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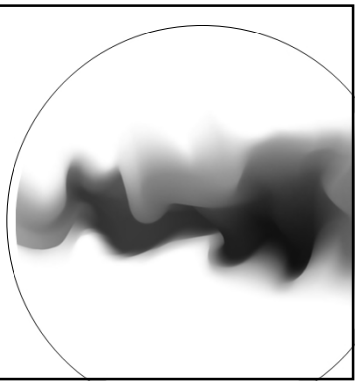
Lumbar-Sacrum-Pelvis OMT Review



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Objectives

- Identify the indications and contraindications, and precautions for performing an exam for lumbar, pelvis, and sacrum dysfunction.
- Identify components of an osteopathic structural exam for lumbar, pelvis and sacral somatic dysfunction
- Compare osteopathic methods: ART, CS, FPR, HVLA, IND, ME, MFR, ST
- Identify the indications, contraindications, and precautions for performing osteopathic techniques.
- Relate somatic dysfunction findings with possible underlying physiological processes.
- Recall the documentation required in a SOAP note and OMT procedure note.
- Recall use of consent, verbal, and non-verbal communication necessary for patient communication.

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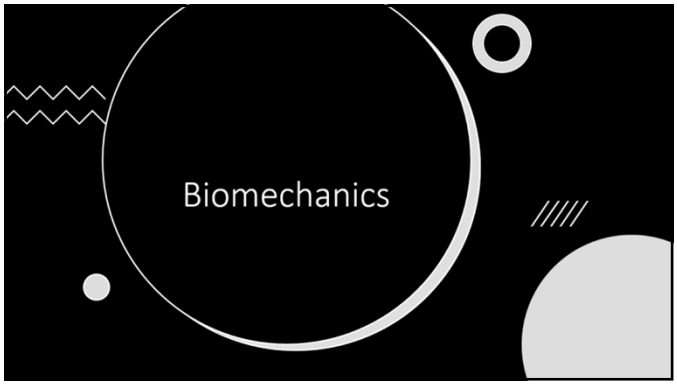

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Question

What is the definition of a Type I dysfunction

A. A neutral dysfunction
B. Sidebending and rotation are in the same direction
C. Sidebending and rotation are in opposite directions
D. Flexion is not possible in the diagnosis
E. Extension is not possible in the diagnosis
F. Involves 3 or more segments

4

Question

What is the definition of a Type II dysfunction

A. A neutral dysfunction
B. Sidebending and rotation are in the same direction
C. Sidebending and rotation are in opposite directions
D. Flexion is not possible in the diagnosis
E. Extension is not possible in the diagnosis
F. Involves 3 or more segments

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Question

What is the third principle of vertebral motion?

A. A neutral dysfunction
B. Sidebending and rotation are in the same direction
C. Sidebending and rotation are in opposite directions
D. Flexion is not a possibility in the diagnosis
E. Extension is not a possibility in the diagnosis
F. Involves 3 or more segments
G. None of the above

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1st Principle

- When side-bending is introduced into a neutral spine, the bodies of the vertebra will rotate towards the side of convexity
- Type I or neutral mechanics
- Side bending precedes rotation
- N SxRy
- Generally, 3 or more vertebrae (though may be one vertebra)
- May become Type I/Neutral somatic dysfunction

Figure 35-4 Fryette Type I mechanics. (Courtesy of Adam Ehrenfeuchter, San Francisco, CA.)

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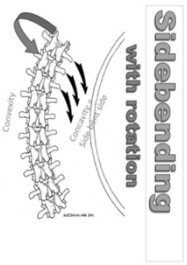
SIDEBENDING

- SPINAL SIDEBENDING IS A COMPLEX MOTION PATTERN
- INITIAL SIDEBENDING IS ACCOMPANIED BY SECONDARY ROTATION
- SIDEBENDING ALSO MAY BE REFERRED TO AS LATERAL BENDING
- WHEN SIDEBENDING STARTS FIRST AND ROTATION FOLLOWS- The *VERTEBRA SIDETILTS THEN ROTATES TO THE OPPOSITE SIDE*



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Characteristics of Type I Dysfunctions

- Tend to occur in groups but may be single
- Associated (present) with scoliosis
- **Compensatory for a type II** at the apex of the curve, or at either or both ends
- The spinal vertebral segment moved in a normal pattern but got hung up in one direction such that one side moves more freely in sidebending/rotation than the other. Named for the free moving side.
- E.g. If free motion is toward right sidebending/rotation and it neither improves or gets more evident in flexion or extension, at that segment, the segment is named "neutral, side bent and rotated right" (NSR right)- its position of ease.
- This pattern **frequently occurs in groups** of 3 segments or more and is maintained by muscular tension in the intermediate, long back muscles

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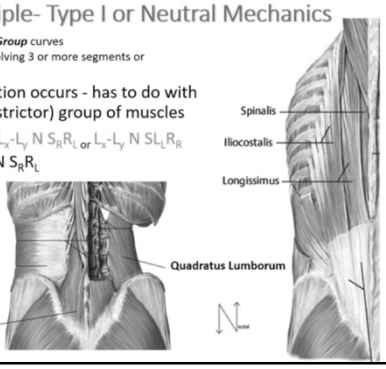
First Principle- Type I or Neutral Mechanics

Applies to Thoracic & Lumbar ***Group*** curves
Group curves, usually involving 3 or more segments or vertebrae.

- When dysfunction occurs - has to do with large (Long Restrictor) group of muscles
- Document as L_x-L_y N $S_R R_L$ or L_x-L_y N $SL_L R_R$
  Ex: L_2-L_5 N $S_R R_L$

Abbreviations
N= Neutral
F= Flexed
E= Extended
L= Left
R= Right
R= Rotated
S= Sidebent



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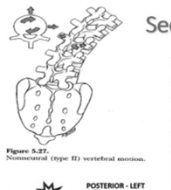
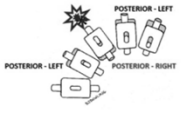


Figure 5.27. Nonsacral (type II) vertebral motion.



Second Principle

When the thoracic and lumbar spine are sufficiently flexed/forward or extended/ backward-bent (**non-neutral**), the coupled motions cause one vertebral segment to rotate and side bend in the **same** direction in relation to the vertebra directly below it. Maintained by the short rotators.

How might you document this event?

FOM4th Ed, p. 1579, GoT

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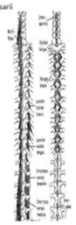
Rotatores
Interspinalis
Intertransversarii



Characteristics of Type II Dysfunction

- Tend to occur singularly but may be adjacent
- **ERS dysfunctions may reflect viscerosomatic reflex secondary to muscle contraction**
- If persistent consider further work-up
- Non-physiologic, frequently secondary to trauma
- Physiologic motion occurred during flexion or extension but during the return to neutral, one or more of the elements could not complete the task properly
- When the spine flexes or extends rotation occurs before side bending
- These motions can become restricted due to ligament creep, muscular imbalance, bony asymmetry and trauma
- Motion occurs about more than one axis allowing the articular facets to open or close creating potential fulcrums for motion.
- Naming is still done with focus on freedom of motion rather than restriction e.g. T5 flexed, rotated and side bent right (FRS right)

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Third Principle

- Initiating motion of a vertebral segment in any plane of motion will modify the movement of the segment in the other planes of motion.
- Applies to cervical, thoracic, and lumbar spine
- Not actually postulated by Dr. Fryette but came from his principles.
- Allows for rotoscoliosis testing to be effective.
- Motion of an isolated segment in one plane engages the motion of the segment in the other planes (e.g., engaging flexion also engages the rotational and side bending component of the dysfunction).

- Example: One can rotate further when standing in neutral and can rotate very little to not at all if they side bend first.

Bottom Line: Motion in one plane restricts motion in all other planes.

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- Abdominal diaphragm crura anchors to L1-2
- Erector spinae muscles originate in lumbar spine and traverse to the head and neck
- Latissimus dorsi connects the lumbars to the upper extremity.

Lumbar Connections

- Through oblique abdominal muscles the lumbars are connected to the anterior abdominal wall
- Lumbosacral aponeurosis and fascia connects the lumbars to the lower extremity through the:
  - gluteals, hamstrings, and iliotibial band

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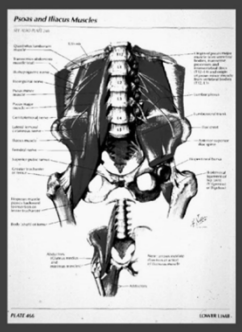
Psoas and Iliacus Muscles



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Iliolumbar Ligament

- Connects the transverse process of L4 and 5 to the iliac crest and the SI joint
- First ligament in low back to become tender in lumbosacral postural decompensation
- Tender point located 1 in. lateral and 1 in. superior to PSIS

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Innervation: Autonomic

- Sympathetic innervation
  - Post ganglionic fibers from 3 ganglia: celiac, superior mesenteric, inferior mesenteric
  - All abdominal organs
  - Distal colon: Sympathetic chain entrance to CNS at L1 or L2 via inferior mesenteric ganglion
- Parasympathetics
  - Cranial nerve X (Vagus nerve)
  - Pelvic splanchnic nerves (S 2,3,4)

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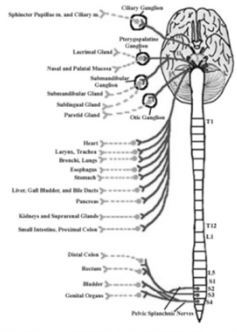

Parasympathetic Innervation

- Pelvic Splanchnis nerves
  - Arise from S2-S4
  - Innervate pelvic and genital organs
    - **Urinary Bladder**: Regulate emptying of urinary bladder
    - **Distal GIT (Distal 1/3 of transverse colon, sigmoid colon, rectum)**: increase motility and controls opening and closing of internal urethral sphincter
    - **Penis or Clitoris**: Erection
- Clinical Significance:
  - Damage can cause:
    - **Neurogenic bladder dysfunction**
    - **Fecal incontinence**

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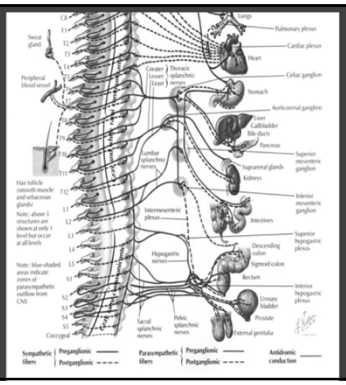
AUTONOMICS



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Chapman's Reflexes

- Frank Chapman, D.O.
- Tender points clues to be used for diagnosis of visceral dysfunction
- Anterior and posterior points
- Tender point is palpable as a small smooth firm nodule (2-3 mm)
- Good interexaminer reliability and correlates with discharge diagnoses

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Question

A 56-year-old female presents to the family medicine clinic with fever, dysuria and right flank pain for the past week. Where is the location of the Chapman's reflex that corresponds to the most likely diagnosis?

A. The tip of the 12th rib
B. 2-inches above the umbilicus
C. Adjacent to the spinous process of L1
D. The 5th intercostal space
E. The 6th intercostal space

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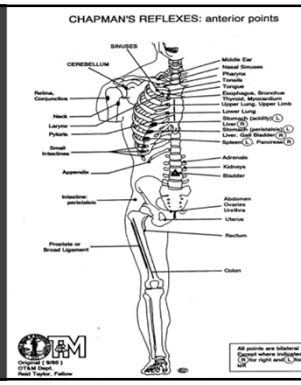
Chapman's Reflexes

- Anterior points
  - Periumbilical: adrenal, kidney, bladder



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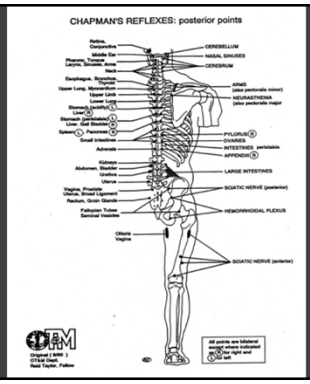
Chapman's Reflexes

- Posterior points
  - Kidney
  - Bladder
  - Urethra
  - Uterus
  - Colon
  - Pelvic organs



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Question

Which of the following is true regarding Soft Tissue technique?

A. It is gentle
B. It is direct
C. It is indirect
D. It is active
E. It is passive

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Defining Soft Tissue Technique

Direct, Indirect, or Combo Technique? How is the restrictive barrier approached?

Methods

1. Traction/ Longitudinal stretching (parallel to the muscle fibers)
2. Kneading/ Lateral stretching (perpendicular to muscle fibers)
3. Deep pressure/ inhibitory pressure / Inhibition (perpendicular)

Soft Tissue Technique FOM glossary definition :

A group of direct techniques that usually involve lateral stretching, linear (longitudinal) stretching, deep pressure, traction and/or separation of muscle origin and insertion while monitoring tissue response and motion changes by palpation.

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Technique Goal

End Goal: relaxation and restoration of tissues. Normal resting tone.

What are the end effects on TART?

T **Tissue texture/ Tone**: Normal tissue tone improves local arterial, venous, lymph circulation

A **Asymmetry/ ROM**: Increase regional ROM

R

T **Tenderness:** Decrease muscular tenderness

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Question

Which of the following are contraindications for Soft Tissue technique?

A. Hypertonic muscles
B. Tender muscles
C. Muscle Strain
D. Open wound
E. Fracture

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Indications & Considerations

- Indications
- Treat visceral or somatic components of somatic dysfunction in the CT, focusing on the fascia and muscles

Considerations

- Acute painful strains, trauma
- Hospitalized patients
- Chronic disease states
- Pediatric & Geriatric patients
- When other OMM techniques are contraindicated
- Anytime you want to use it and not contraindicated!

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Indications

- **Hypertonic or tender muscles**
- **Minor muscle strains/injury**
- Viscerosomatic, somatovisceral, and somatosomatic reflexes

ST techniques can be used as

- Primary treatment for SD
- Relaxation of musculature to make a more specific bony SD diagnosis
- Preparatory treatment for other techniques, HVLA.

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Clinical Contraindications (Do not perform):

- over an open wound, infection, rash, deep vein thrombosis, or skin cancers
- Fracture or suspected fracture

Precautions (be mindful and cautious):

- Modify or discontinue the technique if it causes pain
- Acute muscle/ligament injury
- Joint instability, collagen disorders.
- Coagulation/ bleeding disorders

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Retest and Document findings!

Recap

Method	Movements, barriers, and forces	Force duration
Inhibitory pressure	Apply pressure that is perpendicular, or into, the short axis of the muscle fibers	Sustained
Longitudinal stretching	Create a stretch that is parallel, or along, the long axis of the muscle fibers	Sustained or intermittent/repetitive
Lateral stretching	Create a stretch that is perpendicular, or 90 degrees away from, the long axis of the muscle fibers	Sustained or repetitive

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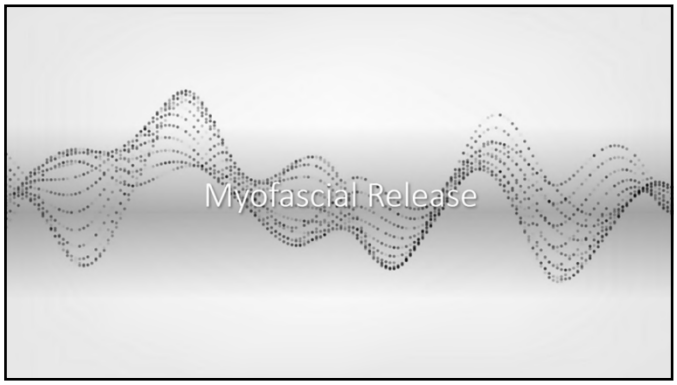

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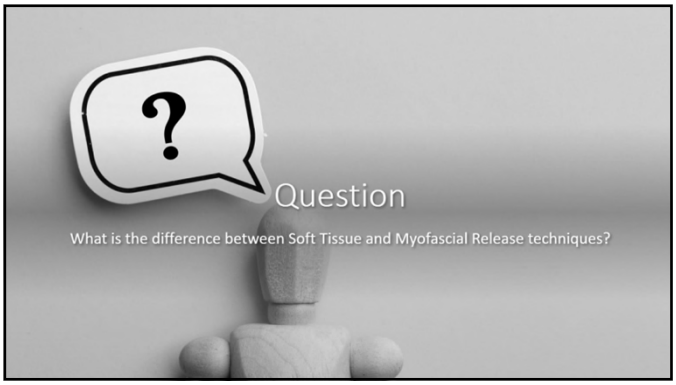

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Defining Myofascial Release (MFR)

- First described by Andrew Taylor Still
- A system of diagnosis and treatment using continual palpatory feedback to achieve myofascial release
- Principles of Diagnosis
  - Passive Range of Motion testing a region, local tissues, or a joint to identify a restrictive barrier and a position of ease.
  - Test motions in as many directions allowed, usually 2-3
    - Superior/Inferior, Medial/Lateral, Anterior/Posterior, Clockwise/Counterclockwise
  - Somatic Dysfunction is named for ease of motion of tissues in all 3 planes.

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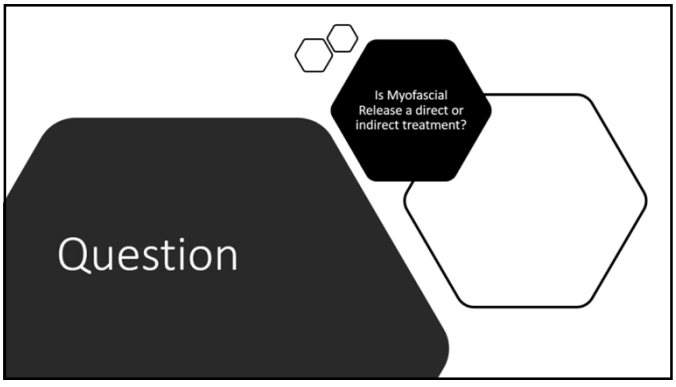

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Question

Which of the following are contraindications for Myofascial Release technique?

A. Hypertonic muscles
B. Tender muscles
C. Aortic aneurysm
D. Open wound
E. Fracture

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Contraindications & Complications

- **Side effects**
- May experience temporary worsening of discomfort, often described as a post workout muscle soreness.
  - Older age and general deconditioned patients
  - OMT Aftercare; OT, Chp1, p.5
- Can have flare-ups of autoimmune, inflammatory, rheumatologic disorders
  - Lupus erythematous
  - Fibromyalgia
- There are no known reports of complications due to MFR.

- **Absolute Contraindications**
  - Absence of somatic dysfunction
  - Physician inability to perform technique
- **Relative Contraindications**
  - Fractures
  - Open wounds
  - Soft tissue / bony infections
  - Abscesses
  - Deep venous thrombosis (threat of embolism)
  - Disseminated or focal neoplasm
  - Recent postoperative site
  - Aortic Aneurysm

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End Goals

- MFR techniques address somatic dysfunction by:
  - Normalizing motion
  - Reestablishing symmetry

  Biomechanical Model

  - Aiding circulatory and lymphatic function
  - Relieving edema

  R-C Model

  - Normalizing neuro-reflexive activity
  - Supporting visceral function
  - Relieving pain

  Neurological Model

  - Restoring bioenergetic balance
  - Supporting homeostatic function

  Metabolic/Energy Model

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Rx

Method
Activating forces
Dosage
Frequency
Length of treatment

- **Direct MFR**: engaged tissues with a loaded, constant, directional force toward the restrictive barrier until the tissue releases and motion is restored.
- **Indirect MFR**: position of ease is identified, then engaged with directed pressure until free movement of all tissues is achieved.
- **Combined MFR**: tissues are engaged in both a barrier and point of ease simultaneously, allowing fascia release through both direct and indirect methods.

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Rx

Method
Activating forces
Dosage
Frequency
Length of treatment

- **Single Direction MFR**
  One plane of motion engaged
- **Multi Direction MFR**
  >1 plane of motion engaged

- **Example of modalities**
  - **Direct single direction MFR**
  - **Direct multiple direction MFR**
  - **Indirect single direction MFR**
  - **Indirect multiple direction MFR**

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Rx

Method
Activating forces
Dosage
Frequency
Length of treatment

- ***Inherent/intrinsic force*** uses the body's natural tendency to seek homeostasis. Inherent force is the rhythmic activity in all tissues, which works to improve the hydrodynamic and bioenergetic factors around restricted tissues and articulations.
- ***Respiratory force (cooperation/assist)***
  1. *Full cycle respiratory effort*
  2. *Particular phase of respiration*
  3. *Breath holding*
  4. *Voluntary coughing or sniffing*
- ***Patient cooperation*:** Restricted tissue is mobilized by instructing the patient to move in specific directions in various planes
- ***Physician-guided force*:** After engaging a barrier or point of ease, the physician sequentially guides the tissue or joint through various positions, following a shifting pattern of easy motion, until the path of dysfunction is retraced and released.
- ***Springing/vibration*:** Applying variable degrees of pressure and/or frequency of force via they physician's hands or a percussion hammer causing a springing or vibration in the structure and activating tissue release.

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MFR Technique-Generalizations

- Identify a body region with somatic dysfunction
- Place hands in such a way as to allow for maximal yet discrete myofascial contact
- Palpate layers and determine which one to treat (superficial or deep fascia)
- Motion test the tissues in all planes, looking for ease and/or restriction of motion
  - There are generally 2-3, and includes compression and distraction
- Hold the tissues in all planes in the direction of the ease (indirect), or tightness (direct)
- Use appropriate respiratory cooperation when applicable
- Appreciate release, or change in the tissues (texture, temperature, circulation, tenderness, etc.)
- Reassess tissues for improved motion

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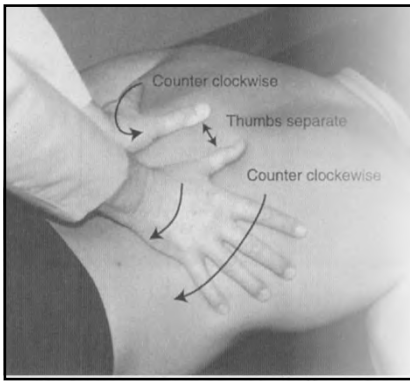

Multiple Direction Indirect MFR of Thoracolumbar Fascia, prone

- Place your hands at the thoracolumbar junction, covering the inferior rib and diaphragm sites as shown
- Hands should be widely open and thumbs pointed cephalad along either side of the spinous processes while the rest of each hand spreads over the upper lumbar areas
  - Palpate layers
    - Skin
    - Superficial fascia
    - Muscles
    - Deep fascia
    - Bone

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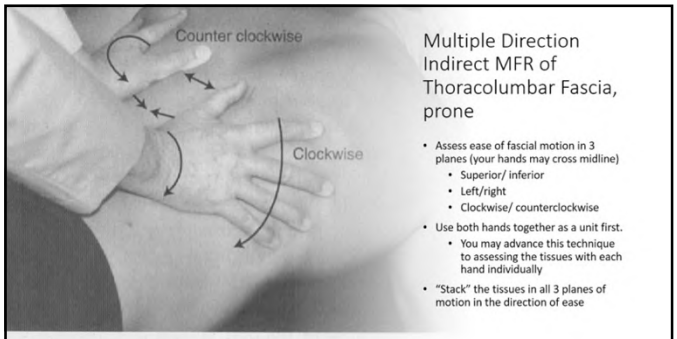

FIGURE 60.10. Head right.

Multiple Direction Indirect MFR of Thoracolumbar Fascia, prone

- Assess ease of fascial motion in 3 planes (your hands may cross midline)
  - Superior/ inferior
  - Left/right
  - Clockwise/ counterclockwise
- Use both hands together as a unit first.
  - You may advance this technique to assessing the tissues with each hand individually
- "Stack" the tissues in all 3 planes of motion in the direction of ease

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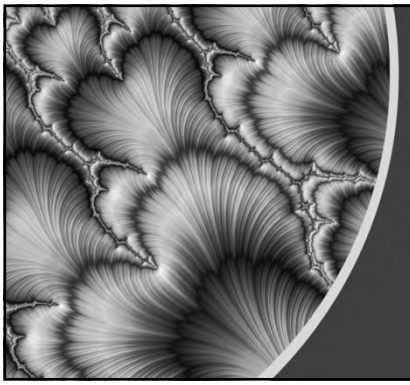

ARTICULATORY TECHNIQUE

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Question

Which of the following is true regarding Articulatory technique?

A. It is a direct technique
B. It is an indirect technique
C. It can be used to diagnose
D. It can prepare the tissues for further treatment
E. It can improve ROM
F. It can improve circulation

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Principles

- Combination (Direct & Indirect) technique.
  - tissue taken to and from the restrictive barrier.
- Also called springing technique or low-velocity/moderate to high amplitude (LVHA) or long lever technique
- Uses long and short levers depending on joint treated.
- Uses slow, smooth, passive, rhythmic, springing or gapping motions repetitively to slowly stretch ligaments, muscles, and joint capsule, in order to increase range of motion of either a specific joint or a region
- This will change the restrictive barrier slightly, over time and progressively with repetition

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Use articulatory technique to:

- Increase joint range of motion (treat somatic dysfunction)
  - This results in:
    - Improved circulation
    - Improved muscle function
    - Improved posture
    - Decreased pain
- Gain diagnostic information
- Prepare for other direct techniques

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Assessing for Restriction of Motion

- Unilateral or bilateral
- Ease of effort:
  - difficult /easy
- Quality:
  - smooth
  - interrupted
  - crepitus
- Quantity:
  - Increased range of motion (laxity)
  - Decreased range of motion
- End feel of joint during active motion testing

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ART Technique Summary Steps

1. Identify active or passive range of motion somatic dysfunction in a joint.
2. Stabilize and monitor the dysfunctional joint.
3. Apply an initial disengagement force (force vector) directed at the articular surfaces and hold this force throughout the rest of the technique.
   - The disengagement force can be compression or distraction.
4. Move the joint through its full range of motion in one direction. Keep the force vector directed at the articular surfaces.
5. Repeat this movement 2-3 times.
6. Reverse directions and move the joint through its full range of motion, keeping the force vector directed at the joint.
7. Repeat this movement (steps 4-6) 2-3 times.
   - Continue alternating directions of movements as necessary 2-3 times until range of motion increases.
8. Release the disengagement force.
9. Retest the joint for improvements in position, active, and/or passive ROM.

Note: The steps for the following techniques vary slightly from these steps:
- Costal, Ribs 2–10; Sacrum; and Upper Extremity, Glenohumeral Joint

Source: Osteopathic Techniques

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Some Clinical Indications

- Mechanical neck and back pain
- Sacroiliac joint pain/sacroiliitis
- Postural imbalance
- Osteoarthritis
- Chronic pain conditions
- Adhesive capsulitis
- Somatovisceral and viscerosomatic reflexes
- Carpal tunnel syndrome

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Question

Which of the following are contraindications for Articulatory technique?

A. Hypertonic muscles
B. Tender muscles
C. Joint effusion
D. Spinal nerve compression
E. Fracture

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CONTRAINDICATIONS	PRECAUTIONS
• Fracture or suspected fracture • Joint dislocation • Joint infection • Moderate–severe or full-thickness tendon, ligament, or meniscal tear • Vertebral disk or spinal nerve compression	• Use when performing on joints with mild effusion. • Discontinue or modify technique if it causes pain.

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Reassess Restriction of Motion after performing technique

- Ease of effort:
  - difficult /easy
- Quality:
  - smooth
  - interrupted
  - crepitus
- Quantity:
  - Increased range of motion (laxity)
  - Decreased range of motion
- End feel of joint during active motion testing

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Lumbar/Pelvis/Sacrum Area of Greatest Restriction

1. Bilateral horizontal band of tension
2. Vertical bands of tension in the lower half of the body along the lumbar spine bilaterally
3. Restriction along the sacral base

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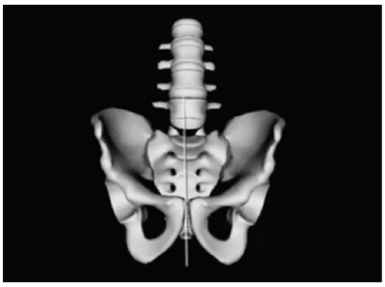
Pelvis/Sacrum Order of Operations(U.P.S.I.)

1) **Up shear/downshear (U)** → (+) standing flexion test
2) Pubic shears (P)
3) Sacrum (S) →(+) seated flexion test
4) Innominate rotations/inflare outflare (I)



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Pelvic Muscle Energy

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Question

- What is the pelvic diagnosis if you find:
  - (+) standing flexion test on the left
  - Inferior ASIS, PSIS, Pubis, and Ischial tuberosity on the right

59

Question

- What is the pelvic diagnosis if you find:
  - (+) standing flexion test on the right
  - Level ASIS, Ischial tuberosity, on the right

60

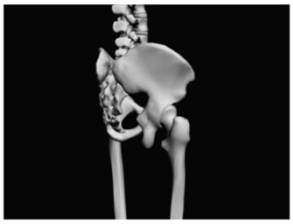
Question

- What is the pelvic diagnosis if you find:
  - (+) seated flexion test on the right
  - Level ASIS, Ischial tuberosity, on the right

61

Innominate Up-Slip (Superior shear)

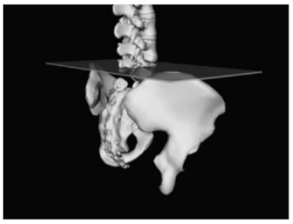
- + standing flexion (on side of the dysfunction)
- Superior ASIS (on side of the dysfunction)
- Superior PSIS (on side of the dysfunction)
- Superior iliac crest height (on side of the dysfunction)
- Superior pubis (on side of the dysfunction)



62

Innominate Down-Slip (Inferior Shear)

- + standing flexion (on side of the dysfunction)
- Inferior ASIS (on side of the dysfunction)
- Inferior PSIS (on side of the dysfunction)
- Inferior iliac crest height (on side of the dysfunction)
- Inferior pubis (on side of the dysfunction)

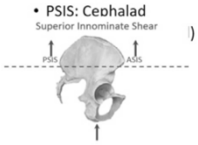


63

Diagnosis: Innominate Shear

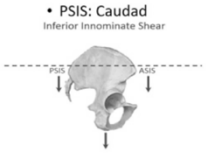
Innominate Upshear

- Osteopathic Findings
  - (+) Standing Flexion test (ipsilateral)
  - ASIS: Cephalad
  - PSIS: Cephalad



Innominate Downshear

- Osteopathic Findings
  - (+) Standing Flexion test (ipsilateral)
  - ASIS: Caudad
  - PSIS: Caudad



64

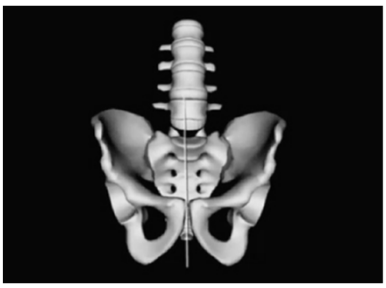
MET for Pubic Superior Shear Traction Tug for Innominate Superior Shear

- **Innominate - Right:**
  - Patient in Supine, abduct the leg 20 degrees to "gap the SI joint"
  - Have the patient hold the table or a second person hold patient under the axillae
  - Meet the inferior barrier and slightly internally rotate the hip
  - Deliver a short caudal thrust
  - Reasses and Repeat if necessary
  - Caution in patient's with knee or ankle instability

65

Pelvis/Sacrum Order of Operations(U.P.S.I.)

1) Up shear/downshear (U) → (+) standing flexion test
2) **Pubic shears (P)**
3) Sacrum (S) →(+) seated flexion test
4) Innominate rotations/inflare outflare (I)



66

Superior Pubic Shear

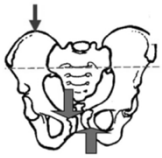
- Tenderness on tubercle
- Step-off sign
- Elevated pubic ramus on affected side

- + standing flexion (on side of the dysfunction)
- Superior pubic tubercle/ramus (on side of the dysfunction)
- Ipsilateral inguinal ligament tense and tender
- ASIS may be superior (on side of the dysfunction)
- PSIS may be inferior (on side of the dysfunction)
- *Findings may look like a posteriorly rotated innominate*

67

Inferior Pubic Shear

- Tenderness on tubercle
- Step-off sign
- Inferior pubic ramus on affected side



- + standing flexion (on side of the dysfunction)
- Inferior pubic tubercle/ramus (on side of the dysfunction)
- Ipsilateral inguinal ligament tense and tender
- ASIS may be inferior (on side of the dysfunction)
- PSIS may be superior (on side of the dysfunction)
- *Findings may look like an anteriorly rotated innominate*

68

Diagnosis: Pubic Shears

Superior Pubic Shear
- Superior pubic tubercle
- (+) Standing flexion test (ipsilateral)
- Tense & tender inguinal

Inferior Pubic Shear
- Inferior pubic tubercle
- (+) Standing flexion test (ipsilateral)
- Tense & tender inguinal ligament

Superior Pubic Shear

Inferior Pubic Shear

69

Pubic Symphysis

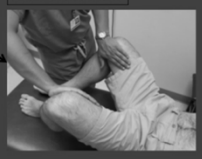
- Findings with ***anterior shears***:
  - Tenderness on symphysis
  - Step-off sign
  - Anterior pubic ramus on affected side
- Findings with ***posterior shears***:
  - Tenderness on symphysis
  - Step-off sign
  - Posterior pubic ramus on affected side

70

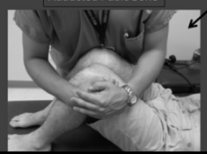
MET Pubic Bone:

- Pubic bone is approximated; feels like a bulging and tenderness
- Resist active ADDuction for a full 5 seconds
- Repeat 3-5 times

Abducted Pubic Bone



Adducted Pubic Bone



Pubic bone is gapped; feels like a deep and tender cartilage
Actually place knees 18 inches apart
Resist active ABDuction for a full 5 seconds
Repeat 3-5 times moving knees closer together

71

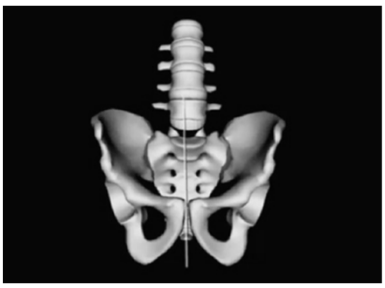
MET for Pubic Superior Shear Traction Tug for Innominate Superior Shear

- **Pubis - Right:**
  - Stand on the right side of the table
  - Extend and Abduct the patient's leg off the table.
  - Stabilize the opposite ASIS and
  - Resist right LE ADDuction and Flexion

72

Pelvis/Sacrum Order of Operations(U.P.S.I.)

1) Up shear/downshear (U) → (+) standing flexion test
2) Pubic shears (P)
3) **Sacrum (S)** →(+) seated flexion test
4) Innominate rotations/inflare outflare (I)



73

Sacral Muscle Energy

74

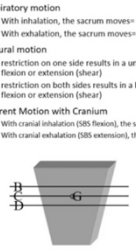
Which of the following is the axis that the sacrum flexes and extends with postural motion?

A. Superior transverse
B. Middle transverse
C. Inferior transverse
D. Right oblique
E. Left oblique

75

Sacral Motion on the Transverse Axes

- Respiratory motion
  - With inhalation, the sacrum moves=
  - With exhalation, the sacrum moves=
- Postural motion
  - restriction on one side results in a unilateral sacral flexion or extension (shear)
  - restriction on both sides results in a bilateral sacral flexion or extension (shear)
- Inherent Motion with Cranium
  - With cranial inhalation (SBS flexion), the sacrum moves=
  - With cranial exhalation (SBS extension), the sacrum moves=



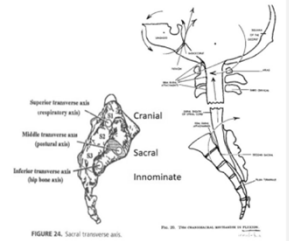


FIGURE 24. Sacral transverse axis.

76

Question

What information do we need to make a sacral muscle energy diagnosis?

77

Sample Question 1

- What is the sacral diagnosis if you find:
  - Poor spring
  - Left deep sacral sulcus
  - Right posterior/inferior ILA

78

Sample Question

What is the diagnosis of L5?

A. L5 FRRSR
B. L5 ERRSR
C. L5 NSLRR
D. L5 FSLRL
E. L5 ESRRR

79

Sample Question 2

- What do you expect the backward bending test to be with the following findings?
  - Right deep sulcus
  - Right posterior/inferior ILA
  - Right positive standing flexion test

80

Quick approach to Diagnosis of the Sacrum

- Perform seated flexion test to determine if there is sacral dysfunction
- Determine which sacral sulcus is deep and which ILA is posterior/inferior.
  - Determine if you have a torsion or shear
  - You can make your diagnosis now and use the following tests to confirm.
- Or you can use the spring and backward bending tests to tell you the axis of the sacral torsion or side of the sacral shear.

81

Seated Flexion Test

- If the problem is a sacral shear
  - the positive side tells you the side of the dysfunction (what side to name)
  - A positive left seated flexion test means that there is either
    - a left unilateral flexion, or
    - a left unilateral extension
- If the problem is a sacral torsion,
  - the positive side is opposite the side of the oblique axis.
  - A positive left seated flexion test means that if there is a sacral torsion, the sacrum has a right oblique axis.

82

Spring Test

- Patient is prone
  - Place your cephalad hand on the lumbar spine with the thenar eminence over L4 and the superior edge of L5
  - Reinforce this with your caudad hand, and induce a forward springing motion to the lumbosacral junction
- Is there good spring, or poor spring?
  - If the sacrum is held anterior one side, or is normal, both sides can spring forward. This will produce good spring (a negative (-) spring test).
  - If the sacrum is held posterior on one or both sides, it cannot spring forward and so will have poor spring (a positive (+) spring test).

83

Backward Bending Test/ Sphinx test

- Done after you have determined your initial findings for the sacral sulcus and ILAs
- Have the prone patient bend backward and lean on the elbows
- Re-examine the sacral sulcus and ILAs
- During backward bending,
  - the sacral base moves anteriorly
  - as the body bends backward around the L5/S1 joint
- Improved (more symmetric) findings on the backward bending test
  - Normally, both sides of the sacral base move forward during backward bending
    - If one side is held forward, it can still move even farther forward; the other side will also move forward during backward bending
    - Findings will therefore improve
  - If the sulcus and ILA findings were asymmetrical, but improve with backward bending, the sacral base is being held forward on one side.
- Worse (more asymmetric) findings on the backward bending test
  - When dysfunction holds one side backward, the non-dysfunctional side will still move forward during backward bending
    - Landmark findings will therefore look more asymmetric (worse!)
    - If findings look worse (more asymmetric), then the sacral base is being held backward on one side.

84

The "Forward" Sacral Dysfunctions

- If the sacral base can move forward (has good spring or findings improve on the sphinx/BBT), then it has a forward or "flexion" or "anterior" types of dysfunction. These include:
  - Unilateral sacral flexions
  - Forward sacral torsions
    - Right on right (R/R)
    - Left on left (L/L)

85

The "Backward" Sacral Dysfunctions

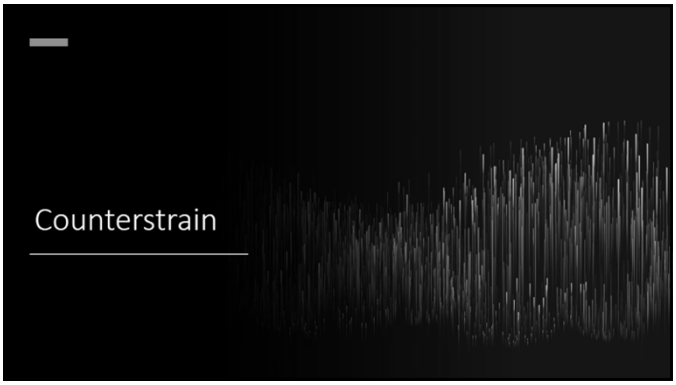
- If the sacral base cannot move forward (has poor spring and/or findings do not improve with the sphinx/BBT), then the sacrum has a backward or "extension" or "posterior" type of dysfunction. These include:
  - Unilateral sacral extensions
  - Backward torsions
    - Left on right (L/R)
    - Right on left (R/L)

86

Backward Sacral Torsion

87

Counterstrain



88

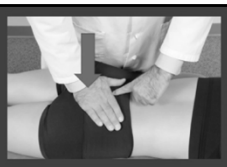
Posterior Sacral 1 – PS1	• The physician applies a posterior to anterior pressure on the inferolateral angle (ILA) of the sacrum diagonally opposite the tender point. This produces rotation of the sacrum around the oblique axis

89

Posterior Sacral 1 – PS1	• The physician applies a posterior to anterior pressure on the inferolateral angle (ILA) of the sacrum diagonally opposite the tender point. This produces rotation of the sacrum around the oblique axis

90

Posterior Sacral 2-4



PS2: Extend the sacrum with ant pressure on apex

PS4: Flex the sacrum w anterior pressure on the base

91

Posterior Sacral 5	• The physician applies a posterior to anterior pressure on the sacral base/sulcus diagonally opposite the tender point. This produces rotation of the sacrum around the oblique axis

92

Table 9.11 Common Sacral Tender Points

Tender Point	Location	Classic Treatment Position
PS1 bilateral	Medial to the PSIS at the level S1 (sacral sulcus/ base)	Apply a posterior-to-anterior pressure on the opposite ILA, which rotates the sacrum around the oblique axis
PS2; PS3; PS4 midline	Midline on the sacrum at the corresponding sacral level	2: Apply a posterior-to-anterior pressure midline to the apex of the sacrum (extend sacrum) 3: May require flexion or extension 4: Apply posterior-to-anterior pressure midline on the base of the sacrum (flex sacrum) Note: This produces rotation of the sacrum around the transverse axis.
PS5 bilateral	Just medial and superior to the ILA of the sacrum	Apply a posterior-to-anterior pressure on the opposite sacral base, which rotates sacrum around the oblique axis

Source: Myers HL. Clinical Application of Counterstrain. Tucson, AZ: Osteopathic Press, A Division of Tucson Osteopathic Medical Foundation, 2006.

93

Question

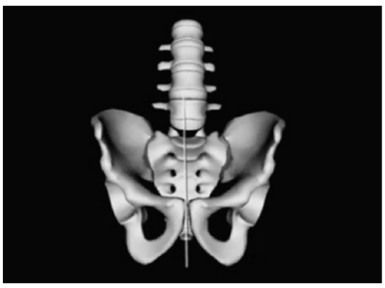
A patient has a left PS1 tenderpoint that does not resolve with Counterstrain. How will you set them up for Muscle Energy treatment?

A. Laying on the right side
B. Laying on the left side
C. Hand on the right sacral base
D. Hand on the left ILA
E. Prone

94

Pelvis/Sacrum Order of Operations(U.P.S.I.)

1) Up shear/downshear (U) → (+) standing flexion test
2) Pubic shears (P)
3) Sacrum (S) →(+) seated flexion test
4) **Innominate rotations/inflare outflare (I)**



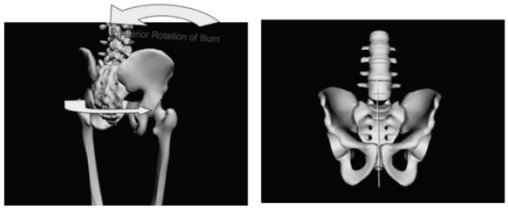
95

Anterior Innominate Rotation

Note the inferior travel of the acetabulum. This gives an apparent INCREASE in leg length

96

Posterior Innominate Rotation



Note the superior travel of the acetabulum. This gives an apparent DECREASE in leg length

97

Diagnosis: Rotated Innominate

Anterior Rotated Innominate

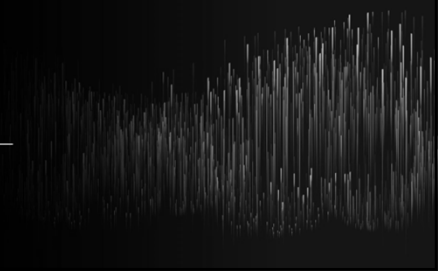
- Osteopathic Findings
  - (+)Standing Flexion Test (ipsilateral)
  - PSIS: Cephalad
  - ASIS: Caudad
  - Ipsilateral long leg*

Posterior Rotated Innominate

- Osteopathic Findings
  - (+) Standing Flexion Test (ipsilateral)
  - PSIS: Caudad
  - ASIS: Cephalad
  - Ipsilateral short leg

98

Counterstrain



99

Proprioceptive Theory

- By shortening the involved muscle, Counterstrain stops inappropriate proprioceptive activity
- The 90 seconds are necessary in order to reset the muscle spindle fibers
- Release is felt as softening of the tissue beneath the monitoring finger.
- May also be felt as a pulse or heat

100

Contraindications for CS

- **Absolute contraindications are rare but include**:
- If positioning negatively affects patient
  - Traumatized tissue, instability of area, or severe illness restricts positioning, potentially producing unwanted neurologic or vascular side effects
- **Relative contraindications**:
- Patients who cannot voluntarily relax
- Stoic patients who cannot verbalize the level of pain or its change secondary to positioning
- Patients who cannot understand the instructions and questions of the physician (e.g., patient 6 months of age)

101

Counterstrain Tender Points

- Classic Positioning Considerations:
  - Anterior points usually require flexion
  - Posterior points usually require extension
  - Midline points are usually primarily flexion or extension
  - Lateral points usually require more side-bending and rotation

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Algorithm (Memorize)

Same algorithm for all CS techniques:

1. Find most significant/relevant tender point
2. Establish a tenderness scale 0-10/10
3. Place patient PASSIVELY in position to shorten tissue around tender point (fold & hold)
4. Evaluate tender point tenderness and tissue texture (fine tune position until 0/10 or at minimum 3/10.
5. While monitoring tender point, maintain position for 90 seconds
6. Instruct patient to remain PASSIVE, as you SLOWLY return patient to neutral while maintaining tender point contact
7. Reevaluate tenderness and tissue texture

103

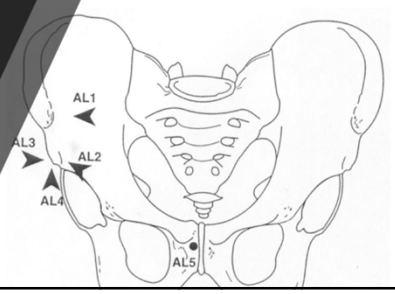
Counterstrain on COMLEX

- Changes and things to consider for COMLEX
  - Strain-counterstrain is now just counterstrain, still means the same thing.
  - Jones' tender points are being changed to counterstrain points, will still see "tender points" used on COMLEX
  - Ribs classically have been held for 120 seconds, but are now being changed to 90 seconds like all the other counterstrain points
    - For COMLEX, ribs may still be 120 seconds but recognize this is changing.
    - In clinical practice the treatment's effectiveness is really all that matters.

104

Lumbar Counterstrain (Anterior)

ior Lumbar TPs



105

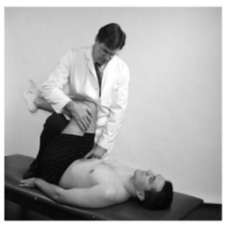
Question

Which tenderpoint is being treated in the picture?

106

Question

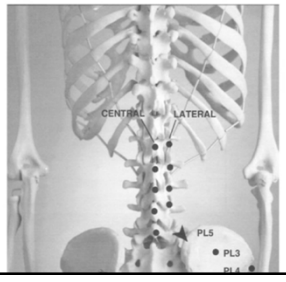
Which tenderpoint is being treated in the picture?



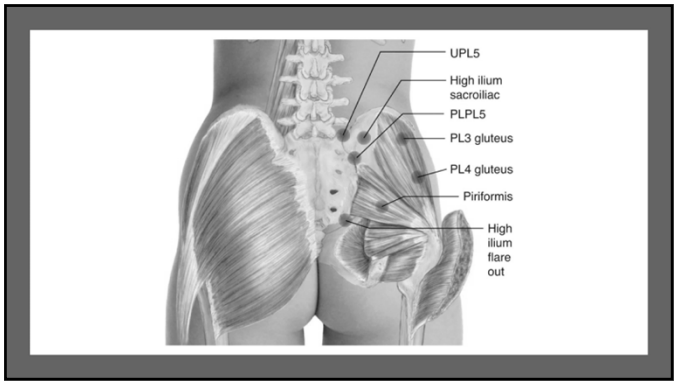
107

Lumbar Counterstrain (Posterior)

Posterior Lumbar Counterstrain Points



108



109

Question

Which motion is the most important to recall for lumbar and pelvic Counterstrain technique?

A. Extension
B. Abduction
C. Internal rotaton
D. External rotation
E. Flexion

110

Lumbar Counterstrain (Posterior)

P1-5L, UP5L

- Base of the spinous process of the respective vertebrae; laterally, posterior surface of the transverse processes of the respective vertebrae
- ESART

111

Table 9.10 Common Posterior Pelvic Tender Points

Tender Point	Location	Classic Treatment Position	Acronym
Upper pole L5 UPL5	Superior medial surface of the posterior superior iliac spine (PSIS)	Hip extension, fine-tune with adduction, internal/external rotation	E Add er/ir
High ilium sacroiliac	2–3 cm lateral to the PSIS pressing medially toward the PSIS	Hip extension, fine-tune with abduction, external rotation	E Abd ER
Lower pole L5 LPL5	On the ilium just inferior to PSIS pressing superiorly	Hip flexed 90, slight internal rotation, and adduction	F IR Add
High ilium flare out	Lateral aspect of the ILA and/or lateral aspect of the coccyx *Note:* Jones 1 describes three separate locations for this point: lateral margin of the coccyx, ILA, and inferior aspect of the buttock. Jones 2 calls the ILA point HIFO, then drops the point at the coccyx, and renames the buttocks point as the gemelli point.	Hip extension, adduction	E Add E ADD
PL3 lateral PL4 lateral (gluteus medius)	Upper outer portion of the gluteus medius at the level of the PSIS PL3— ½ lateral from PSIS to tensor fasciae latae PL4—posterior margin of tensor fasciae latae	Hip extension with fine-tuning in abduction and external rotation	E Abd er
Piriformis	Midpoint between the lower half of the lateral aspect of the sacrum and ILA and the greater trochanter	Marked flexion of the hip and abduction. Fine-tune with external or internal rotation	F ABD er/ir

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Question

- Which Counterstrain tenderpoint is associated with the iliolumbar ligament?
  - A. AL1
  - B. AL5
  - C. HISI
  - D. HIFO
  - E. UP5L

113

Lumbar Muscle Energy

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DX: L5 ERS_R TX: L5 FSR_L

Figure 10

The patient is flexed, rotated to the left and sidebent to the left.

115

DX: L1 FRS_R TX: L1 ERS_L

Figure 11

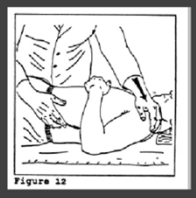


Figure 12

The patient lies on his right side to induce sidebending left.
The hip is flexed to extend the lumbar segment.
The torso is rotated to induce rotation left at the segment.

116

Lumbar HVLA

117

HVLA: Lumbar, Lateral Recumbent

1. **Sagittal Barrier**: Position into the sagittal (N, F, E) restrictive barrier by moving hips anterior/posterior until the dysfunctional segment is engaged
2. Isolate Dysfunctional Segment for rotation and side bending barriers
   - "Up To, Down Through" Rule: used to determine how far to rotate patient depending on which side they are lying on.
3. **Rotation Barrier**: Always rotate the pelvis toward you (anterior direction) and rotate torso away from you (posterior direction)
4. **Side bending Barrier**: Determine directions arms will need to go to create side bending into the RB: arms going away from dysfunctional segment vs arms going toward the segment
5. **Corrective Thrust** by dropping weight and transmitting force through arms.

118

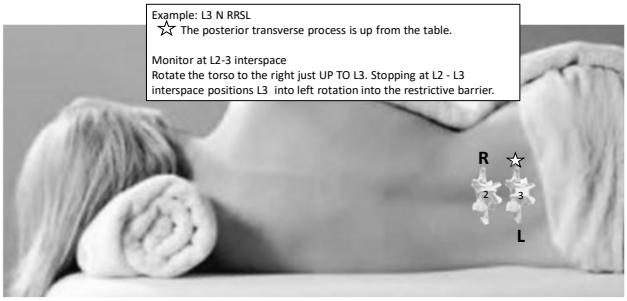
Lumbar: Sagittal plane restrictive barrier

119

"Up to, Down through"

Example: L3 N RRSL
☆ The posterior transverse process is up from the table.

Monitor at L2-3 interspace
Rotate the torso to the right just UP TO L3. Stopping at L2 - L3 interspace positions L3 into left rotation into the restrictive barrier.



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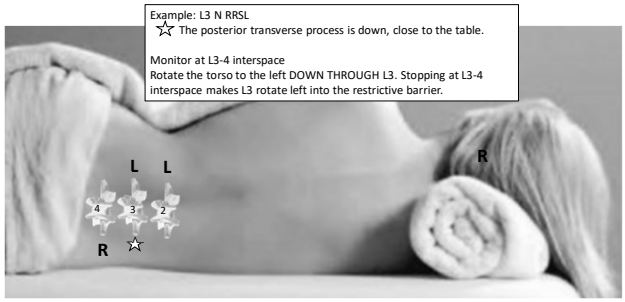
"Up to, Down through"

Example: L3 N RRSL
☆ The posterior transverse process is down, close to the table.

Monitor at L3-4 interspace
Rotate the torso to the left DOWN THROUGH L3. Stopping at L3-4 interspace makes L3 rotate left into the restrictive barrier.



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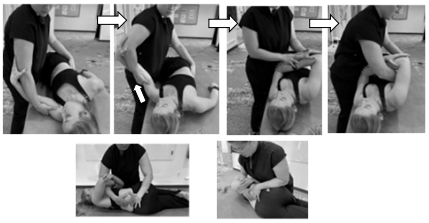
"Turn & Thread"



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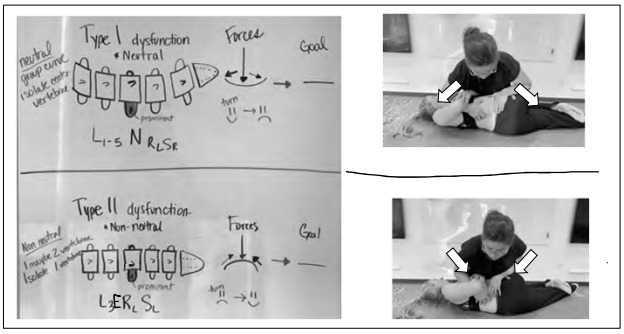

123

Neutral Lumbar SD

Example: L4 N SRRL
D.O. Position: Stand opposite of side of rotation. Table height: low enough to have epigastric area over patient's lumbar spine.
Patient Position: Left Lateral Recumbent (**Posterior Transverse Process Down**)

Monitor L4-5 interspace with cephalad hand

With caudad hand, flex patient's hips and trunk until motion is felt with monitoring hand. Instruct patient to straighten the leg contacting the table. Hook the other foot behind the popliteal fossa of the straight leg.

Switch monitoring hands at L4-5 interspace.

Rotate L4 to the right by grabbing the patient's left upper arm and instructing them to hold your arm as well, allowing you to pull their torso anteriorly until motion is felt at your monitoring hand. (Rotating the torso **down through** L4, rotating L4 to the right)

Place the patient's hand on their waste then thread your cephalad arm between the patient's arm and torso, so that your forearm contacts the upper lateral chest and your hand is able to touch their back.

Place the caudal forearm on the lateral buttock of the leg off the table, between the PSIS and the greater trochanter.

In this position, your epigastric area should be over the dysfunctional segment.

Bringing the patient to a rotational restrictive barrier by using your forearms to rotate the pelvis toward you and the torso away.

Instruct patient to inhale and exhale 1-3 times, advancing to new restrictive barriers as the patient relaxes on exhalation. The corrective thrust should be performed on exhalation when the patient is relaxed and not guarding.

The corrective force is directed from your epigastric area down to the arms via gently dropping your weight onto the patient, creating a side bending corrective force. The cephalad arm should exert a gentle force in a superior and posterior direction, while the caudal arm exerts an inferior and anterior force. The directions of the forearm forces create side bending to the left, side bending into the restrictive barrier.

Reassess the somatic dysfunction for effectiveness of the technique.

124

Neutral Lumbar SD

Example: L4 N SRRL
D.O. Position: Stand opposite of side of rotation. Table height: low enough to have epigastric area over patient's lumbar spine.
Patient Position: Right Lateral Recumbent (**Posterior Transverse Process Up**)

Monitor L3-4 interspace with cephalad hand

With caudad hand, flex patient's hips and trunk until motion is felt with monitoring hand. Instruct patient to straighten the leg contacting the table. Hook the other foot behind the popliteal fossa of the straight leg.

Switch monitoring hands at L3-4 interspace.

Rotate L4 to the right by grabbing the patient's right upper arm and instructing them to hold your arm as well, allowing you to pull their torso anteriorly until motion is felt at your monitoring hand. (Rotating the torso to the left up to L3-L4 interspace, causing L4 to rotate right)

Place the patient's hand on their waste then thread your cephalad arm between the patient's arm and torso, so that your forearm contacts the upper lateral chest and your hand is able to touch their back.

Place the caudal forearm on the lateral buttock of the leg off the table, between the PSIS and the greater trochanter.

In this position, your epigastric area should be over the dysfunctional segment.

Bringing the patient to a rotational restrictive barrier by using your forearms to rotate the pelvis toward you and the torso away.

Instruct patient to inhale and exhale 1-3 times, advancing to new restrictive barriers as the patient relaxes on exhalation. The corrective thrust should be performed on exhalation when the patient is relaxed and not guarding.

The corrective force is directed from your epigastric area down to the arms via gently dropping your weight onto the patient, creating a side bending corrective force. The cephalad arm should exert a gentle force in an inferior and posterior direction, while the caudal arm exerts an superior and anterior force. The directions of the forearm forces create side bending to the left, side bending the patient into the restrictive barrier.

Reassess the somatic dysfunction for effectiveness of the technique.

125

Flexed Lumbar SD

- Set up, directions, and forces are the same as neutral dysfunctions
- Only difference is engaging the sagittal plane restrictive barrier
  - This is done by pushing the knees and hips posteriorly creating lumbar extension until motion is felt in the monitoring hand of the dysfunctional segment. The leg contacting the table is still straightened, the other leg is hooked into the popliteal fossa of the straight leg.
    - i.e. Flexed 2, monitor L1-2 interspace.
- Rotation into restrictive barriers, and side bending corrective forces remain the same as in neutral dysfunctions.

126

Extended Lumbar SD

- Set up, directions, and forces are the same as neutral dysfunctions
- Only difference is engaging the sagittal plane restrictive barrier
  - This is done by monitoring the interspace above the dysfunction and pulling the knees and hips into flexion until motion is felt, thus the dysfunction segment has been positioned into flexion. The leg contacting the table is still straightened, the other leg is hooked into the popliteal fossa of the straight leg.
    - i.e. Extended L2, monitor at L1-2 interspace.
- Rotation into restrictive barriers, and side bending corrective forces remain the same as in neutral dysfunctions.

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Indirect techniques

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Definition

An indirect myofascial release manipulative technique where the dysfunctional structures are positioned at the point where tissue tension is balanced in each plane.

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Principles

- Balanced Ligamentous Tension (BLT) technique is an "indirect" technique.
- Similar to Ligamentous Articular Strain (LAS) technique,
- BLT uses three technique components: 1) exaggeration, 2) disengagement, and 3) balance.
- Exaggeration refers to taking the dysfunctional tissues into the direction of the injury, thus exaggerating the position of diagnosis to the shifted neutral point.
- Disengagement refers to a slight amount of compression or traction introduced to unload strained tissue or gap a dysfunctional joint.
- This may be accomplished with manually or with respiratory cooperation.
- The balance point is the point at which the dysfunctional tissue is in the greatest ease in all planes.
- The balance point is where the treatment begins.

130

Activating Forces

- BLT utilizes inherent forces such as circulatory, lymphatic, or primary respiratory forces to release dysfunctional tissues.
- Respiratory cooperation may be used to maximize the balance of the dysfunctional tissues.
- Manual compression or traction may be used with or without respiratory cooperation to bring tissues to maximal balance.

131

Indications/ Contraindications

- Indications
  - Any type of clinically relevant somatic dysfunction.
- Contraindications
  - Absolute
    - Absence of somatic dysfunction
    - Lack of patient consent and/or cooperation
  - Relative
    - Malignancy, infection, or severe osteoporosis at dysfunctional site
    - Fracture, dislocation, or gross instability of involved joint
    - Positioning that compromises vascular flow

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Procedure detail

1. The dysfunctional structures are moved away from the restrictive barrier (exaggerated) in one or more planes of motion to the point of balanced ligamentous tension, also called the point of greatest ease (shifted neutral).
2. The balance point may be fine-tuned with respiration (inhalation and exhalation) to identify the point of maximal balance.
3. The patient holds in the inspiratory or expiratory phase which provides the best ligamentous balance.
4. The physician makes minor adjustments in all three planes as needed to maintain ligamentous balance as the tissues release.
5. Tissues will soften as they release.
6. Reassess tissues after release.
7. Repeat steps 1-6 until no further change is obtained, typically 3 times.

133

Introduction

- You have learned many techniques for somatic dysfunction caused by muscles (muscle energy, counterstrain, FPR etc.)
- The techniques above all utilize the nervous system to relax the muscle/s causing the somatic dysfunction
- Now what if the cause of somatic dysfunction is NOT a muscle?
- What if the somatic dysfunction was caused by a problem in the joint capsule?
  - Balanced ligamentous tension (BLT) can be used

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Theory

- Ligaments do not stretch or contract like muscles
- Ligaments rely on ligamentous tension to stabilize joints
- The theory states during normal physiologic motion (NO dysfunction)
  - The tension throughout a given joint capsule is balanced (all ligament throughout normal physiologic motion have the same tension)
  - The tension in a ligament throughout a range of motion remains relatively constant

135

Question

Which of the following are components of a proper BLT or LAS technique?

A. Disengagement
B. Exaggeration
C. Thrust
D. Balance
E. Oscillation

136

Treatment

- BLT and LAS treatment have the same components
  - Disengagement – Compression or Traction
    - Whichever allows the most movement
    - Described as 'stepping on the clutch in a car'
  - Exaggeration – Position of relative freedom
    - Carry the injured segment into the original position of injury
  - Balance – All parameters of pull are brought into a state of balance
    - Once everything feels balanced then hold in that position until a release is felt
      - A release is described as: softening with ebb and flow- fluid motion (FOM- 809-813)

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Balanced Tension

- Find an area of restriction
- While approaching the tissue gently, hold onto some aspect of that restricted tissue
- Motion test in all three planes and determine which way the tissue wants to go (direction of ease)
- Move the tissue in the direction of ease in all three planes of motion, a form of stacking, one direction then add the next motion, then add the third
- In that direction of ease find the balance point and put the tissue there
- Refine the balance point while allowing the tissue to breath
- The treatment is done when the tissue feels free and is easily moved by the breath of the patient

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Patience and observation

—

- If you're patient and observant, you can watch the body evolve and self heal.
- One way to augment the process, and get involved, without significantly disturbing the process, is to use balanced tension techniques.

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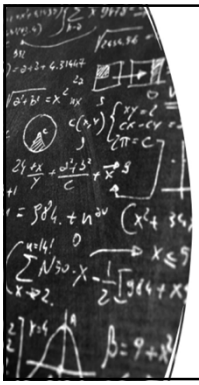

Facilitated Positional Release

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Schiowitz' Steps of Facilitated Positional Release Technique

1. **Place the spine (or extremity) in neutral**
   - "flatten the curve"
2. **Apply an activating force**
   - compression, torsion, combination or distraction
3. **Place tissue &/or segment into position of ease**
   - Hold position and forces for 3-5 seconds
   - Release
   - Re-assess
   - Repeat if needed

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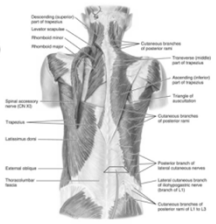
Activating or facilitating force?

- "Shortening the muscle more than intended caused a **decrease in the spindle output** and **lowered the afferent excitatory input to the spinal cord** through the **1a nerve fibers**.
- This results in a decrease in gamma motor gain to the spindle and, by reflex action, decreases tension of the extrafusal muscle fibers.
- As a result, hypertonicity of the muscle mass is reduced."



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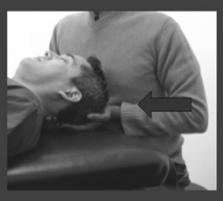
Superficial Cervical (exp: hypertonic muscles posterior and left of C4 area)

- Monitor tissue
- Support head in lap
- **1)** Flatten cervical lordosis
  - AP curve in neutral
- **2)** Apply axial compression
  - <1 pound of pressure
  - Compress tissue up to monitoring finger
- **3)** Maintain compression while positioning indirectly (Extension, SB left, Rot left, maybe torsion)
  - Hold for 3-5 sec.
- **4)** Release slowly
  - Re-assess



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Segmental C4 FRSr

Step 1 - Place in neutral
Step 2 - Facilitating force
Step 3 – what position will the physician place the patient's head in each example?

FRSr ERSl

Segmental C4 ERSl

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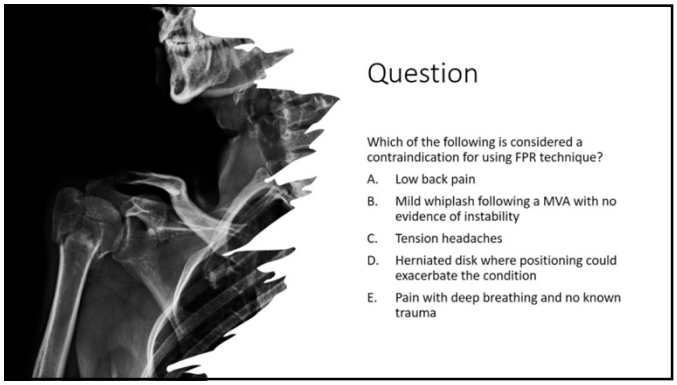

Question

Which of the following is considered a contraindication for using FPR technique?

A. Low back pain
B. Mild whiplash following a MVA with no evidence of instability
C. Tension headaches
D. Herniated disk where positioning could exacerbate the condition
E. Pain with deep breathing and no known trauma

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Contraindications

- Moderate to severe joint instability
- Herniated disc where the positioning could exacerbate the condition
- Moderate to severe intervertebral foraminal stenosis, especially in the presence of radicular symptoms at the level to be treated if the positioning could cause exacerbation of the symptoms by further narrowing the foramen
- Severe sprains and strains where the positioning may exacerbate the injury
- Certain congenital anomalies or conditions in which the position needed to treat the dysfunction is not possible (e.g., ankylosis)
- Vertebrobasilar insufficiency

146

STILL TECHNIQUE

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Physiology

- Injury produces abnormal fascial pattern preventing normal range of motion.
- This movement becomes integrated into the elastic memory of tissue.
- All direct OMT involve some force directed toward or through the barrier, to disrupt the injury pattern, and restore normal movement.
- In Still technique, the use of an initial position of ease is used to decrease the nociception , allowing movement toward the barrier.
- The force vector unloads sensory receptors (golgi tendon bodies and spindles), and spinal reflexes. This allows movement without stimulation of nociception.
- Joint compression also stimulated mechanoreceptors, which inhibit muscles that cross the joint. Distraction stretches the capsule, also inhibiting reflexes.
- The vector used to move the tissue through the injury fascial pattern is parallel to the normal motion vector.
- It re-establishes normal fascial patterns.

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Application

- The combination of physiological effects means the Still technique works well at an articular level, but also at facial and muscular levels.
- It can be used for articular, muscular, tendonous, ligamentous and soft tissue injuries.
- This technique requires specific articulatory diagnosis which is no different than other OMM techniques.
- Depending on the type of injury, either traction or compression may work better.
- Just as with any OMT technique, we use our monitoring palpation to guide us through the treatment.

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Atlas-axis

1. Your sensing fingertip is on the atlas transverse process or its posterior neural arch.
2. Your operating hand is on the top of the head.
3. Set the patient's head and neck so the atlas is rotated toward the side of ease
4. Introduce compression from the patient's head to the atlas.
5. Maintain compression. Carry the head and neck through the restriction (in left rotation in this case).
6. Release compression. Return to neutral. Retest

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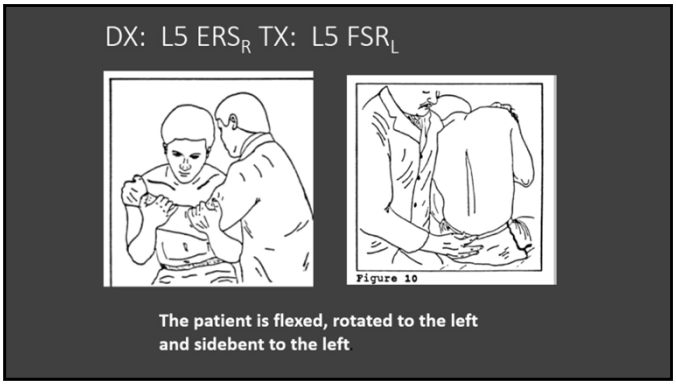

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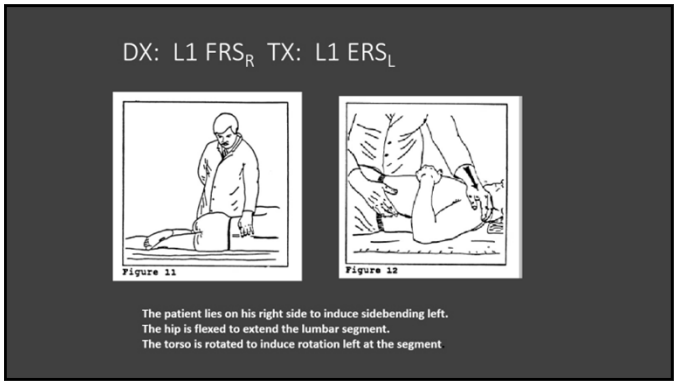

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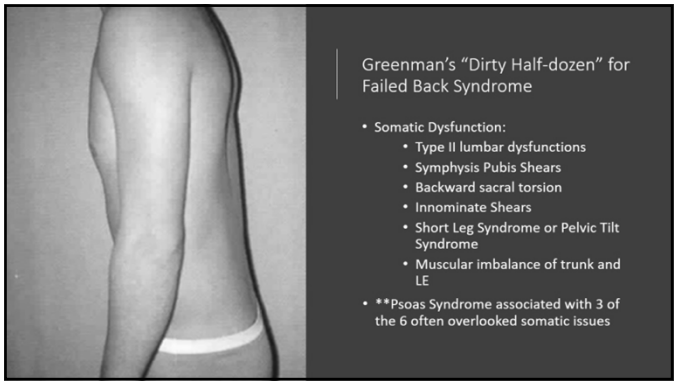

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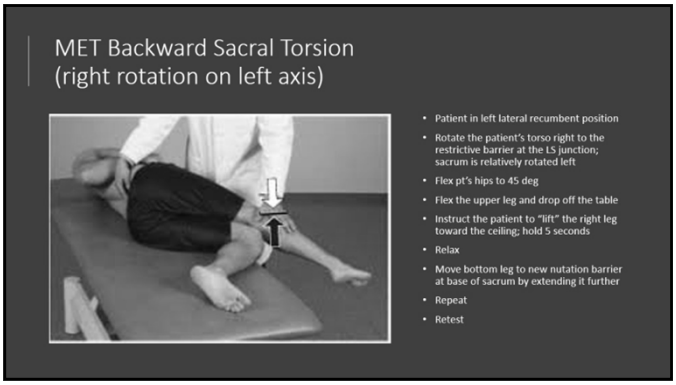

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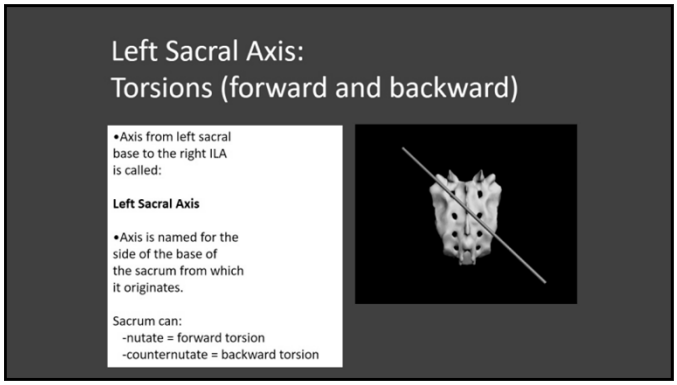

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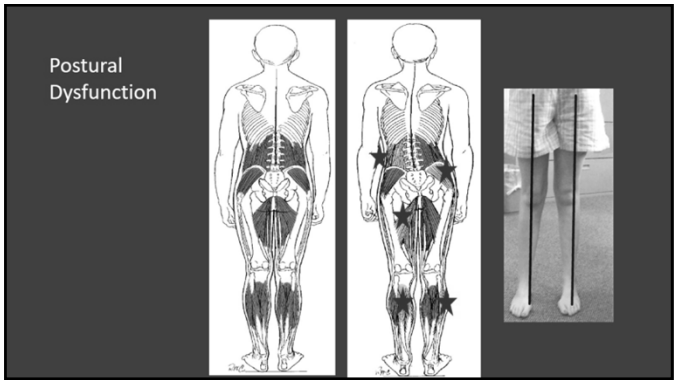

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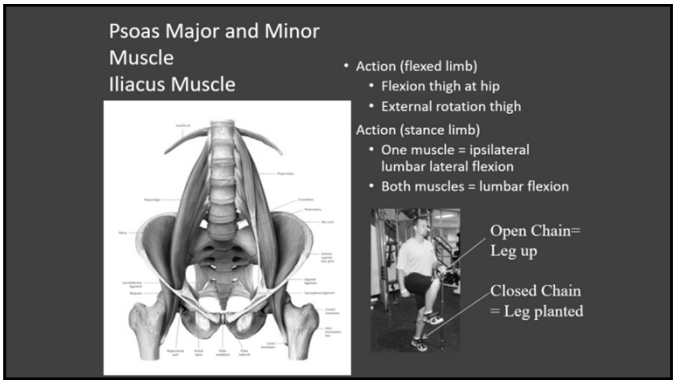

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Question

Which of the following is not associated with Psoas Syndrome?

A. Loss of lumbar lordosis
B. Ipsilateral sidebending
C. Onset of ipsilateral sciatic nerve irritation
D. Backward sacral torsion
E. Pelvic side shift

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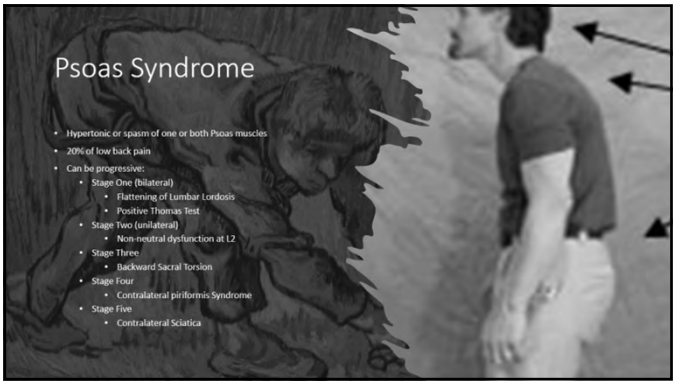
Psoas Syndrome

- Hypertonic or spasm of one or both Psoas muscles
- 20% of low back pain
- Can be progressive:
  - Stage One (bilateral)
    - Flattening of Lumbar Lordosis
    - Positive Thomas Test
  - Stage Two (unilateral)
    - Non-neutral dysfunction at L2
  - Stage Three
    - Backward Sacral Torsion
  - Stage Four
    - Contralateral piriformis Syndrome
  - Stage Five
    - Contralateral Sciatica



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PSOAS SYNDROME PROGRESSION

- Stage One:
  - Bilateral spasm (psoas)
  - Loss of lumbar lordosis
- Stage Two:
  - Unilaterally dominant spasm (psoas)
  - Ipsilateral lumbar SB
- Stage Three:
  - Psoas spasm with sacral torsion
    *****usually backward sacral torsion*****
  - Pelvic side shift
    - to side contralateral to psoas spasm
- Stage Four:
  - Psoas spasm with sacral (backward) torsion and contralateral piriformis spasm
- Stage Five:
  - Onset of contralateral sciatic nerve irritation (NOTE: ipsilateral to the piriformis spasm)

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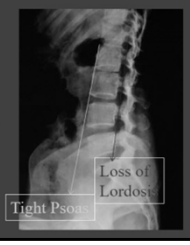
PSOAS SYNDROME

Normal Lordosis

LATERAL FILMS: Flattening of Lumbar Anteroposterior Curve

FLATTENED LUMBAR SPINE



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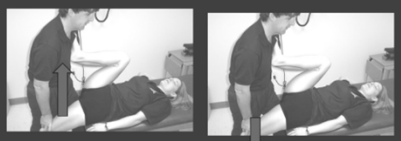
Muscle Energy for Left Psoas Muscle Spasm



Patient contracts Psoas by pushing Up (flexing hip)

Physician stretches psoas by pushing down – into the restrictive barrier

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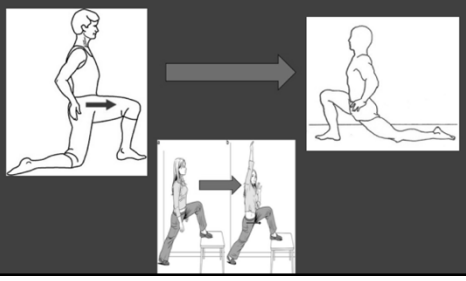
Psoas (Runner's) Stretch



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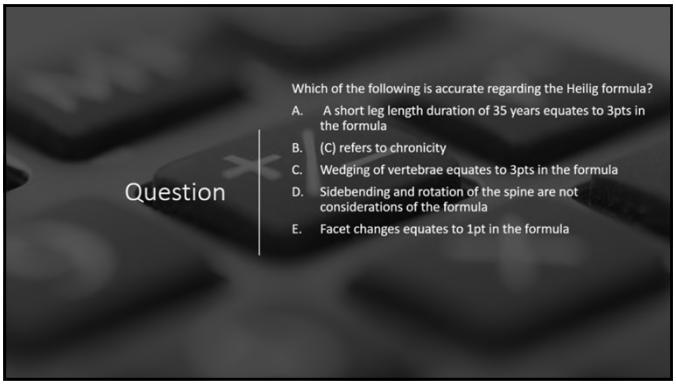

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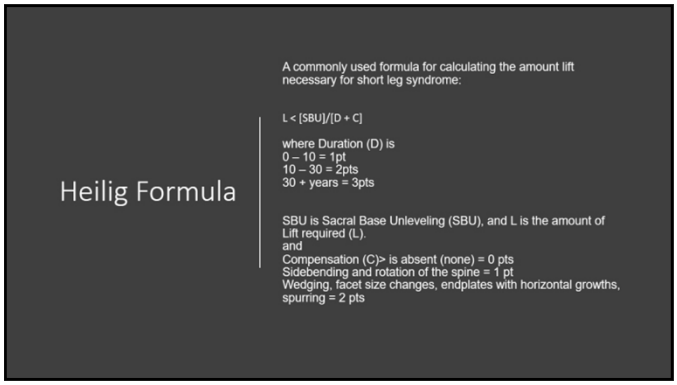

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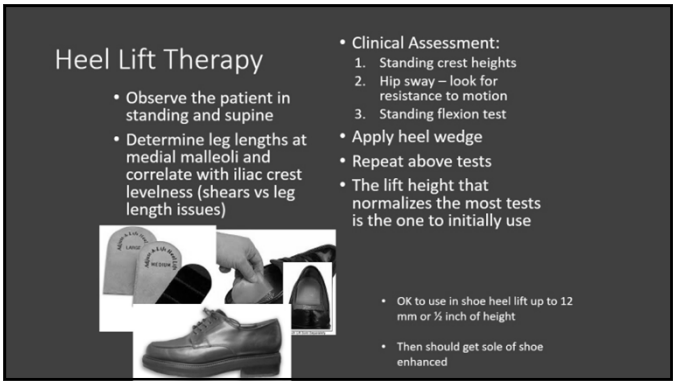

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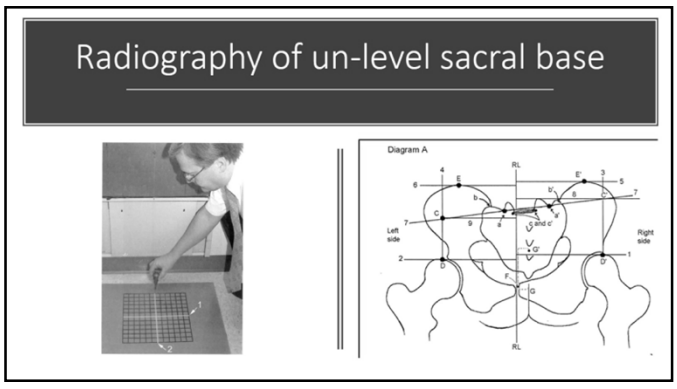

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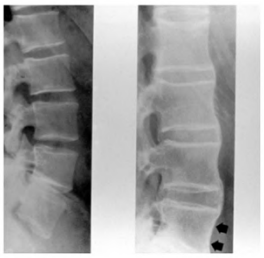
Ankylosing Spondylitis (AS)

- Autoimmune, Inflammatory arthritis
- Leads to joint fusion
- 1 in 2000 persons
- Men>Women (3:1)
- Genetic predisposition
- Primary population:
  - young men (20's to 30's)
- Risk Factors:
  - Family History
  - Male



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- Patient presentation:
  - **Low back pain** (first SIJ, then entire spine)
  - Pain worse:
    - at night; wakes up
    - in a.m.
    - w/inactivity
  - Pain better with exercise and activity
  - Pain remits after fusion complete
- Extra-articular involvement (30%):
  - eyes (iritis)
  - heart (aortitis)
  - lungs (pulmonary fibrosis)
  - neurologic deficits
- Diagnosis:
  - CBC
  - ESR
  - **HLA-B27**
  - X-Rays; MRI; CT
- Treatment:
  - OMT – pain control; improved mobility
  - PT – above and exercise; posture education
  - Block inflammation (NSAIDs; Steroids; TNF-inhibitors)
  - Cytotoxic agents
  - Surgery

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Ankylosing Spondylitis

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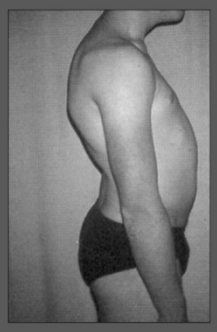
Spondylolisthesis

Forward slippage of one vertebra upon the next vertebra

Secondary to fracture of pars interarticularis

Clinical Presentation

Pain LB – thighs - buttock
"Step Sign" on exam
+ SLR with tight Hams
Stiffness



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Spondylolisthesis

- Cause:
  - Children due to birth defect typically at L5 on S1
  - Adults due to degenerative arthritis at L4 on L5
  - Other
    - Bone disease
    - Traumatic fracture
    - Stress fracture (gymnastics; football; weight-lifters)
- Diagnosis:
  - Lateral X-Ray

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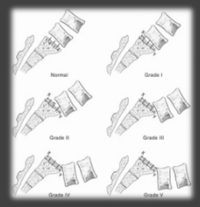

- Grades Spondylolisthesis:
  - 1 = 25% slippage
  - 2 = 25-50%
  - 3 = 50-75%
  - 4 = up to 75%
- Spondylosis
  - 5 = 100%
- Treatment:
  - 80% Conservative
    - PT – Exercise
    - OMT – alignment
    - Modify activities
    - NSAIDS
    - Back brace
  - Fusion surgery

180

Question

- A 35-year-old female has a dextroscoliosis from T5-9. You decide to apply muscle energy technique to the lateral curvature. What is the positional/tri-planar diagnosis at the are of intervention?

A. T7 NSLRR
B. T6 ERRSL
C. T8 NRRSL
D. T5 NSRRL
E. T9 NSRRL

181

Lateral postural changes of the thoraco-lumbar spine

- Scoliosis
  - Pathological or functional lateral curvature of the spine
  - Affects the coronal plane
  - 80% idiopathic in origin
  - Named by the convexity (rotation) of the curve (a curve that is side bent right is a "Left" scoliosis
- 10:200 children ages 10-15 years
- 1:1 boys:girls; >10 deg
- 1:30 boys:girls; >30 degrees
- Girls 5x more likely to progress

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SCOLIOSIS

Diagnosis:

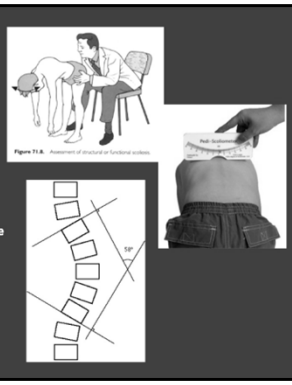
Clinically:

Scoliometer

Adam's forward bending test for "rib hump"

AP x-rays of the thoracic and lumbar spine = "scoliosis screening"

Cobb Angle



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Non-postural causes of thoracic and lumbar pain

- Arthritis
- Spinal Fractures
- Disc herniations

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Arthritis

- Because of the multiple bones and joints in this region, arthritis (both rheumatoid and osteoarthritis) must be considered in this region, as well as degenerative changes
- Symptoms of pain may be pinpoint, involve associated nerves, or refer to the surrounding tissues

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Spinal Fractures

- Usually the result of high energy trauma
  - Automobile accidents
  - Falls from height

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Spinal Fractures

"WHIPLASH" (acceleration-deceleration injuries)

May fracture body of vertebra or spinous process, depending on the compressive force

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- Differential Diagnosis

of spinal fractures:
  - osteoporosis
  - tumors
  - infections
  - steroid use
- Symptoms:
  - Moderate to severe back pain
  - Pain exacerbated by motion
  - ***Numbness, tingling, weakness, or bowel and bladder dysfunction (incontinence) suggest nerve root or spinal cord injury

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Herniated Discs – thoracic and lumbar

- Disc Herniation
  - much more common in the lumbar spine
  - may cause associated radicular pain
- Diagnosis:
  - MRI scan

T2 weighted MRI

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Herniated lumbar discs

- Typical symptoms:
  - Positive SLR test > 30°
  - Pain in low back and gluteal region
  - Pain with prolonged sitting and flexion; pain relieved with extension
  - Pain which radiates down the leg, below the knee

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Case 2: Bob

- 56 y/o truck driver with chronic LBP (<20 years) comes in c/o being crooked and starting to have numbness in the right anterolateral thigh
- Neuro:
  - Paresthesia R thigh
  - DTR 2/4
  - Strength 5/5

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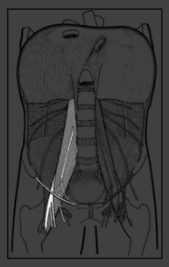
Meralgia Paresthetica



- Impingement of lateral femoral cutaneous nerve
- Characteristic referral pattern to anterolateral thigh

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