidence and exposure
  - Calculate injury rates
  - Describe patterns of injury
  - Identify risk/protective factors
  - Recommend preventive interventions
Rugby RIO™

- Study participant identification
  - USA Rugby and Rugby magazine
  - Advertised on USRFF and USA Rugby website

- In 2005, 62 clubs reported 21 weeks of data
- In 2006, 59 clubs reported 23 weeks of data
RIO™ (Reporting Information Online) Internet-Based Surveillance System

- Each week, logged into the RIO™ system to report exposure and injury information
- RIO™ = Internet-based data collection tool
  - Powerful (no reporter, variable, geographic distribution, etc. limits)
  - Flexible
  - Inexpensive
  - Quick
  - User friendly
  - Completely updatable
Desired club reporters were (listed in order or preference): a club physician, a club certified athletic trainer, another club medical personnel (i.e., nurse, EMT, etc.), a club coach, or a club manager.

Vast majority of club reporters in both 2005 and 2006 were the coach (74.4% and 78.6%, respectively)
Calculating Weekly Exposures

- Calculating number of player-practices
  - Add the number of players at each practice during that week.
  - For example, if there were three practices and the first practice had 20 players, the second practice had 15 players, and the third practice had 18 players, the number of player-practices would equal 53.

- Player-matches were calculated the same way
Definition of Injury

- Occurred as a result of participation in an organized high school rugby match or practice AND
- Required medical attention by a club physician, certified athletic trainer, personal physician, or emergency department/urgent care facility AND
- Restricted the high school rugby player’s participation in regular school or rugby activities for one or more days beyond the day of injury.
Welcome to the Rugby RIO™ (Reporting Information Online) High School 2006 internet-based injury surveillance system!

Please enter Reporter ID to begin.  

If you have forgotten your Reporter ID# or you have questions about using the Rugby RIO™ surveillance system or about the Rugby RIO™ High School injury surveillance study, please contact Dawn Comstock or Christy Knox or Ellen Yard at RugbyRIO@ccri.net or at (614)722-2400

Click on Training Guide for a tour of the system.
<table>
<thead>
<tr>
<th>Exposure Week</th>
<th>Exposure Report</th>
<th>Injury Report</th>
<th>Study ID</th>
<th>Player ID</th>
<th>Report Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/16/2006 - 1/22/2006</td>
<td>Week 1</td>
<td>Injury</td>
<td>ds02</td>
<td></td>
<td>1/17/2006 12:48:04 PM</td>
</tr>
<tr>
<td></td>
<td>Add Injury</td>
<td>Delete</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Add Injury</td>
<td>Delete</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Add Injury</td>
<td>Delete</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Reporter ID#:  
   christy  
   (If you have forgotten your unique reporter ID# please contact Dawn Comstock, Christy Knox, or Ellen Yard at (614) 722-2400 or at rugbyrio@ccri.net.)

2. Number of player-practices:  
   35  
   (The sum of the number of players at each practice. For example, if the first practice had 20 players and the second practice had 15 players, the number of player-practices would equal 35. If there were three practices and the first practice had 20 players, the second practice had 15 players, and the third practice had 18 players, the number of player-practice would equal 53.)

3. Number of player-matches:  
   33  
   (The sum of the number of players in each match. For example, if 15 players played in the first match and 18 players played in the second match, the number of player-matches would equal 33.)

Reportable injuries are defined as injuries that:
A) occurred as a result of participation in an organized rugby match or practice and
B) required medical attention by a team physician, certified athletic trainer, personal physician, or emergency department/urgent care facility and
C) restricted the rugby player's participation in rugby activities for one or more days beyond the day of injury.

4. Number of injuries:  
   1  
   (After completing this survey, you will be linked to an injury report form. Please fill out a separate injury report form for each injury.)

Submit Report
Reporter ID#

Christy

(If you have forgotten your unique reporter ID#, please contact Dawn Comstock, Christy Knox, or Ellen Yard at (614) 722-2400 or at rugbyrio@ccri.net.)

Injured player ID code

cah11

(Please create a unique ID code for each injured player. This injured player ID code will be used to track all injuries sustained by the player over the course of the season. The unique identifier should be something easy for you to remember but should retain the players’ confidentiality. We suggest using the player’s first and last initial and the jersey number of the position they usually play.)

Level of club playing for at time of injury

High School

Age (in years)

15

Height (in inches)

60

Weight (in pounds)

140

Date of injury (mm/dd/yyyy)

03/15/2006
2006 Preliminary Data: Injury Rates

- 290 injuries
  - 231 match
  - 52 practice
  - 7 other/unknown

- 62,172 player exposures
  - 15,436 player-matches
  - 46,736 player-practices

- 4.7 injuries/1,000 player exposures
  - 15.0 injuries/1,000 player-matches
  - 1.1 injuries/1,000 player-practices
## Comparing Injury Rates

<table>
<thead>
<tr>
<th>Injury Rate per 1,000 Player-Exposures</th>
<th>2005 Rugby RIO</th>
<th>2006 Rugby RIO</th>
<th>HS Football</th>
<th>HS Wrestling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>6.6</td>
<td>4.7</td>
<td>4.4</td>
<td>2.6</td>
</tr>
<tr>
<td>Game</td>
<td>15.9</td>
<td>15.0</td>
<td>12.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Practice</td>
<td>1.5</td>
<td>1.1</td>
<td>2.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>
# Comparing Rates of Specific Injuries

<table>
<thead>
<tr>
<th>Injury Rate per 10,000 Player-Exposures</th>
<th>2005 Rugby RIO</th>
<th>2006 Rugby RIO</th>
<th>HS Football</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concussion</td>
<td>8.6</td>
<td>8.2</td>
<td>4.6</td>
</tr>
<tr>
<td>Fracture</td>
<td>8.8</td>
<td>8.2</td>
<td>4.9</td>
</tr>
<tr>
<td>Knee</td>
<td>5.2</td>
<td>6.3</td>
<td>6.6</td>
</tr>
</tbody>
</table>
2006 Preliminary Data: Risk Factors

- **Mechanism**
  - 50.0% impact with another player
  - 25.9% impact with the playing surface/ground
  - 7.9% stepped on/fallen on

- **Activity**
  - 30.0% being tackled
  - 27.9% tackling
  - 15.2% ruck
  - 9.7% running during play
2006 Preliminary Data: Risk Factors

- **Protective Equipment**
  - 91.7% wore mouthguard
  - 13.4% scrumcap
  - 11.4% shoulder pads

- **Illegal Activity**
  - 4.1% ruled illegal/foul play by referee
## Comparing Time Loss

<table>
<thead>
<tr>
<th>Injury Severity by Days Lost</th>
<th>2005 Rugby RIO</th>
<th>2006 Rugby RIO</th>
<th>HS Football</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 7</td>
<td>27.4%</td>
<td>25.5%</td>
<td>46.7%</td>
</tr>
<tr>
<td>7 to 21</td>
<td>41.9%</td>
<td>44.1%</td>
<td>30.0%</td>
</tr>
<tr>
<td>&gt; 21</td>
<td>26.7%</td>
<td>27.2%</td>
<td>16.6%</td>
</tr>
</tbody>
</table>

% do not sum up to 100% due to missing data
Purpose of Injury Surveillance

Epidemiological findings can help shape the development and implementation of recommendations for injury prevention.
Recommendations for Injury Prevention

- Largest proportion of injuries sustained while tackling or being tackled
  - Educate coaches about the injury risk associated with unsafe tackling
  - Provide coaches with videos or written materials demonstrating proper tackling technique and “safe” tackling drills
  - Encourage referees to penalize unsafe tackling when warranted
Recommendations for Injury Prevention

- Preventive interventions designed to emphasize safety in practice settings
  - Educate coaches about the potential for injury in practice
  - Provide coaches with materials designed to help them run "safe" practices (i.e. warmup, stretching, contact drills, controlled scrimmages)
  - Encourage referees to use scrimmages as opportunities to train new referees
Recommendations for Injury Prevention

- Interventions designed to decrease serious head injury, including concussion
  - Educate coaches about concussion prevention, identification, and treatment as well as guidelines for return to play
  - Distribute CDC’s “Heads Up: Concussion in High School Sports” tool kit
  - Mouthguards worn 100% of the time
  - Coaches, players, and referees should be educated about the dangers of illegal activity/foul play
Limitations of Rugby RIO™

- Based on a small sample of US high school rugby clubs
- Use caution when comparing results from other studies as injury rates are affected by study sample size, injury definitions, and exposure unit
- Because clubs across the US begin and end their seasons at different times during the calendar year, not every club reported all 21 weeks in study period
Recommendations for Future Rugby Injury Surveillance

- Nationally representative sample of US high school rugby players is needed
- Ongoing surveillance will allow researchers to monitor injury rates and patterns of injury over time
- Research must prompt the development of evidenced-based preventive interventions to decrease injury rates
Acknowledgements

- United States Rugby Football Foundation (USRFF) for providing funding
- Dr. Micheli and the USA RUGBY Medical & Risk Management Committee for assisting in the development of the questionnaires and the internet-based surveillance tool
- USA Rugby and Rugby Magazine for providing contact information for high school rugby clubs.