THREE DIMENSIONAL CHANGES
INDUCED BY NON-INVASIVE TREATMENT
OF IDIOPATHIC SCOLIOSIS

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INTRODUCTION

Treatment with Orthopaedic Brace Systems

Rigid Brace

Flexible Brace
(SpineCor)

3 Point Pressure

Corrective Movement
OBJECTIVES

Identify 3D acute postural changes that accompany Cobb angle reduction induced by an orthopaedic shoe lift or a non-rigid brace.
• Control Subjects:
  • $n = 31$
  • Age: 18 years
  • Gender: 38 female, 9 male
Patient Population:

- n: 46 Left Thoracolumbar
- Age: 12 ± 2 years
- Gender: 9 male, 37 female
- Apex of Curves: T11-L1 (left)
- Initial Cobb Angle: 24° ± 10°
<table>
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<th>Clinical Exam</th>
<th>Postural Geometry</th>
<th>X-RAY</th>
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<tr>
<td>Without Treatment</td>
<td>With Shoe Lift</td>
<td>With Brace</td>
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<tr>
<td>n = 46</td>
<td>n = 31</td>
<td>n = 23</td>
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TREATMENT APPROACH

SpineCor System

Hôpital Ste-Justine
TREATMENT APPROACH

Shoe Lift System

Hôpital Ste-Justine
POSTURAL PARAMETERS

- Head
- Scapular Girdle
- Thorax
- Pelvic Girdle

Parameters:
- Rotation
- Tilt
- Version
- AP Shift
- ML Shift
- Height
POSTURAL PARAMETERS

Spine

Rib Prominence Deviation (Frontal, Sagittal)
RADIOLOGICAL CHANGE WITH SHOE-LIFT
POSTURAL CHANGE WITH SHOE-LIFT

Angular Measurements

Angular Measurements (Degrees)

Pelvis rotation
Pelvis Tilt
LIB Version
RIB Version
Shoulders Tilt
RADIOLOGICAL CHANGE WITH BRACE

Cobb Angle (Degrees)

- Initial
- Brace
- Change
POSTURAL CHANGE WITH BRACE

Angular Measurements

Angular Measurements (Degrees)

Pelvis rotation
LIB Opening
Shoulders Tilt
Shoulders Rotation
Shoulders Version
IDIOPATHIC SCOLIOSIS

Normal Posture ≠ Optimal Curve Reduction
IDIOPATHIC SCOLIOSIS

Left Thoracolumbar Curve

Left bending = Optimal Reduction of Cobb Angle
CONCLUSION

• Orthopaedic Shoe Lift
  • 3D change of pelvis + postural reaction for the trunk (bending) = decreased Cobb angle.

• SpineCor
  • 3D acute postural reaction : bending = decreased Cobb angle