Can a Neck Specific Intervention Reduce Self-Reported Neck Pain and Stiffness in Professional Rugby Players

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Introduction

• In rugby union there are 0.26 to 10.58 neck injuries/1000 player-hrs. (Fiske et al. 2007)
• During game play severe neck injuries account for 6.7% of the total injuries with 68.0% classified as minor, and 12.0% as major.
• What happens to neck strength in professional players over a season and what role may a neck specific exercise intervention play
• Neck strengthening has been recommended as a strategy for preventing neck injury and concussions in collision sports but with limited research support.

Aim:

• To evaluate the impact of a neck exercise program using peak force, neck pain (NP), and stiffness (NS) in two professional rugby teams over a season

Methods:

• Case control design: Neck intervention group (NG, n=27) and control group (CON, n=15).
• Peak force was measured pre- and post-season for extension, flexion, left (LtFlx) and right lateral flexion (RtFlx) in all participants.
• Participants performed 1 MVC for each direction.
• Current, average and worst NP and NS values over the previous 3 weeks were recorded using a 100 mm visual analog scale.

Results:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Intervention Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>25.14 ± 3.14</td>
<td>24.78 ± 2.76</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>183.97 ± 4.11</td>
<td>185.50 ± 17.91</td>
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<tr>
<td>Weight (kg)</td>
<td>102.99 ± 12.24</td>
<td>105.06 ± 16.72</td>
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<tr>
<td>Neck Girth Pre-Season (cm)</td>
<td>42.98 ± 2.46</td>
<td>43.49 ± 1.79</td>
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<tr>
<td>Number of Years Super 15</td>
<td>3.77 ± 2.73</td>
<td>4.67 ± 2.34</td>
</tr>
<tr>
<td>Minutes played 2012 Season</td>
<td>423.59 ± 378.66</td>
<td>590.30 ± 421.96</td>
</tr>
</tbody>
</table>

Intervention:

• 3 neck exercise sessions/wk (10 min per session) during the pre-season + 1-2 sessions/wk for the regular season.
• All exercises were supervised
• CON continued with their usual conditioning routines.

Figure 1: Simulated tackle stance testing apparatus for neck strength assessment

Figure 2: A sample of exercises used in the intervention

Figure 3: Neck pain and stiffness values over a competitive season for the intervention group (NG) and control (CON)

Figure 4: Peak forces in the NG and CON groups over the season p < 0.05

Implications:

• Neck specific exercises implemented over a rugby season preserved neck extensor peak force and improved peak force for flexion, LtFlx, and RtFlx for the NG.
• In the control team neck strength decreases significantly in all measured directions and worst NP and average NS increased over the season.
• The neck specific intervention prevented an increase in self-reported worst NP and average NS VAS scores.
• As NP is one of the most frequently cited symptoms of minor neck injuries, reductions in symptom severity through a neck specific intervention could translate into a reduced number or less severe minor neck injuries; however, a larger sample would be needed to confirm.

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