Cervical spine range of motion in elite female rugby union players

Bianca B. Zietsman and Peter W. McCarthy
University of South Wales (UK)

Abstract

The aim of the study was to assess the effect of rugby union on the active cervical spine range of motion (ACROM) flexion/extension in elite female players, comparing forwards and backs.

Results of the study showed a decrease in ACROM flexion, extension and total flexion/extension. Forwards had significantly less extension and total flexion/extension.

Introduction

Elite male rugby union players have a decreased ACROM, the severity of which correlates to years of playing and position played. Although the female game has yet to attain full professional status, the players are still subjected to proportionately similar game related activities. Therefore it might be expected that they also accumulate degenerative changes in vertebral joints and consequently affect the physiological function of this region.

This study was designed to determine if playing a contact sport such as rugby union decreases ACROM (neck) flexion/extension in the elite female game.

Methodology

• All 35 female Welsh international rugby union players in the 2011 6 Nations pre-season training camp volunteered (age 24 years ±).
• The protocol used in this study is the same as that described in Lark, McCarthy 2007 Figure 1.
• Exclusion criteria included current neck pain or trauma, previous surgery or serious pathology.
• A cervical range of motion device** was used to measure ACROM. Figure 2
• Ethical approval was granted by The Faculty of Health Science and Sport’s Ethics Committee, University of Glamorgan, written informed consent was obtained.

Results

The data was analysed using SPSS (v19) and was found to be normally distributed ( Shapiro-Wilk), therefore unpaired T-tests and Cohen’s d coefficient of effect size were used to compare Forwards and Backs.

Table 1 Anthropometric data

<table>
<thead>
<tr>
<th></th>
<th>Mass (Kg)</th>
<th>Height(m)</th>
<th>Neck (cm)</th>
<th>Age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forwards (n=14)</td>
<td>78.0±8.3</td>
<td>1.7±0.1</td>
<td>35.7±1.4</td>
<td>24.2±4.2</td>
</tr>
<tr>
<td>Backs (n=15)</td>
<td>65.0±8.4**</td>
<td>1.7±0.1</td>
<td>33.8±1.3**</td>
<td>24.1±5.0</td>
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</tbody>
</table>

Table 1 Anthropometric data: This table shows the anthropometric measurements of the backs and forwards ** indicates significant difference (p<0.01 2-tailed).

Figure 3 – Flexion and extension measurements in backs and forwards (with standard deviation)
* There was a significance of p<0.05 found in extension.
• Mean Normative data is represented in the red lines††

Figure 4 – Flexion/Extension Ratio in Forwards and Backs (with standard deviation)
*There was a significance of p<0.05 found in the ratio of flexion and extension

Figure 5 – Total Flexion Extension Measurements in Backs and Forwards (with standard deviation)
* There was a significance of p<0.05 found in total range of motion.

Conclusions

These findings suggest that playing in the forward position in elite rugby union is especially associated with a decrease in ACROM regardless of sex.

This suggests that female elite rugby union players have a similar risk of accelerated degeneration of the vertebral joints as their male counterparts. Further research is needed to determine cause.

References


Acknowledgements

The authors would like to thank the Welsh Women’s Rugby Union Management for access to the squad and players for their time and patience.

As well as colleagues of CTDRU: Andrew Heusch, Petina Slolly, Mitchell Quoi, Angus Nixon, James Barber, Simon Leung, Tom Lawrence and Lauren Eckington who assisted in data collection.