Slide 4

Functions of the Thorax

- Respiration
- Protection
- Facilitation of Extensive Biomechanical Functions
  - Cervical Spine
  - Lumbar Spine
  - Shoulder Girdle

Slide 5

Context

- All interventions must focus on the patient's overall needs, not just the specific spine problem. (Engle, 2006)
- We protocol lean in the functional position: the patient should be assessed in their normal position, position for therapy, or position to reduce pain. (Crow, 2009)

Slide 6

Basic Truths of Medicine

- Anatomy does not lie (Pettenkofer)
- Tissues heal in a predictable manner (Sahrmann, 2000, Casagrande, 2000)
- The mind can alter perception of pain and function (Butler, 2000, McNeil, 2000)
- Errors in medical reasoning are commonplace (Casagrande, 2000)
Slide 7

Advancing Practice Through Research
- Tend to research the “new ideas”.
- Tend to not refine proven theories.

Slide 8

Judgment Errors
- Error recognition error.
- Availability heuristic.
- Anchoring effect.
- Representativeness, and the empirical fallacy.
- Confirmation bias.
- Overconfidence in the majority view.
- Post-hoc rationalization:
  - If you have already done it, how can it be wrong?
  - Want to regret; can’t bear your reputation.

Slide 9

Core Reasons why Human Beings Fail
- Ignorance
- Inescapable
Slide 10

Perspective

- Biopsychosocial Approach
- Contextualizing rehabilitation
- Collaborative Approach

Slide 11

Questions

- What functional motions are we attempting to regain?
- What is our patient wanting from our sessions?
- Does this fit within the basic laws of...
  - Anatomy?
  - Tissue Healing?
  - Patient's belief system?

Slide 12

Common Diagnosis

- MDI
- Impingement with or without bicipital tendinitis
- Rotator Cuff Tear
Slide 16

**Scapular Influence**
- Coordinated contraction of the anterior deltoid muscles to provided an anchor is necessary for shoulder mobility.
- It is the stable dynamic foundation.
- Scapular dyskinesis

Slide 17

**Impingement Corticospinal Influence**
- The corticospinal activity on the symptomatic R C. side not related to R C. chronicity but with pain intensity.
- Reorganization is present only with pain.
  (Roy, 2014)

Slide 18

**How do we treat??**
- Tear vs. No Tear
- Ending musculoskeletal
Slide 25
Scapulo-Thoracic Mobility

Slide 26
Stretching
• Upper fibers of serratus anterior

Slide 27
Functional Integration
• Retain the range you gain.
Slide 28

Bones of the Shoulder Complex
- 3 Bones (clavicle, humerus, scapula) with associated attachments through muscle to 16 other bones, 16 vertebral segments, 24 ribs, clavicle, sternum, radius and ulna.

Slide 29

Articulations of the Shoulder Complex
- 4 major joints
  - sternoclavicular
  - acromioclavicular
  - glenohumeral
  - scapulothoracic

Slide 30

Sternoclavicular Joint
- Works in concert with the thoracic spine to facilitate shoulder elevation, flexion and abduction
  - (Petimian, 2015)
Slide 31

Manubriosternal joint
- Derived from the thoracic spine

Slide 32

First Rib Facet
- On the proximal end of the clavicle in a facet for attachment of the first rib

Slide 33

Thoracic Component
- The entire thoracic spine

- Theelardin (2002)
- Edmondston et al. (2012)
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Shoulder Stacking
• Arms are 5% of body weight
• Head 1% of total body weight
• Forward head alters thoracic shape and respiratory function
• ZZZZYVIE (plag)

Slide 38

Taping
• Posture Correction

Slide 39

Stacking with Tape for Cuing
Slide 43

**Example of Manubrial Test**

- Cervical Extension and flexion while palpating the xiphoid process and the manubrium.
- Due to the ribs and strong fascial attachments, this is reflecting the movement of the anterior body of the T1 vertebral.
- Normal is no motion relative to the starting position.

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**Biomechanical Assessment**

- This includes:
  - Active Motion Testing
  - Passive Motion Testing
  - Palpation for hypotonia
  - Stress tests

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Slide 45

**Important Criteria Prior to Manipulation**

- Negative Stress Tests
- Negative Slump Test
- Absence of upper motor neuron signs/symptoms
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Traction Seated Bilateral, Unilateral

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Slide 47

Thoracic Spine: thrust manipulation - indications
- Clinical evidence
- Clinical expertise
- Patient preferences
- Research evidence • Indicators
  - Clinkard, Chilsen et al. (2007) CPR
  - Fina, B. & Wolf et al. (2007)
  - Spafford (2006)

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Thoracic Spine Manipulation for Shoulder
- Winters et al. (1998)
- Bayles, R., Rilland, M., et al. (2009)
- Strange et al. (2005)
- Riley et al. (2013) with education
- Mchener et al. (2013) with sham manipulation
- Chiroli et al. and Heggiman (2014)
Slide 55

Retraining Thoracic Positioning

Slide 56

Neuro Control
- Regaining ipsilateral sidebending and extension

Slide 57

Functional Integration
Nerves of the Shoulder Complex

- 12 separate nerves innervating these muscles including a cranial nerve
- 5 cervical spinal chord levels of innervation

Slide 59

Neural Mobility

- Impacts limb mobility

Slide 60

Regain Neuromuscular Control of Elevation through Flexion and Abd/ER

- Shoulder Stacking
- Sternal Lift with Breathing and Lateral Costal Expansion
- Manual Cuff with shoulder Push for SA and Lower Trap
- Swim: Nose-Kiss served for shoulder motion and engagement
- Wall Exercise
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Butler and Mosely, Explain Pain


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