The SpineCor System

“A Revolutionary Approach For Conservative Treatment of Adolescent Idiopathic Scoliosis”
The SpineCor System
Origins
The SpineCor System
Paediatric SpineCor Brace

- Developed in 1992 at Ste-Justine Hospital, Montreal, Canada
- Professor Charles H Rivard MD; Christine Coillard, MD
  - Canadian Government Research Project
  - 12 million dollars
  - 65 researchers
    - Orthobiom
    - Blood Test
    - SpineCor
Pediatric Patients

- Idiopathic Scoliosis
  - Juvenile and Adolescent
- Initial Cobb angle between 15° and 50°
- Initial Risser sign 0, 1, 2 … 3
- No restriction except swimming
The SpineCor System
Paediatric Treatment

- SpineCor offers a real opportunity to provide true sustainable long term improvement of curves
- Must be worn 20 hours per day
- Minimum of 18 months
- Achieves permanent stable changes to patient’s posture.
The SpineCor System
Paediatric Treatment

• No long term negative side effects. i.e. muscular weakening

• Better cosmetic results than rigid bracing.

• Preserves normal body movement and growth and allows normal activities of daily living and sports.

• Better compliance
  • Easily concealed under clothing
  • Improved self image

• Improved Comfort
The SpineCor System
Paediatric SpineCor Brace
The SpineCor System
SpineCor Vs. Rigid Brace

SpineCor is NOT just another Scoliosis Brace

• Does not use 3-Point Pressure traditional Biomechanical principles

• Uses Global Postural Re-education

• Which treats the muscular, neurological and osseous elements of the scoliosis at the same time
The SpineCor System
Corrective Movement Principle
Overcorrection of the Postural disorganisation

Using Dynamic Forces

Compressive forces

Distractive forces
Treatment Approach

• Moderate **initial** curve reduction compared with rigid braces

• But better long term results in both maintaining correction and avoiding surgery.

• Progressive curve reduction and neuro-muscular integration over time
Comparison of initial vs. long-term results

<table>
<thead>
<tr>
<th>Cobb angle</th>
<th>Beginning of treatment</th>
<th>6 months brace treatment</th>
<th>3 years post weaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigid Brace</td>
<td>35°</td>
<td>10° (Passive correction)</td>
<td>35°</td>
</tr>
<tr>
<td>SpineCor</td>
<td>35°</td>
<td>20° (Dynamic correction)</td>
<td>20°</td>
</tr>
</tbody>
</table>
## RESULTS 25° - 40°

<table>
<thead>
<tr>
<th>Scoliosis curve</th>
<th>TLSO(^{(2)})</th>
<th>PROVIDENCE(^{(2)})</th>
<th>SPINECOR(^{(3)})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>48 At 2 years follow-up</td>
<td>35 At 2 years follow-up</td>
<td>170 At the end of brace treatment</td>
</tr>
<tr>
<td>Progresion ≤ 5°</td>
<td>7 (15%)</td>
<td>11 (31%)</td>
<td>101 (59%)</td>
</tr>
<tr>
<td>Progresion ≥ 6°</td>
<td>41 (85%)</td>
<td>24 (69%)</td>
<td>57 (41%)</td>
</tr>
<tr>
<td>Progresion ≥ 45°</td>
<td>30 (56%)</td>
<td>15 (45%)</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>Progresion to surgery</td>
<td>38 (79%)</td>
<td>21 (60%)</td>
<td>39 (23%)</td>
</tr>
<tr>
<td>Withdrawals</td>
<td>N/R</td>
<td>N/R</td>
<td>12 (7%)</td>
</tr>
</tbody>
</table>


Based on the New SRS inclusion criteria for brace studies

- **SpineCor** is **4 times** more effective than TLSO/Boston in stopping progression of the curve.

- **SpineCor** was **76.5%** effective in avoiding surgery, Providence is 40% effective and TLSO is 21% effective.

- Even thought 40.6% of patients in the SpineCor group progressed >5 only **1.2%** progress to a curve greater than 45. The majority of the SpineCor group that did progress did not require surgery (unlike the TLSO group)


Based on the New SRS inclusion criteria for brace studies

- SpineCor is **71% more effective** in reducing the rate of surgery compared to Boston/TLSO.

- At two year follow up SpineCor brace was **95.7% effective in maintaining** or further improving correction.

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Positive SpineCor paediatric results have been published by centres in the following counties:

- **UK**

- **Poland**
  “The Early Results Of The Treatment Of Idiopathic Scoliosis Using The Dynamic Spinecor Brace, “Tomasz Potaczek et. al. Medical Rehabilitation 2008, 12 (2), 1-6

- **Spain**
  Initial Results Of Spinecor Treatment Of Adolescent Idiopathic Scoliosis In Seville.

- **Greece**
  The Use Of The Spinecor Dynamic Corrective Brace In Greece: A Preliminary Report
  Irini Tsakiri¹, Scoliosis 2009, 4(suppl 1):O35
Negative results have been published by two authors

1) Dr Hans-Rudolf Weiss (Germany)
   • Dr. Weiss, has a competing brace, the “Cheneau Light”, and is a proponent of Schroth physiotherapy.
   • Has NO formal training in SpineCor treatment.
   • Tried to apply SpineCor in same fashion as a rigid brace, not in the way SpineCor was designed.
   • No experience using SpineCor beyond the study he conducted.
   • The results of his study are not valid.
Negative results have been published by two authors

2) Dr Man Sang Wong (Hong Kong)
   • Staff attended Montreal for “introductory” training, did not complete certification for SpineCor .
   • Pictures in Study show that the SpineCor braces were fitted incorrectly.
   • No experience using SpineCor beyond the study they conducted.

Issues discussed in letter to the editor in SPINE Volume 33, Number 25, p 2837–2841
Conclusion:

- Research from centre's that have been properly trained and follow the correct approach in using SpineCor show results that are comparable to the Montréal results.

- Research from centre's that have no formal training or a lack of training and inappropriate fitting are poor.

- To be successful with SpineCor a formal training program must be undertaken and the brace must be fitted in the correct manner.
CASE STUDIES
Idiopathic Scoliosis:
Effectiveness of the corrective movement

Th36
Th30 L56

1814104
21-01-98
Risser-0
Idiopathic Scoliosis:
Brace fitting – First x-ray in brace
Idiopathic Scoliosis:
2 months after brace fitting
Idiopathic Scoliosis:
6 months after brace fitting
Idiopathic Scoliosis:

1 year after brace fitting

Th 0

1814104
27-01-99
RISSER 0

Th 27 L40

1 ½ year after brace fitting

Th 2

1814104
03-06-99
RISSER 0
Idiopathic Scoliosis:
Reduction of the vertebral wedge

Before brace fitting

After 18 months in brace
Idiopathic Scoliosis:
Normalization of postural disorganization

Before treatment

After treatment
Idiopathic Scoliosis:
SpineCor treatment concept

- **CLINICAL EVALUATION**
- **RADIOLOGICAL EVALUATION**
- **CLASSIFICATION PARAMETERS**

- **PATIENT CLASSIFICATION**
  - **SPINECOR COMPONENTS**
  - **CORRECTIVE MOVEMENT**
  - **SPINECOR FITTING**

- **SPINECOR SYSTEM TREATMENT protocol**
**CLINICAL EXAMINATION - Without Brace - Without Shoe Lift**

**ROTATION**

- **Type**: Chronic mechanical
- **Freq.**: 1 x Day

**TILT**

**RIB PROMINENCE**

- T9: 8° Right
- L2: 5° Left

**PAIN**

**LATERAL SHIFT**

- L: 10 mm

**HEIGHT/WEIGHT**

- Standing: 154.0 cm
- Sitting: 75.0 cm
- Weight: 45.0 kg

**POSTURE**

- Normal
- Minor perturbation
- Major perturbation
ORIGINAL QUESTION

* 3-Dimensional asymmetry of scapulae?  
  ☐ yes  ☐ no

SUPPLEMENTAL INFORMATION

Left Image: shows an example of 3-dimensional asymmetry of the Scapula for left thoracic curve. The inferior angle of the scapula on the patient's left is elevated, prominent and displaced to the left. Whilst on the patient's right the inferior angle of the Scapula is more inferior, depressed and further towards the mid line. Right Image: shows the Scapulae of a normal patient.

CHOOSE THE ANSWER BY CLICKING THE CORRECT IMAGE

☐ yes  ☐ no
**Classification and Choice of Scoliosis Type**

### Classification Results:
(Technique Used: Clinical Parameters)

- **100% - Right Thoracic Type III**
- **80% - Right Thoracic Left Lumbar Type III**
- **67% - Right Thoracic Left Lumbar Type I**
- **Right Thoracic Type I**
- **Right Thoracic Type II**
- **Left Thoracic European**
- **Left Thoracic Lumbar Type I**
- **Left Thoracic Lumbar Type II**
- **Left Thoracic T11**
- **Left Thoracic Right Lumbar Type I**
- **Left Thoracic Right Lumbar Type III**

### Right Thoracic Type III (RT3)

#### Classification - Types of Scoliosis - Right Thoracic Type III (RT3)

#### Photos

*Back View (1)*

Postural disturbances are predominant at the shoulder girdle level and thorax.

- Clockwise rotation of the thorax in the horizontal plane, which corresponds to a right thoracic prominence.
- Counterclockwise rotation of the shoulders.
- A slight frontal counterclockwise tilt of the shoulder girdle; dropping of the left scapula, which is flattened and a slight elevation of the right scapula, which is prominent.