

# CP Population: Spinal Orthotic Management

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# Consideration

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- Clinical approach (Spinal)
  - Does the existing evidence support/refute clinical approach
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# Clinical Approach to the Neuromuscular (CP) Spine

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- Quality of life
  - Function
  - Delay fusion
  - Balance
  - Cobb
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# Clinical History/Assessment

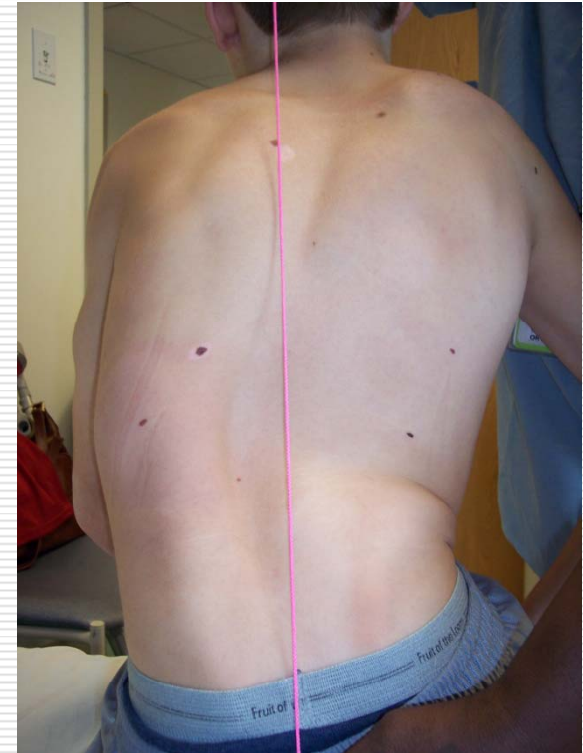
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- Ambulatory status
  - Pulmonary function
  - History of ulcers
  - Upper limb function
  - Current/Previous treatment
    - Surgery
    - Intrathecal baclofen pump
    - Therapy
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# Clinical History/Assessment

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- ❑ Balance
- ❑ Curve stiffness
- ❑ Alignment (standing, seating system, out of seating system)
  - Sagittal (often neglected), coronal, transverse
  - Pelvis
  - Shoulder
  - Head/Neck
  - Lower/Upper limb



# Impression/Measurement Consideration

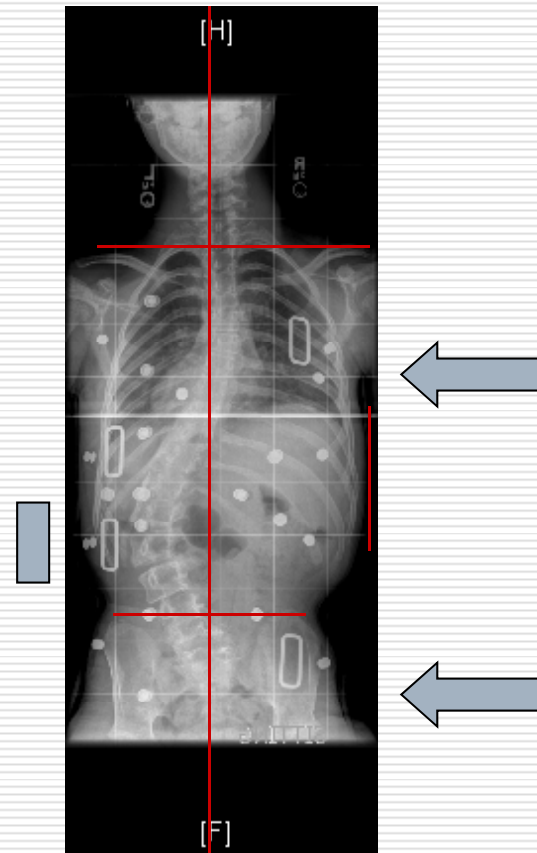
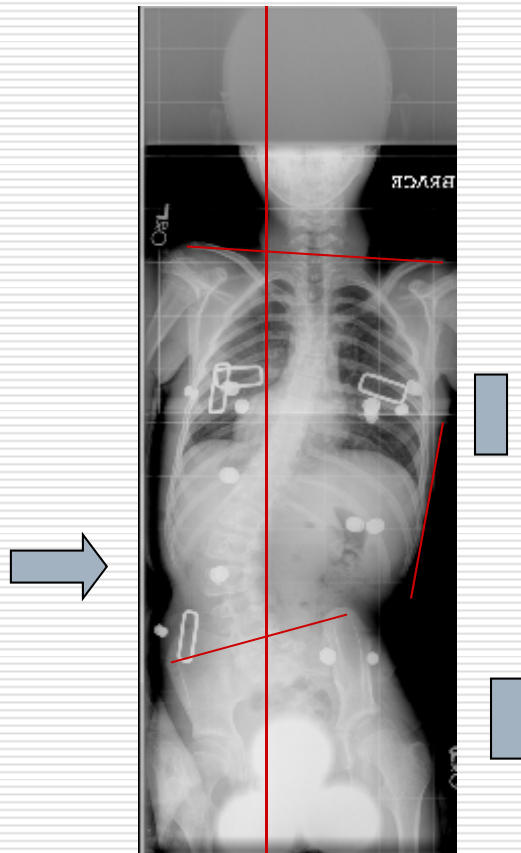
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- Balance
- Curve stiffness
- Visco-elastic response
- Force application
  - Constraining vs. translatory
- Sagittal alignment
- Coronal/Transverse



# Force Application

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# Design Consideration

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- Material selection
- Alignment
- Trimlines
- Closure system



# Fitting/Follow-up

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- Application
  - Visco-elastic consideration
  - Sequence for tightening closure
  - Adjustments
  - Follow-up
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# Evidence: Purpose of Orthotic Management of the Spine

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- A review of papers and orthopedic textbooks
    - Focus is on Natural History
      - Frequent assumption is that orthotic management does not change natural history of neuromuscular curves  
Conclusion: orthotic management doesn't work
    - Delay Surgery (Lonstein, 1994, Skinner, 1995)
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# Evidence: Orthotic Management and Surgical Management

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**Orthotics Management**

**Outcome Measures:**

- Change in Cobb Angle
- Delay surgery
- Improved sitting balance
- Improved head/neck postures
- No negative effect pulmonary function

**Surgery/Surgical Outcome**

**Outcome Measures:**

- Balance
- Change in Cobb Angle
- Pelvic Obliquity
- Decompensation
- QoL questionnaires
- Seated Postural Control Measure
- Paediatric Evaluation of Disability Inventory
- FEV1 sitting ability

# Evidence: Efficacy for Spinal Orthotic Management

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- Population is not homogeneous
  - Research Design (orthotic intervention) lacks detail and makes it difficult to reproduce
    - Impression/measurement
    - Material
    - Force application
    - Adjustments
    - Follow-up
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# What are the Current Strategies for Clinical Care with limited Evidence?

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- Use of existing literature (limited)
  - Literature as proxy for insufficient literature on orthotic efficacy
    - Seating systems
    - Orthopedics
      - Visco-elastic
      - Outcome measurers
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# Consideration for the Future

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- ❑ Database of design considerations (as described in the consensus findings)
  - ❑ Inclusion of orthotist in research design (beyond fabrication)
  - ❑ Need to expand outcome measures beyond cobb angle
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Thank You

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