

# Counterstrain of the Anterior & Posterior Rib Cage

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# Objectives

- Locate, name, and palpated the anterior & posterior rib tender points
- Demonstrate counterstrain technique for anterior & posterior rib tender points

# Tender Points and Counterstrain: A Review

## What is a tender point?

- thought to be caused by sudden shortening of antagonistic (hamstrings) muscles in response to agonist (quadriceps) muscles lengthening due to injury/strain.
- usually located in the **shortened muscle**

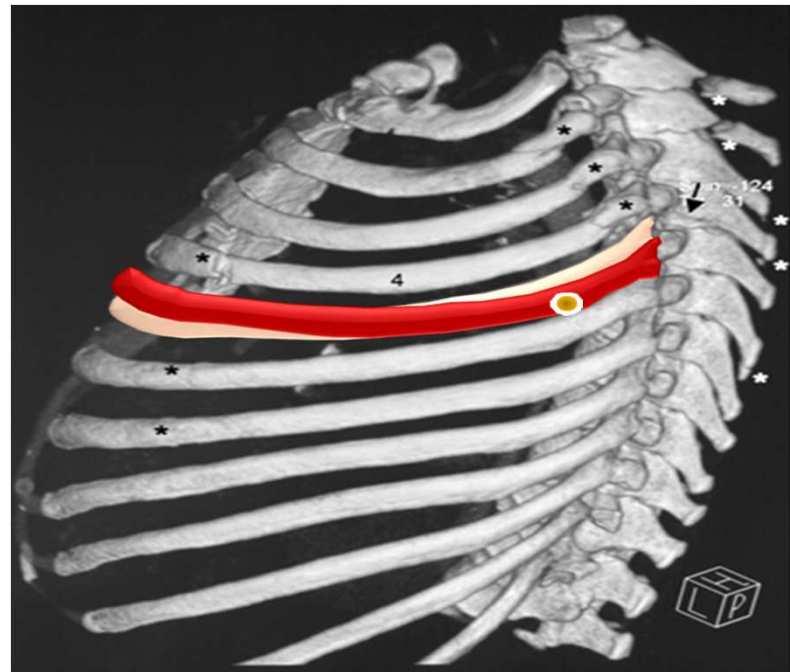
## What is counterstrain?

- a passive indirect technique
- the tissue (tender point) being treated is positioned at a point of balance (ease), away from the restrictive barrier.
- ***Shortening the hyper-shortened muscle***
- treatment position places the **antagonist muscle in a shortened position** while lengthening the agonist muscle.
- With counterstrain, it is essential both patient and doctor are comfortable; communication is key!

# **Posterior Rib Counterstrain**

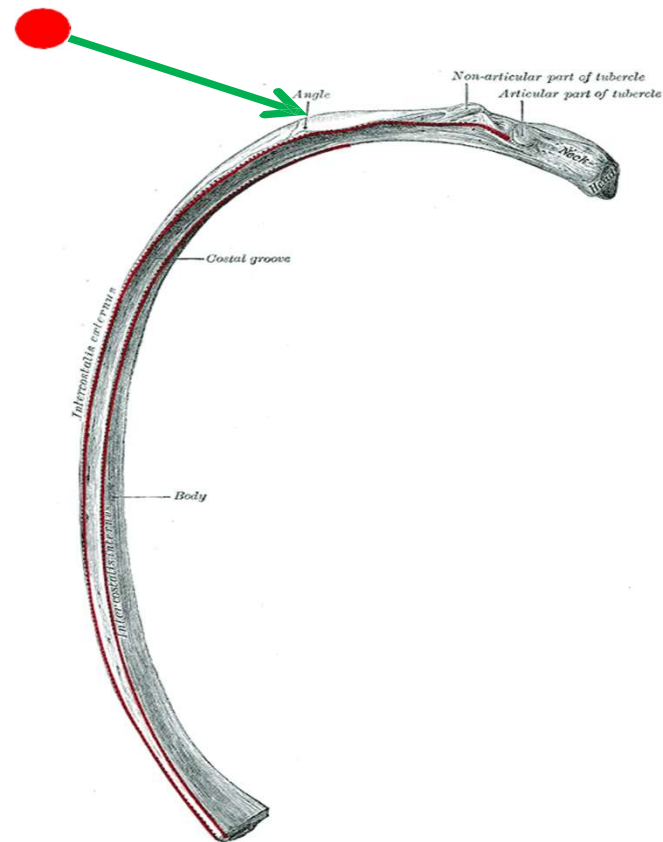
# Posterior Tender Points

Associated with  
Inhalation Dysfunctions

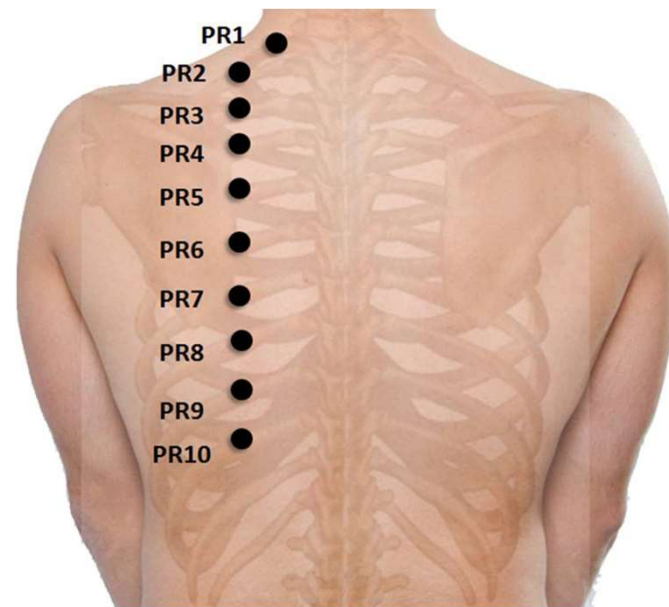
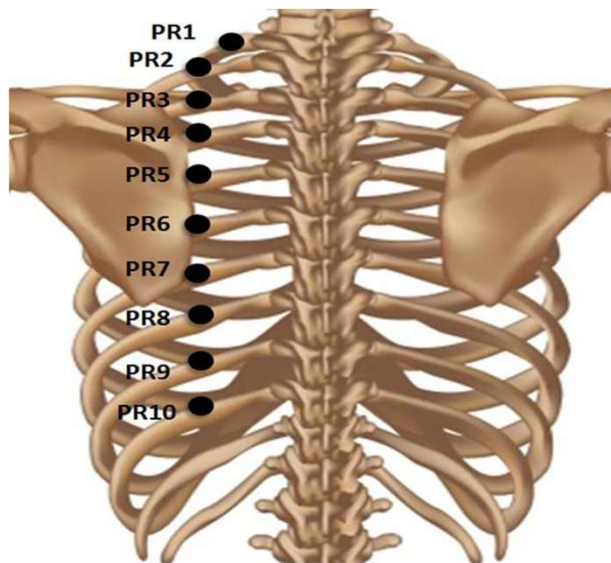


Posterior Rib TP  
Location:

On posterior rib  
angles



# Posterior Rib Tender Points



*\*These are also bilateral!*

# How do we get Posterior Rib Tender Points?

1. Coughing and sneezing
2. Leaning back and lifting
3. Smoking → COPD



Frontal chest X-ray:  
Left: healthy patient  
Right: patient with COPD



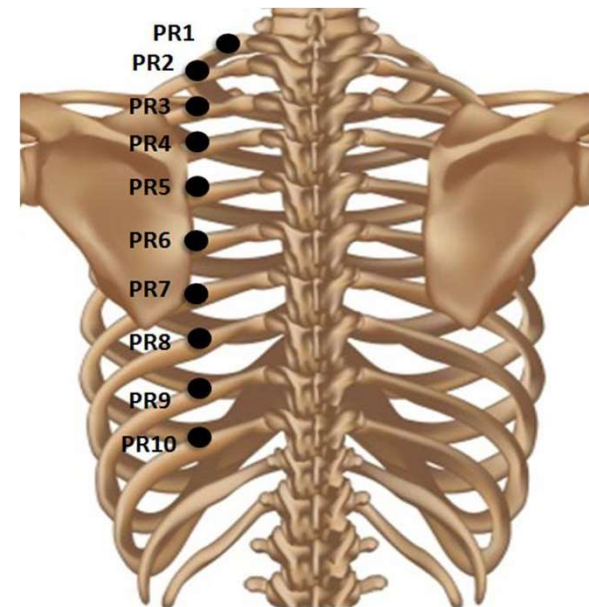
# Finding PR Tender Points

## **PR1**

Posterior/superior aspect of first rib just lateral to costovertebral articulation, beneath trapezius muscle

## **PR2-10**

Posterior rib angle



Take this time to practice

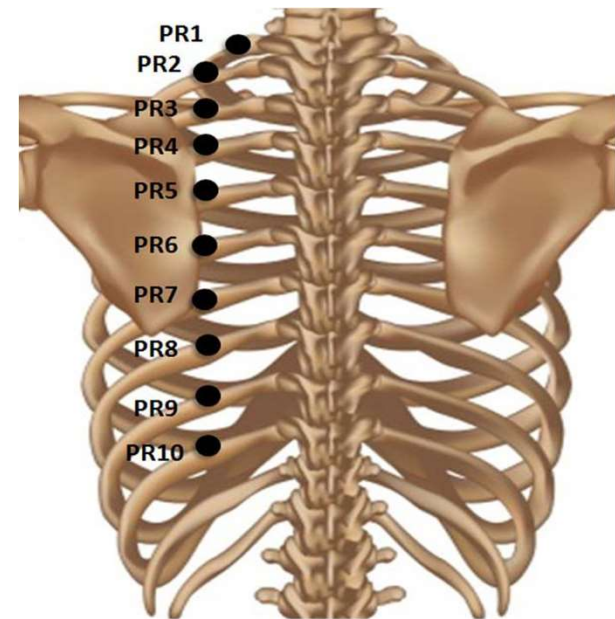
## **Practice:** Circle Positive PR TPs

### **PR1**

Posterior/superior aspect of first rib  
just lateral to costovertebral  
articulation, beneath trapezius muscle

### **PR2-10**

Posterior rib angle

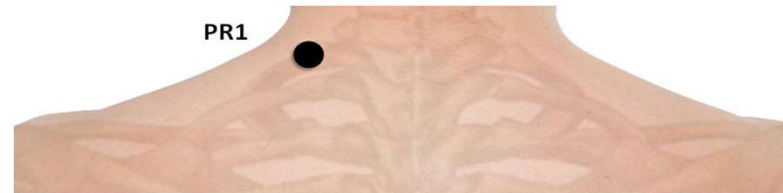


# Counterstrain Steps

1. Find the tender point using eliciting pressure.
2. Establish a pain scale: “10/10 on pain scale”
3. Position in standard treatment position.
  - Usually wrap the body around the point (“fold and hold”)OR
  - Approximate the origin and insertion of the affected structure.
4. Recheck TP: “If your pain was 10/10 before, what is it now?”
  - Goal is zero, minimum is 30% of original pain
  - Fine tune position for maximum effect
  - Back off the pressure on this point to monitoring pressure
5. Hold treatment position for *90 seconds* – **patient must be relaxed** (and doctor should be comfortable too to hold them for that long)
6. Slowly return to neutral
7. Recheck point – Goal is zero, but up to 30% of original pain is acceptable

## PR1 Location

Found on posterior/superior aspect of first rib just lateral to costovertebral articulation, beneath trapezius muscle



## Treatment

1. Seated or Supine
2. Thoracic extension using head and neck with sidebending away and rotation towards point

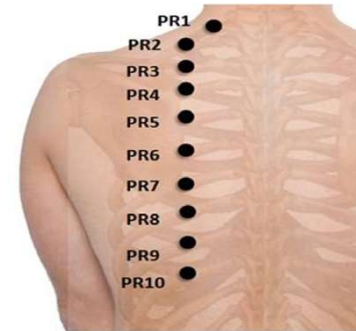
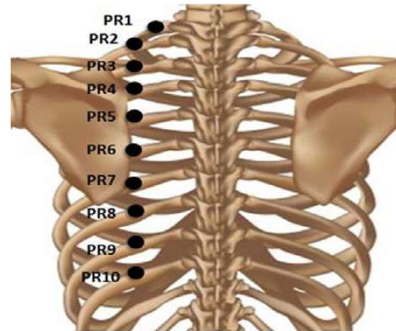
**ESaRt**



Left PR1 Tender Point Treatment

## PR2-10 Locations

Found on posterior rib angle

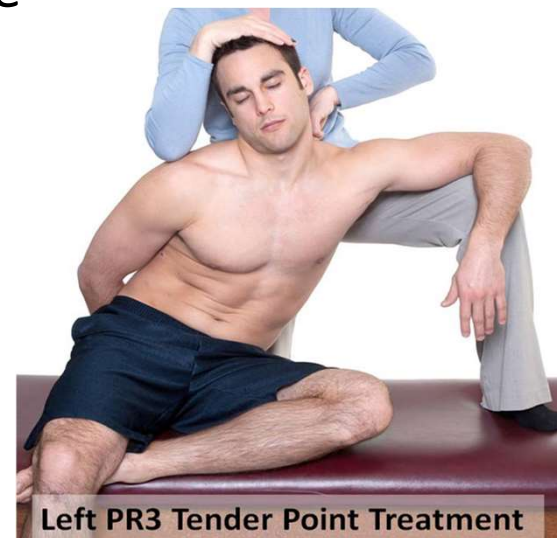


## Treatment

1. Seated
2. Thoracic sidebending away (physician knee under ipsilateral arm) and rotation away (contralateral arm behind back) from point

## SaRa

*Hold for 90 seconds after the patient is completely relaxed.*



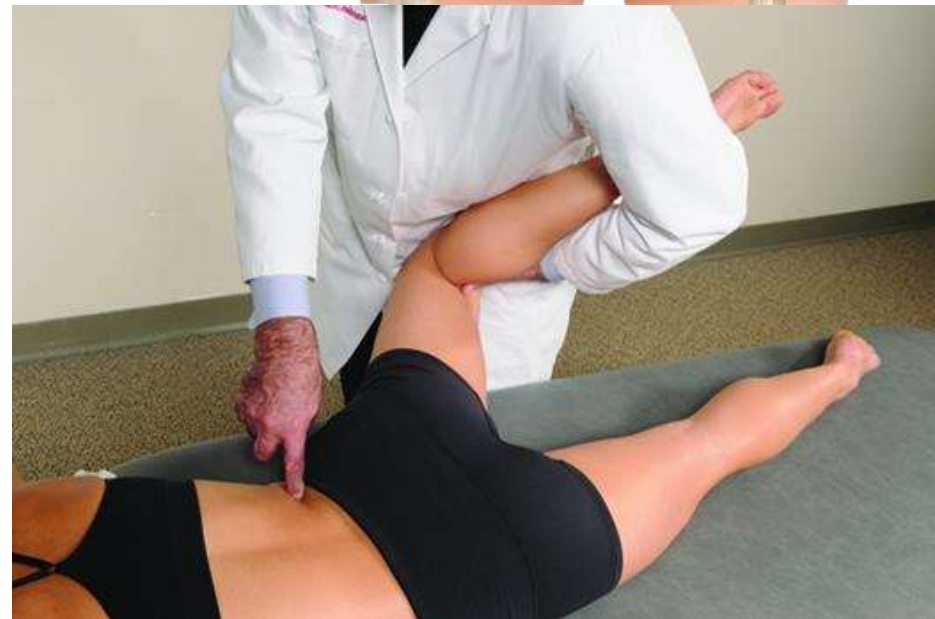
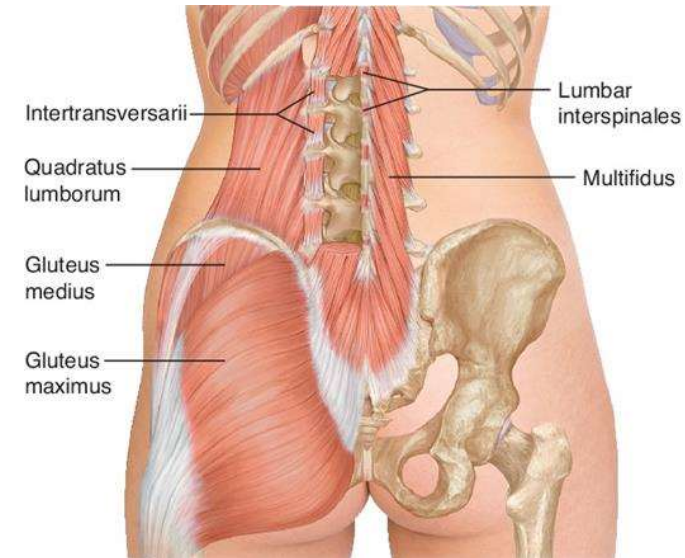
## What about PR11 and PR12?

- None of our references include treatment for Ribs 11 and 12, anterior or posterior
- Ribs 11 and 12 have ample variability of anatomy such that we cannot guarantee there are anterior points
- May treat “PR12” by counterstraining the Quadratus Lumborum Muscle, in which one of the tender points is **on the inferior aspect of Rib 12.**

### Treatment

1. Patient prone, physician stands same side
2. Sidebend trunk toward tenderpoint
3. Extend, abduct, and externally rotate the hip
4. Fine tune

**E Abd ER**



# Practice: Diagnose and Treat

## Summary of Posterior Rib Counterstrain



**PR1**

**ESaRt** using head and neck

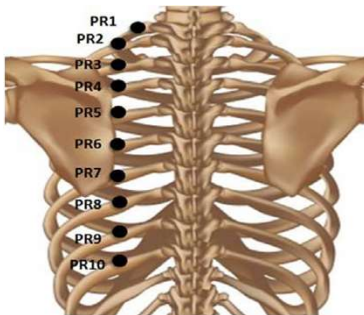
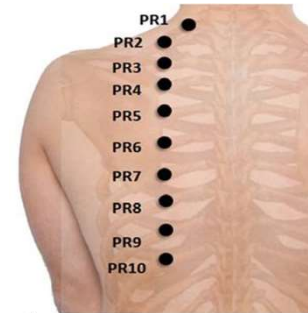
**PR2-10**

**SaRa** seated with physician knee under ipsilateral arm and contralateral arm behind back.

*Hold for 90 seconds after the patient is completely relaxed.*

**Quadratus Lumborum**

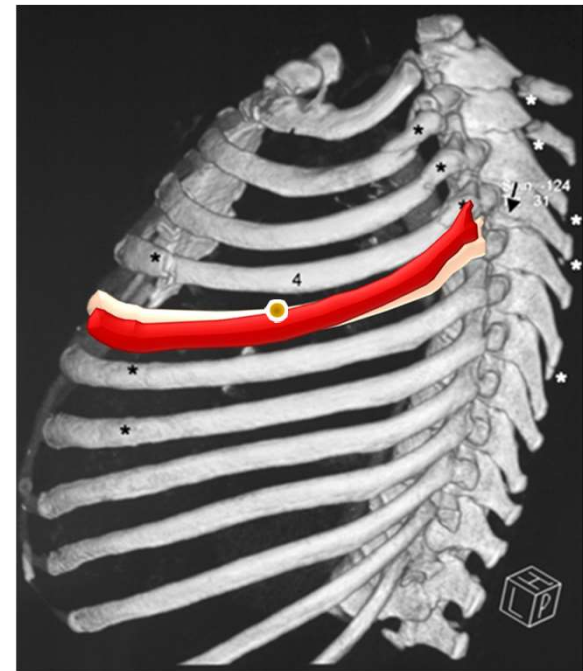
**E Abd ER**



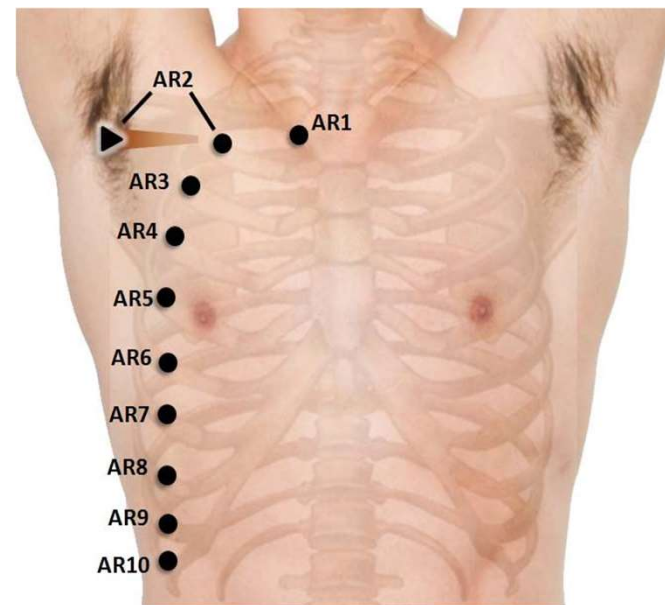
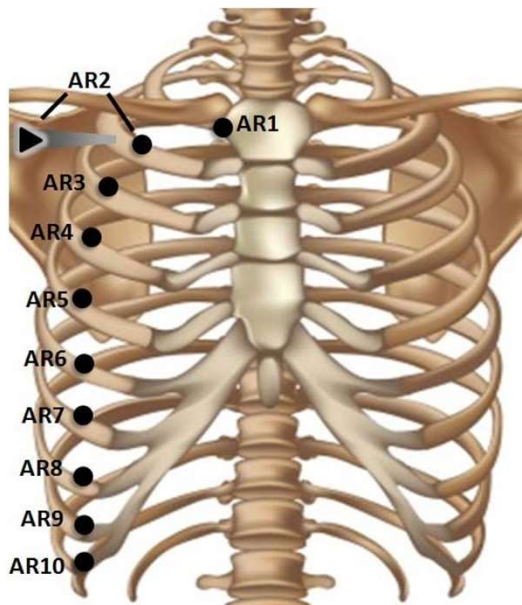
# **Anterior Rib Counterstrain**

# Anterior Tender Points

Associated with exhalation  
dysfunctions



# Anterior Rib Tender Point Locations



*\*These are bilateral!*

# How do we get Anterior Rib TPs?

- Coughing/sneezing
- Bending forward
- Lifting



# Finding AR Tender Points

## AR1

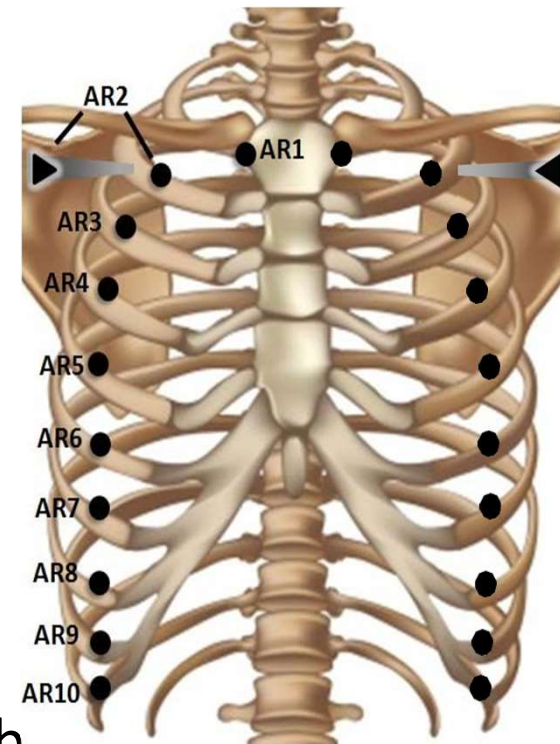
First costal cartilage

## AR2

1. Midclavicular line, 6-8 cm lateral to sternoclavicular joint, on superior surface of second rib
2. On lateral aspect of second rib, high in axilla – *from high in axilla push lateral to medial*

## AR3-10

Anterior axillary line of corresponding rib



## Practice: Circle Positive AR TPs

### AR1

First costal cartilage

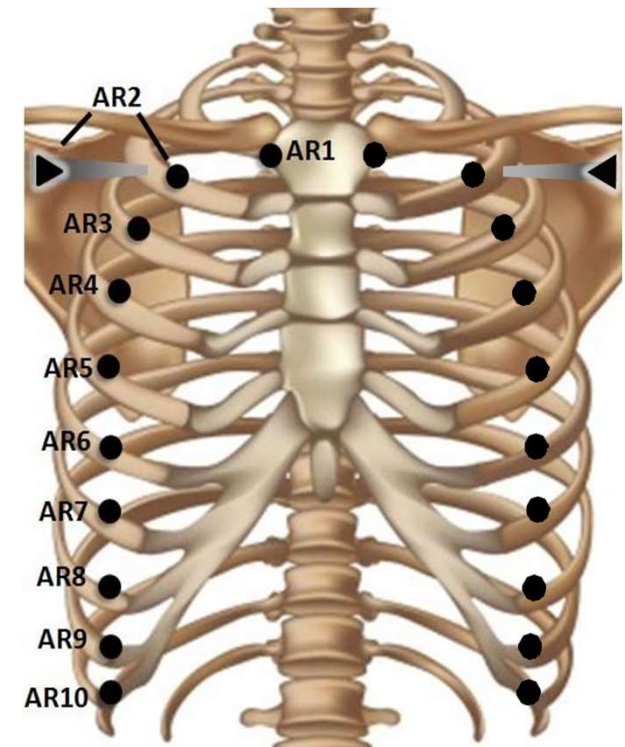
### AR2

1. Midclavicular line, 6-8 cm lateral to sternoclavicular joint, on superior surface of second rib
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### AR3-10

Anterior axillary line of corresponding rib

Take some time to practice



# Counterstrain Steps

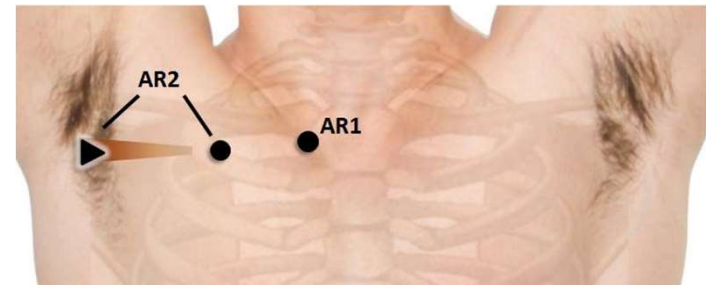
1. Find the tender point using eliciting pressure.
2. Establish a pain scale: “10/10 on pain scale”
3. Position in standard treatment position.
  - Usually wrap the body around the point (“fold and hold”)OR
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4. Recheck TP: “If your pain was 10/10 before, what is it now?”
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5. Hold treatment position for *90 seconds* – **patient must be relaxed** (and doctor should be comfortable too to hold them for that long)
6. Slowly return to neutral
7. Recheck point – Goal is zero, but up to 30% of original pain is acceptable

# AR1 Location

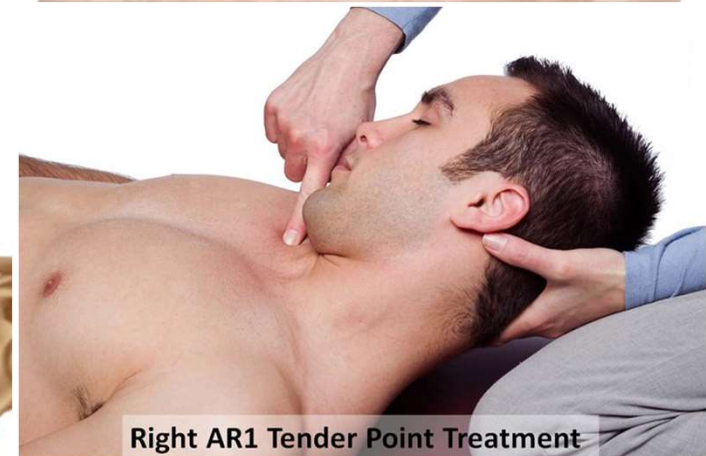
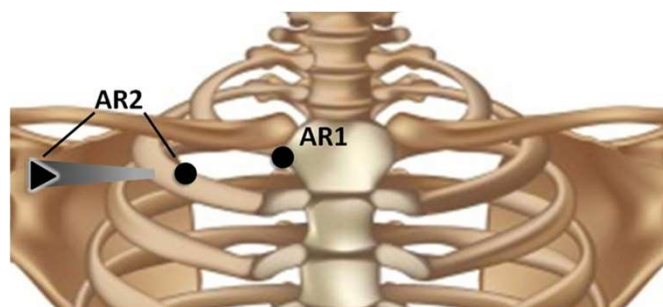
Found on first costal cartilage beneath the clavicular attachment to manubrium

## Treatment

1. Seated or supine
2. Thoracic flexion using head and neck with sidebending and rotation towards point



**FStRt**



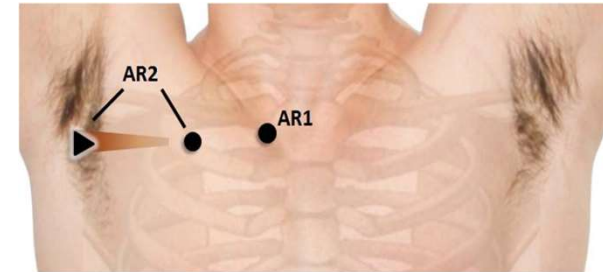
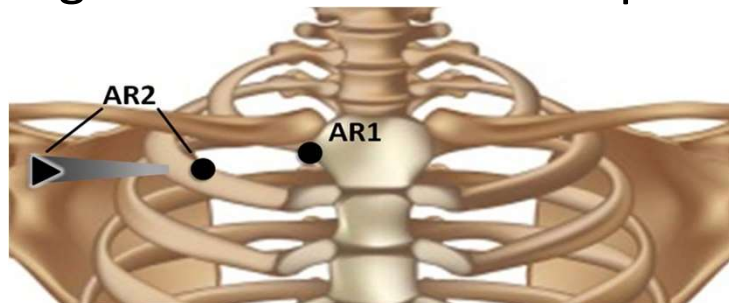
## AR2 Location

1. Midclavicular line, 6-8 cm lateral to sternoclavicular joint, on the superior surface of second rib
2. On lateral aspect of second rib, high in axilla – *from high in axilla push lateral to medial*

## Treatment

1. Seated or Supine
2. Thoracic flexion using head and neck with sidebending and rotation towards point

**FStRt**



# Practice: Diagnose and Treat

## AR1 Location

Found on first costal cartilage beneath clavicular attachment to manubrium

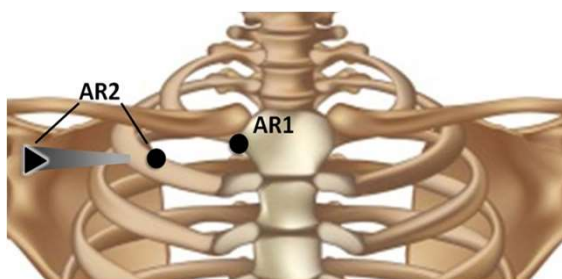
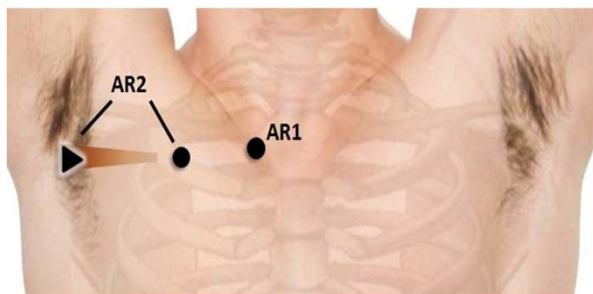
## AR2 Location

1. Midclavicular line, 6-8 cm lateral to sternoclavicular joint, on superior surface of second rib
2. On lateral aspect of second rib, high in axilla –  
*from high in axilla, push lateral to medial*

## Treatment

1. Seated or Supine
2. Thoracic flexion using head and neck with sidebending and rotation towards point

## FStRt



Right AR1 Tender Point Treatment



Right AR2 Tender Point Treatment

## Practice: Diagnose and Treat

### AR3-10 Locations

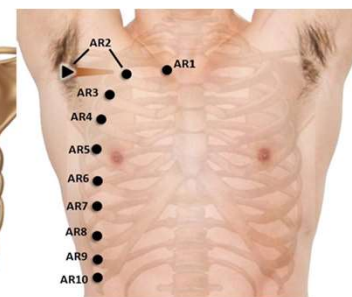
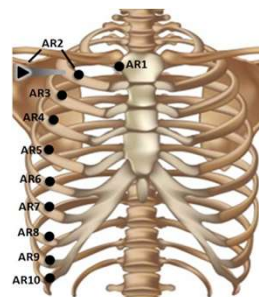
Found on corresponding rib at anterior axillary line

#### Treatment

1. Seated
2. Thoracic flexion with sidebending towards (physician knee under contralateral arm) and rotation towards (ipsilateral arm behind back) point

**FStRt**

*Hold for 90 s after the patient is completely relaxed.*



# Summary of Anterior Rib Counterstrain

## AR1-2

**FStRt** using head and neck



Right AR1 Tender Point Treatment

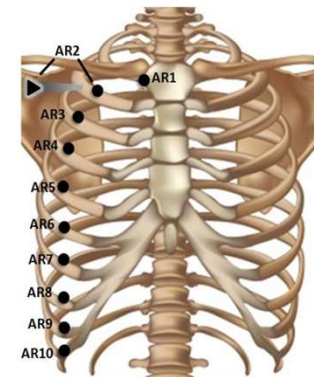
## AR3-10

**FStRt** seated with physician knee under contralateral arm and ipsilateral arm behind back.

*Hold for 90 seconds after the patient is completely relaxed.*

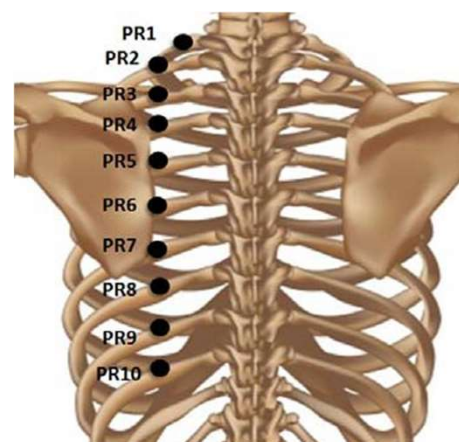
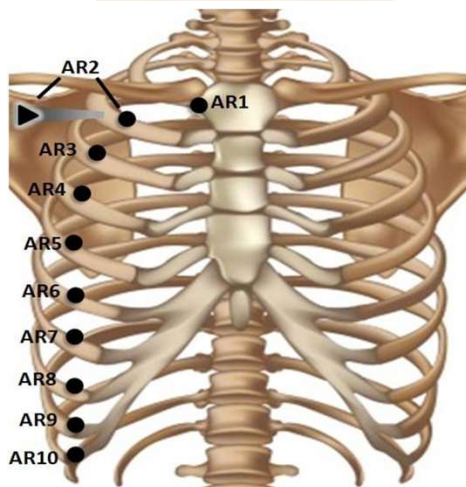
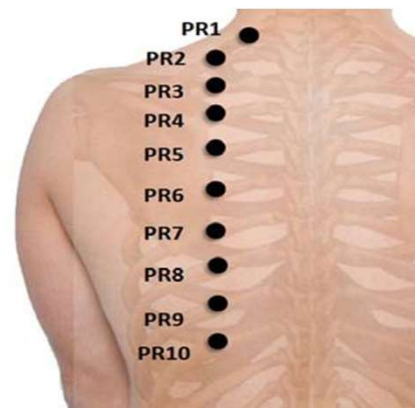
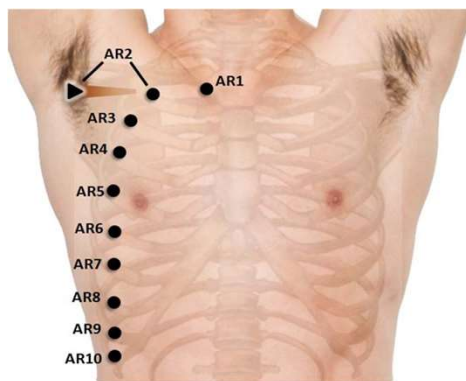


Right AR2 Tender Point Treatment






Right AR6 Tender Point Treatment

# Summary of Rib Counterstrain Points



## Anterior Rib Tender Points

AR1	FStRt	 <p>Right AR1 Tender Point Treatment</p>
AR2	FStRt	 <p>Right AR2 Tender Point Treatment</p>
AR3-10	FStRt	 <p>Right AR6 Tender Point Treatment</p>

## Posterior Rib Tender Points

PR1	ESaRt	 <p>Left PR1 Tender Point Treatment</p>
PR2-10	SaRa	 <p>Left PR3 Tender Point Treatment</p>

# Practice Question

Audrey, a 33-year-old female, presents with a 2-day history of sharp right-sided cervicothoracic pain. The pain is worse when she turns her head to the right. On physical exam, right rib 2 demonstrates exquisite tenderness over the posterior rib angle. The most appropriate initial setup to treat this tender point using counterstrain technique is thoracic

- A. Extension
- B. Flexion
- C. Sidebending away and rotation away
- D. Sidebending away and rotation towards
- E. Sidebending towards and rotation away
- F. Sidebending towards and rotation towards

# Practice Question

Audrey, a 33-year-old female, presents with a 2-day history of sharp right-sided cervicothoracic pain. The pain is worse when she turns her head to the right. On physical exam, right rib 2 demonstrates exquisite tenderness over the posterior rib angle. The most appropriate initial setup to treat this tender point using counterstrain technique is thoracic

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# Practice Question

Audrey, a 33-year-old female, presents with a 2-day history of sharp right-sided cervicothoracic pain. The pain is worse when she turns her head to the right. On physical exam, right rib 2 demonstrates exquisite tenderness over the posterior rib angle. The most appropriate initial setup to treat this tender point using counterstrain technique is thoracic

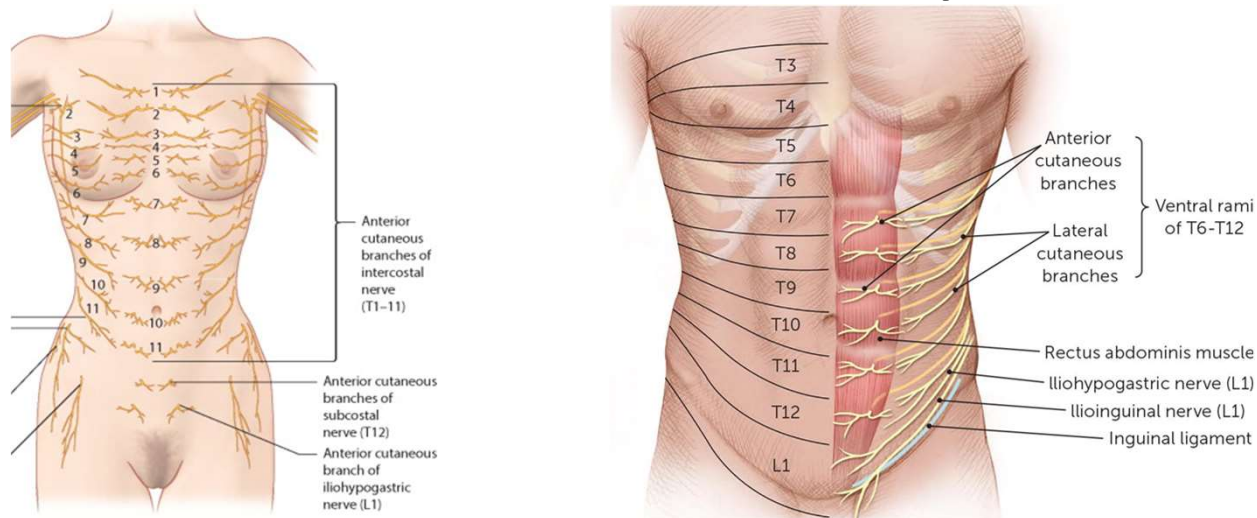
- A. Extension
- B. Flexion
- C. Sidebending away and rotation away
- D. Sidebending away and rotation towards
- E. Sidebending towards and rotation away
- F. Sidebending towards and rotation towards

Time Permitting: Anterior T1 – T6

# Functional Anatomy

- Anterior rami of spinal nerves T1-T12 course between the ribs and wrap around the thoracic cage.
  - T1-T6 course toward sternum
  - T7-T12 course downward; become embedded in abdominal wall
- Anterior thoracic tender points reflect abnormal myofascial, articular, and visceral conditions within the specific spinal segment level.

# Functional Anatomy

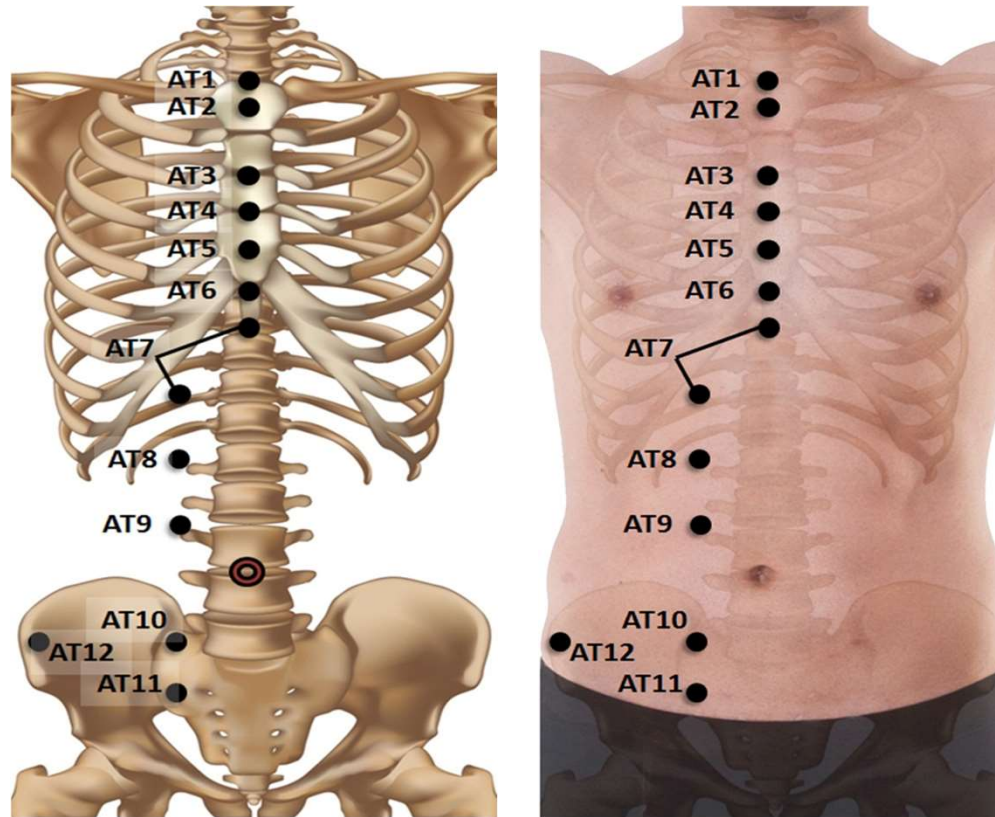


- Anterior branches of intercostal and subcostal nerves innervate midline thorax and abdomen.
- Nerves travel between internal oblique and transversus abdominis muscles, pierce rectus abdominis muscle and anterior rectus sheath.

# Anterior Thoracic Palpation

- Explain what you will do before you do it and ask for permission.
- Ask them to let you know if it is too uncomfortable, consent and care are a continuous process.
- Tell them the names of the anatomy you are palpating.
- Note anatomic differences between patients and adjust palpation accordingly.
  - For example, having female patients move their breast laterally so you can palpate tender points without risking palpation of the breast

# Anterior Thoracic Tender Points

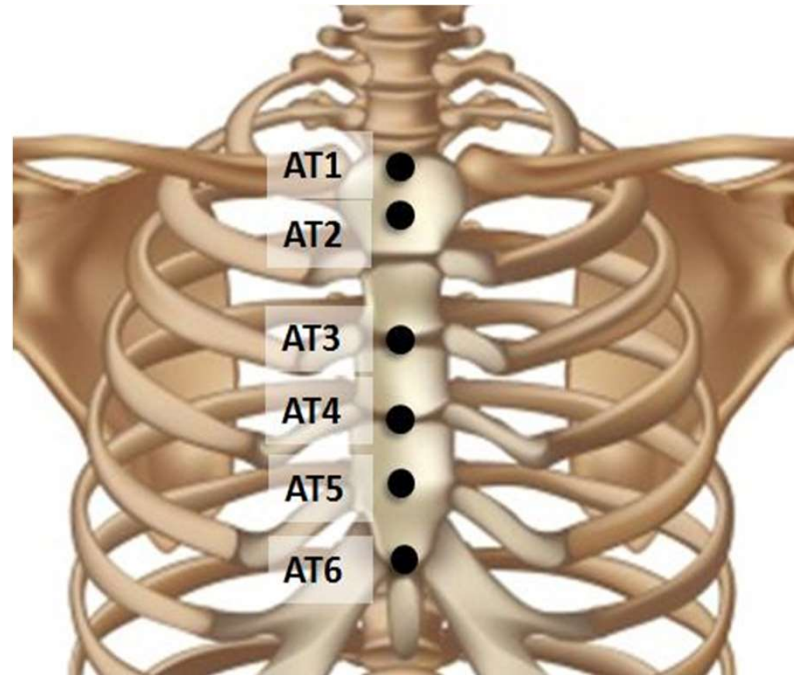


Note: Anterior thoracic tender points **AT7-12** occur **bilaterally**

# Anterior T1-T6

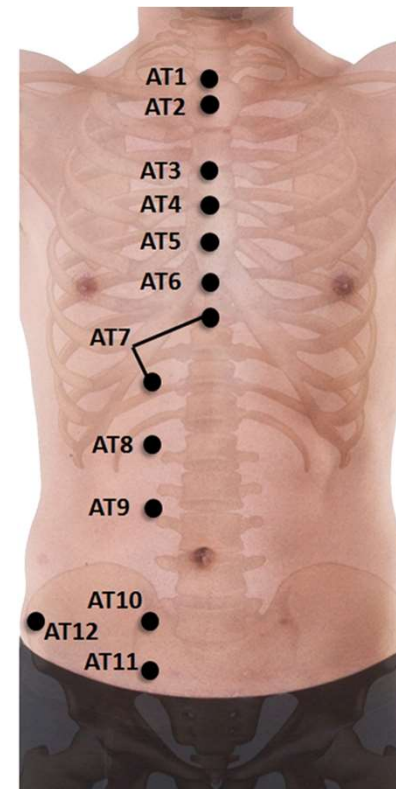
## Location

- **AT1:** Sternal notch
- **AT2:** Middle of manubrium
- **AT3-6:** Along sternal midline at level of corresponding rib attachment



# Practice

- **AT1:** Sternal notch
- **AT2:** Middle of manubrium
- **AT3-6:** Along sternal midline at level of corresponding rib attachment
- **AT7:** On xiphoid tip and/or  $\frac{1}{4}$  distance from xiphoid tip to umbilicus, 1-2cm lateral to midline in rectus abdominis muscle



### **AT1-6 Locations**

**AT1:** Sternal notch

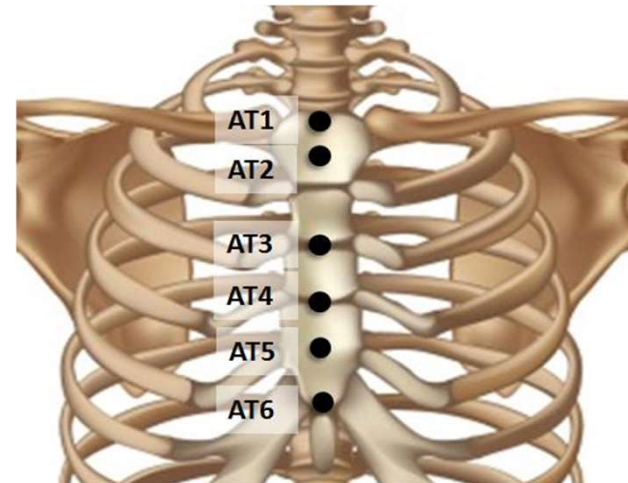
**AT2:** Middle of manubrium

**AT3-6:** Along sternal midline at level of corresponding rib attachment

### **Treatment**

1. Supine
2. **Thoracic flexion** from cervicothoracic junction to level of point

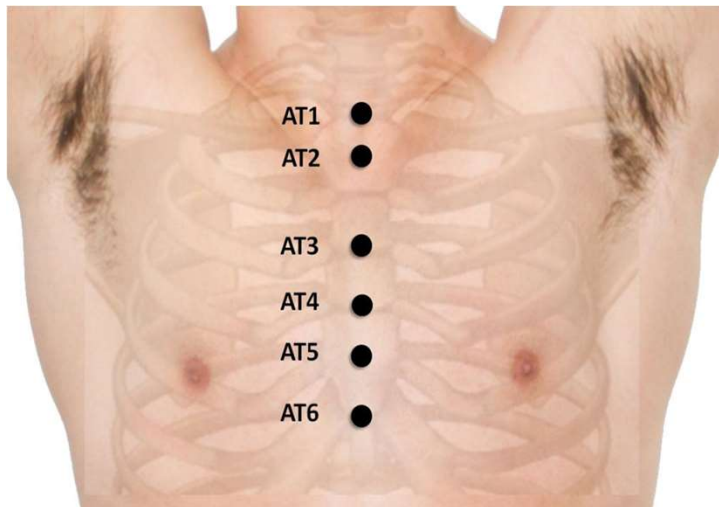
***Flex***



# Practice

## AT1-6

Thoracic flexion from cervicothoracic junction to level of point



## References

- Counterstrain Techniques. In: Nicholas AS, Nicholas EA. eds. *Atlas of Osteopathic Techniques, 4e*. Lippincott Williams & Wilkins, a Wolters Kluwer business; 2023. Accessed May 11, 2026. <https://osteopathicmedicine.lwwhealthlibrary.com/content.aspx?bookid=3202&sectionid=252633080>
- GLOVER JC, RENNIE PR. Strain–Counterstrain. In: Heinking KP, Giusti RE, Hensel KL, et al. eds. foom05. Wolters Kluwer; 2026. Accessed May 11, 2026. <https://osteopathicmedicine.lwwhealthlibrary.com/content.aspx?bookid=3456&sectionid=261504172>
- Snider K, DO, FAAO; Glover J, DO, FAAO. *Atlas of Common Counterstrain Tender Points*. A. T. Still University – Kirksville College of Osteopathic Medicine, 2014.

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