The Effect of a Four-Week Intensive Scoliosis-Specific Exercise Programme on Cobb Angle in Subjects with Idiopathic Scoliosis: An 11 Patient Case Series

Erika Maude, Joseph Head, Kylie Hobson
Scoliosis SOS Clinic, London, England

Introduction - Cobb Angle; History & Importance
- Current management for scoliosis in the UK is dictated by a patient’s Cobb angle.
- Cobb angle is a 2-dimensional measurement and has been the Gold standard assessment for scoliosis since 1948\(^1\).
- Simple to calculate and understand, it is the angle between the most tilted vertebral bodies above and below the apex of the spinal curve.
- This case series aims to investigate whether a four-week intensive scoliosis-specific exercise programme results in a significant improvement in patients’ Cobb angle measurements.

Method
- 11 patients with Idiopathic Scoliosis were treated with a four-week intensive scoliosis-specific physiotherapy course (ScolioGold).
- Patients’ X-rays were supplied retrospectively and follow-up X-rays gathered at routine appointments.
- Some patients had X-ray data for up to 3 years post-treatment.
- All X-rays were taken by an independent radiographer and measured by the same clinician.

<table>
<thead>
<tr>
<th>Thoracic curve</th>
<th>Mean Cobb Angle (°)</th>
<th>Standard Deviation (°)</th>
<th>Range (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-treatment</td>
<td>44.89</td>
<td>12.41</td>
<td>19-60</td>
</tr>
<tr>
<td>Post-treatment</td>
<td>36.22</td>
<td>12.17</td>
<td>10-50</td>
</tr>
</tbody>
</table>

Thoracic curve mean percentage change = -21.96% (SD -11.23% Range -12.2 to -47.37%)

<table>
<thead>
<tr>
<th>Thoracolumbar/Lumbar curve</th>
<th>Mean Cobb Angle (°)</th>
<th>Standard Deviation (°)</th>
<th>Range (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-treatment</td>
<td>45.60</td>
<td>5.55</td>
<td>41-55</td>
</tr>
<tr>
<td>Post-treatment</td>
<td>33.80</td>
<td>9.42</td>
<td>21-44</td>
</tr>
</tbody>
</table>

Thoracolumbar/Lumbar curve mean percentage change = -26.64% (SD -15.11% Range -8.89 to -48.78%)

Results

Conclusion
- Clinically significant Cobb angle change is 5° or more\(^1\).
- Maximum reductions; 12° (thoracic) & 20° (lumbar) - across case series
- Scoliosis-specific physiotherapy can reduce Cobb angle
- Significant Cobb angle reductions in patients over 40° (surgery threshold)
- Reductions in a range of patients; juvenile, adolescent & adult scoliosis
- Results substantiate intensive exercise (e.g. ScolioGold) for treating scoliosis & also as an alternative to surgery.

References
\(^1\) Goldberg CJ, Moore DP, Fogarty EE, Dowling FE. Scoliosis; a review. Pediatr Surg Int. 2008;24(2):129-144