

Importance of Treatment Sequence

- Sympathetic nervous system and facilitated segment
 - Why start here?
 - Lowered threshold for firing
- Ribs/ rib raising
- Vagus nerve (OA, AA, C2-3)
- **Ultimate goal:** balancing the Autonomic Nervous System (ANS)

Thoracics: T1-6 and T10-12 Facilitated Segment(s)

- Screen regionally first
- Treat non-neutral (Type II) first
 - BB(FB)R_XS_X
- Treat neutral (Type I)
 - NS_XR_Y



Thoracics: T1-6 and T10-12 Facilitated Segment(s)

- **INDIRECT-** take the lesion in the direction that it wants to go
- Respiratory force cooperation
- **DIRECT-** engage the restrictive barrier
 - HVLA or ME



Supine, Indirect- Thoracic Spine



Muscle Energy – Thoracic Spine

SD - NS_LR_R

Engage the barrier of restriction



Seated Thoracic Spine "gapping"

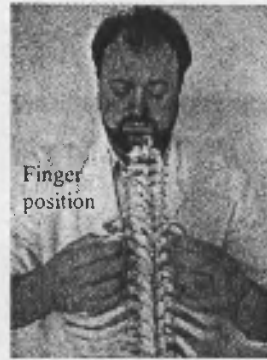


Rib raising



Lever effect:
DO applies elbow
pressure toward floor,
while fingers go toward
ceiling.

Seated Rib Raising



Finger
position



Direction of
DO's pressure

Ribs

- 80% of all rib somatic dysfunction (SD) will correct with addressing Thoracic spine SD
- Upper rib motion = "pump" handle
- Lower rib motion = "bucket" handle
- Coughing tends to produce exhalation SD of the ribs
 - Prevents full inhalation / expansion of the lungs (i.e. decreased TLC)

Inhalation Rib Somatic Dysfunction



ME technique where rib is taken in the direction that it does not want to go in. Use respiratory cooperation and hold rib @ its end point each time.

Exhalation Rib Somatic Dysfunction

ME technique with respiratory cooperation

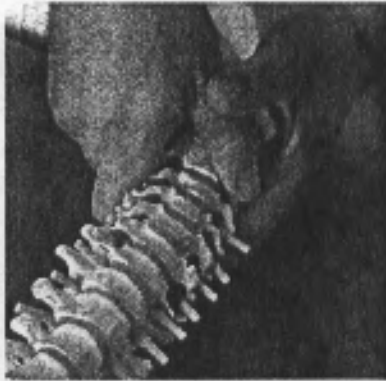


Additional Information

- Kuchera
 - "An additional 400 cc of air can be inhaled with each breath for each additional centimeter of chest cage diameter."⁶
- Travell
 - "Active TPs in the serratus anterior muscle inhibit expansion of the lower chest ... After inactivation of TPs in this muscle, there is a ...larger maximum lower chest circumference. The resultant marked increase in volume of tidal air..."⁸
 - Video = 2 inches of increased chest diameter with release of unilateral serratus anterior

Cervical spine

- INDIRECT technique
- OA, AA, C2-3 = vagus n.
- C3-5 = phrenic n.
- C2-4= primarily rotation correction
- C4-7= primarily SB correction



Cervical spine

- Start @ occipito-atlantal (OA) joint and work way down
 - Why?
 - Major "hold" area on vagus
- Restrictions of OA may cause inappropriate firing of PNS
 - Increasing PNS activity



Cervical spine

Remember to obtain a good PMHx prior to cervical OMM



Thoracoabdominal Diaphragm (TAD)

"Piston"

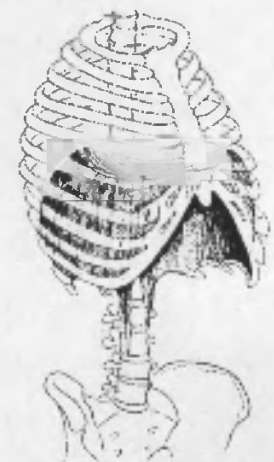
- Aids in venous and lymphatic return
 - Highly dependent on pressure differentials
- Hospitalized (supine) patients
 - Main "driving force" of venous/lymphatic fluid mobilization
- "Heart" of the lymphatic system

Thoracoabdominal Diaphragm (TAD)

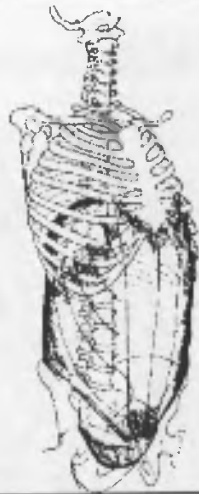
Fascial "crossroads"

- Above TAD- ventral course of cephalad fascias to attach to superior surface of TAD
- Below TAD- dorsal course of caudal fascias to attach to inferior surface of TAD
- Rhythmical, "tug of war" *massaging* of all fascial planes

Thoracoabdominal Diaphragm



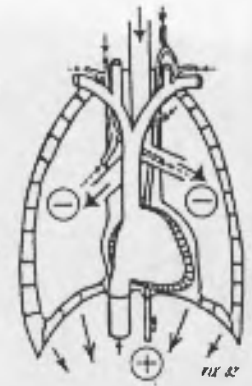
Importance of abdominal musculature in regards to respiration / chest cage motion



Excursion of a Domed Diaphragm



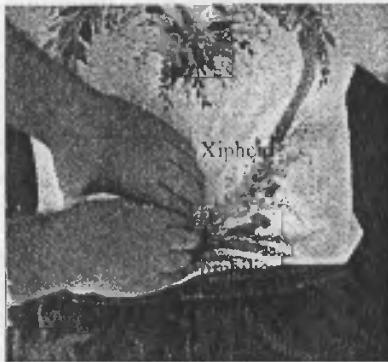
Excursion of a Flattened Diaphragm



Relative Pressure Differentials Generated by the Abdominal Diaphragm

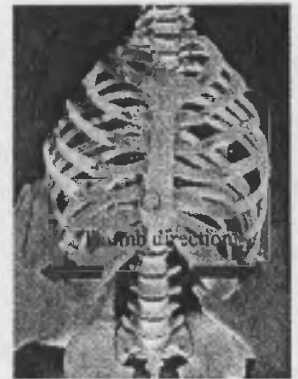
Thoracoabdominal Diaphragm (TAD)- #1

- Pt supine
- Release the midline (xiphoid to umbilicus, umbilicus to pubis symphysis)
- DIRECT/INDIRECT MFR
 - Utilize technique of less tenderness
 - If unsuccessful, try the other technique



Thoracoabdominal Diaphragm (TAD)- #2

- Next, address the inferior costal angles (anterior TAD attachment points)
- DIRECT MFR w/ resp. cooperation
- Redoming can also be utilized
- Posterior attachments- T10- L3/4



Thoracoabdominal Diaphragm (TAD)- #2



Thoracoabdominal Diaphragm (TAD)- #3

- DO at head of table.
- Slide fingers under anterior costal angles.
- Apply cephalad traction while utilizing pt. respiratory cooperation



Thoracoabdominal Diaphragm (TAD)- #3



Thoracolumbar Junction

- Posterior attachment of the T/A diaphragm
- Forgotten area of thoracic cage motion



Thoracolumbar Junction

HVLA "desidebending" technique

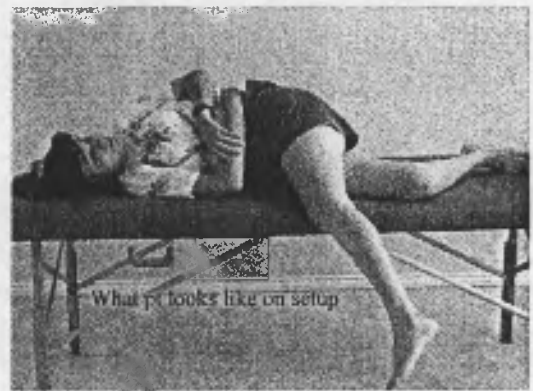


In this e.g., pt is SB left



DO's HVLA thrust

Thoracolumbar Junction



What pt looks like on setup

Thoracolumbar Junction

DO hooks pt's leg hanging off table
Uses pt's leg as "fine tuner"
to localize SD prior to thru:



Thoracic inlet (*Foundations*)

- "functional"
 - T1-4, ribs 1-2 (plus their costocartilages), manubrium
- "anatomical"
 - T1, first rib (and their costal cartilages), and the superior end of the manubrium
- Additional
 - Sibson's fascia, clavicles, muscles

Why treat the Thoracic Inlet?

- The apices of each lung is covered by Sibson's Fascia
 - Thick cupulae produced by fascia from the longus colli, scalenius anticus, medius, and posticus muscles
 - Forms a functional cervicothoracic diaphragm
 - Involved in the mechanics of fluid homeostasis anywhere in the body

Why treat the Thoracic Inlet?

- The thoracic duct (left lymphatic duct) passes through the cervicothoracic diaphragm, travels 3-4 cm up into the neck to approximately C7 left transverse process, turns around, and comes back down through this fascial diaphragm into the thoracic cage
- Here, it empties into the left subclavian and internal jugular veins (or the brachiocephalic vein)

Why treat the Thoracic Inlet?

- Therefore, prevention of *lymphovenous stasis* is the reason we treat the thoracic inlet.
- **Right** thoracic duct- heart, lungs, right upper extremity, right side of face
- Left thoracic duct- everything else

Thoracic inlet

- Address thoracic spine, ribs, sternum first
- Pt supine
- Find the T inlet that's restricted
- Slide caudal hand over superior surface of clavicle and apply caudal traction



Thoracic inlet

- Take cephalad hand and grasp pt's distal forearm
 - Apply cephalad traction
 - Apply "pumping" action
 - Apply MFU
- Use resp. cooperation
 - Wait for release

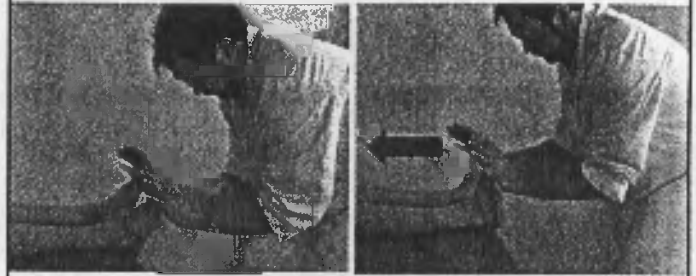


Lymphatic Pumps

- Pedal (Dalrymple)
 - Dorsi- and plantarflexion
- Abdominal
 - Splenic and liver
 - Caution in disorders/ congestion of these organs
- Thoracic
 - Females cup their own breasts first

Why are Lymphatic pumps important?

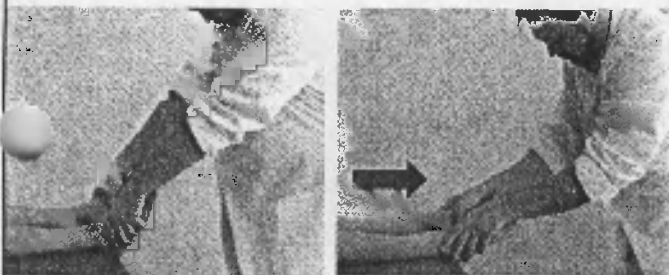
Pedal Pumps - Dorsiflexion



Starting position

Frequency = 12 - 20
cycles/minute

Pedal Pumps - Plantarflexion



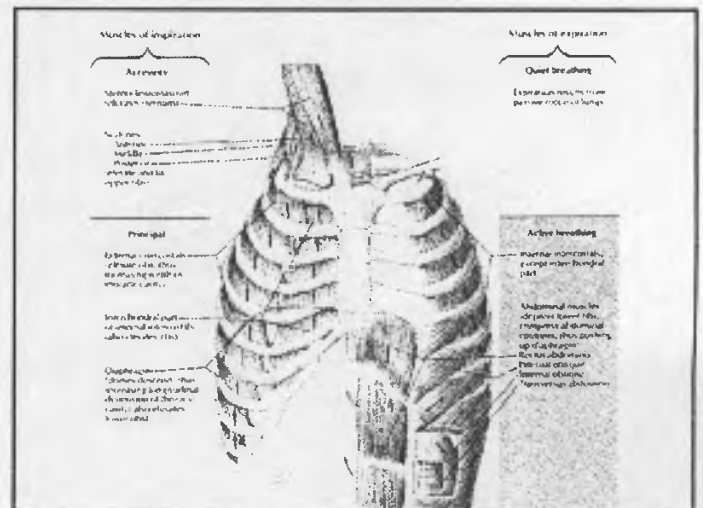
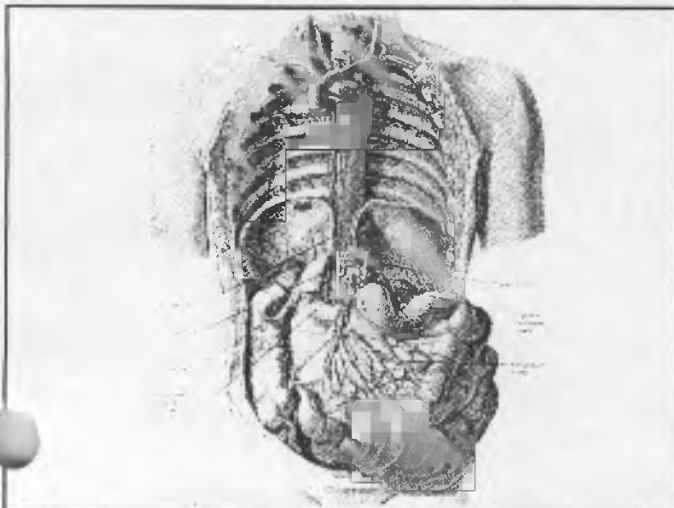
Starting position

Frequency = 12 - 20
cycles/minute

Abdominal and Thoracic Lymphatic Pumps



Frequency = 12 - 20 cycles/minute



References

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