OMT to Reduce (Idiopathic) Scoliotic Curves

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• Case history

• Scoliosis and the Human Spine available from National Scoliosis Foundation
  www.scoliosis.org

Update from: mhawes@u.arizona.edu

• International Society on Scoliosis Orthopaedic and Rehabilitation Treatment
  www.sosort.org
  • Scoliosis
    www.scoliosisjournal.com
Over an 8-year period, a 6-cm increase in resting chest circumference (in the absence of weight gain) and a 7.5-cm increase in chest expansion were correlated with a substantial reduction of incidence of respiratory infections.
Reversal of childhood idiopathic scoliosis in an adult, without surgery: a case report and literature review
Scoliosis 2009, 4:27 (15 December 2009)

Progressive improvement in chest wall excursion, increased thoracic kyphosis, and resolution of long-standing respiratory symptoms occurred concomitant with a >10 degree decrease in Cobb angle magnitude of the primary thoracic curvature.
Adolescent idiopathic scoliosis: natural history and long term treatment effects
Marc A Asher, Douglas C Burton
Scoliosis 2006, 1:2 (31 March 2006)
Lateral radiographs
Chest wall circumference and excursion
Pulmonary function tests
Echocardiogram
Work of breathing
The transformation of spinal curvature into spinal deformity: pathological processes and implications for treatment

Martha C Hawes, Joseph P O'Brien Scoliosis 2006, 1:3 (31 March 2006)
Biomechanical spinal growth modulation and progressive adolescent scoliosis – a test of the 'vicious cycle' pathogenetic hypothesis: Summary of an electronic focus group debate of the IBSE

Ian AF Stokes, R Geoffrey Burwell, Peter H Dangerfield Scoliosis 2006, 1:16 (18 October 2006)

Vicious Cycle

Wedging of vertebrae

Spinal curvature

Asymmetric growth

Asymmetric loading
Validation of DNA-based prognostic testing to predict spinal curve progression in adolescent idiopathic scoliosis

Conservative treatment of idiopathic scoliosis according to FITS concept: presentation of the method and preliminary, short term radiological and clinical results based on SOSORT and SRS criteria

Marianna Bialek Scoliosis 2011, 6:25 (28 November 2011)
Len Clark, PhD

• “Question your assumptions!”
Type-I somatic dysfunction:
a group curvature that affects lumbar and/or thoracic vertebrae, wherein side-bending and rotation occur in opposite directions (in accordance with the first principle of physiologic motion) as the vertebral segments are in a neutral position
Type-II somatic dysfunction:
dysfunction of a single lumbar or thoracic vertebra, wherein side-bending and rotation occur in the same direction (in accordance with the second principle of physiologic motion) as the vertebra is significantly extended or flexed.
Scoliosis is Type I

**BUT**

*Lordo*-scoliosis

*Kypho*-scoliosis
Robert Fulford, DO

• “Diagnosis is the key.”

• “It took force to put it in there, it takes force to get it out.”

• “It’s balanced, but it doesn’t move.”
Functional Pathology of the Musculoskeletal System


- Musculoskeletal System as a fully integrated organ system

- Discrimination of structural pathology from functional pathology
Musculoskeleton – an Organ System

• Component organs
• Integrating principles
  – Anatomic – tensegrity
  – Physiologic – neural controls
• Emergent properties
  – Human morphology
  – Human posture and movement
Nomenclature of posture and movement consistent with MSS as an organ system

- Internal consistency
- Body centric
- Precise (flexion/extension; of and within a region)
- Clinically relevant
- Complete (physiology and pathology - joint versus segment)
• Central organizing question for functional pathology
  – Efficient posture and movement
• Discrimination of examination of control of motion versus available motion

• Specified linkage passive range of motion
  – Specified mechanical context
  – Physiologic motion to the anatomic barrier
Cervical Spine Bending: A Factor Confounding Lumbar and Trunk Forward Bending

William J Brooks DO; Michael M Patterson, PhD; Ethan Wagner DO; Patrick Hardigan PhD

Accepted for publication JAOA
Anatomic barrier

Tissue disruption
Passive ligamentous stretch
Physiologic barrier
Normal range of motion
Region of somatic dysfunction
Neutral
Region of somatic dysfunction
Passive ligamentous stretch
Physiologic barrier
Symmetrical restriction

Triplanar and triaxial motion @ a joint

Uniplanar motion @ remote joints

Anatomic categories

Sagittal plane posture and movement
\[(X^o - Y^o) + Y^o = X^o\]
\((X^\circ - Y^\circ) + Z^\circ\)
#1 Grading

#2 Profiling

#3 Prioritizing
<table>
<thead>
<tr>
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<th>Criteria</th>
<th>Physiologic</th>
<th>Pathologic</th>
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<tr>
<td></td>
<td></td>
<td>Left</td>
<td>Right</td>
</tr>
<tr>
<td>Ortho</td>
<td>WNL</td>
<td>ex: $70^\circ - 90^\circ$</td>
<td>$70^\circ - 90^\circ$</td>
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<tr>
<td>Osteo</td>
<td>WNL + Symmetry</td>
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<td>Balance</td>
<td>Reference Range</td>
<td>$90^\circ$</td>
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<td>ex: $75^\circ$</td>
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<td>ex: $130^\circ$</td>
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<td>ex: $110^\circ$</td>
<td>$110^\circ$</td>
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Summary

• MSS – *an organ system*
• Corresponding adjustments of nomenclature
• Discriminating structural vs. functional pathology
• *Efficiency* as the central organizing idea of functional pathology
• Discriminating control of motion vs. available motion
  – Evaluating entire anatomic range of motion
  – Evaluating available motion in each direction along and around all 3 axes
  – Controlling for linkage
• Proportionality as the necessary criterion of interpretation