

## Introduction to OMM for MDs and DOs

- May 18–21, 2026 Kirksville, MO
- NCOPPE & KCOM



**ATSU**

National Center for Osteopathic  
Principles and Practice Education

# Counterstrain of the Thoracic Spine (Posterior)

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# Objectives

- ▶ Identify, describe, and define counterstrain technique.
  - ▶ Name and locate common tender points of the thoracic region.
  - ▶ Demonstrate efficient physician ergonomics while diagnosing and treating somatic dysfunction.
  - ▶ Demonstrate osteopathic manipulative treatment of the thoracic spine using counterstrain.
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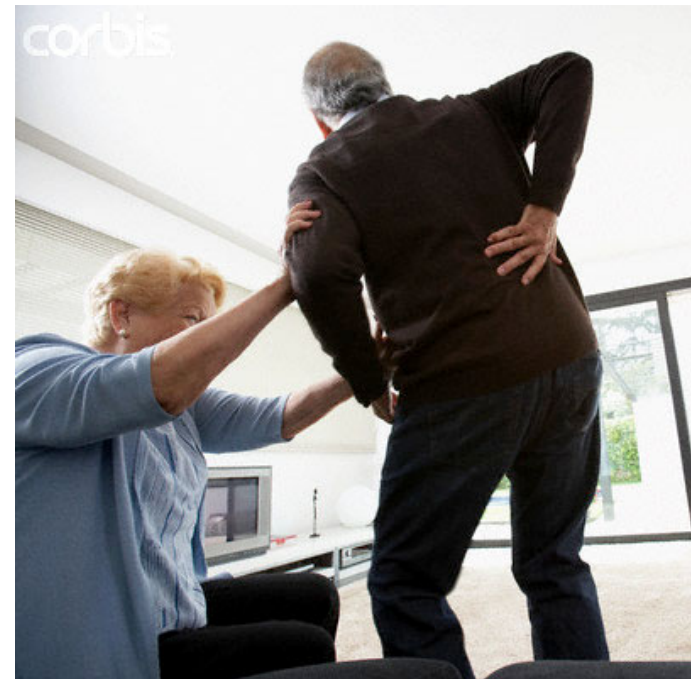
# Counterstrain

## Counterstrain,

1. A system of diagnosis and treatment that considers the dysfunction to be a continuing, inappropriate strain reflex, which is inhibited by applying a position of mild strain in the direction exactly opposite to that of the reflex. This is accomplished by specific directed positioning about the point of tenderness to achieve the desired therapeutic response.
  2. Australian and French use: Jones technique, (correction spontaneous by position), spontaneous release by position.
  3. Developed by Lawrence Jones, DO.
- 

# Counterstrain

- ▶ Defined in 1955 by Lawrence Jones, DO
- ▶ Patient presented to office with inability to stand up straight for the past 2 months
- ▶ Chiropractic techniques had not resolved the problem and then 2 months of osteopathic techniques did not help
- ▶ Dr. Jones finally had the patient find a comfortable position and stay in it for 20minutes
- ▶ Patient was assisted out of the position slowly and found he could stand upright with the pain resolved.



# Counterstrain

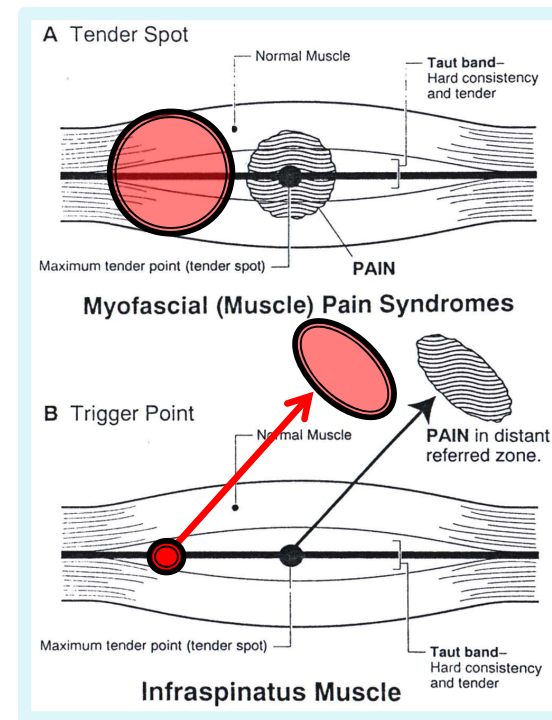
- ▶ Dr. Jones experimented with different positions for different problems
- ▶ Found that if he just positioned the affected areas of the body he only needed to maintain the position for 90 seconds
- ▶ Found discrete tender points associated with different problems
- ▶ Found both anterior and posterior tender points




Lawrence Jones, D.O., F.A.A.O.

# Tender points vs Trigger points

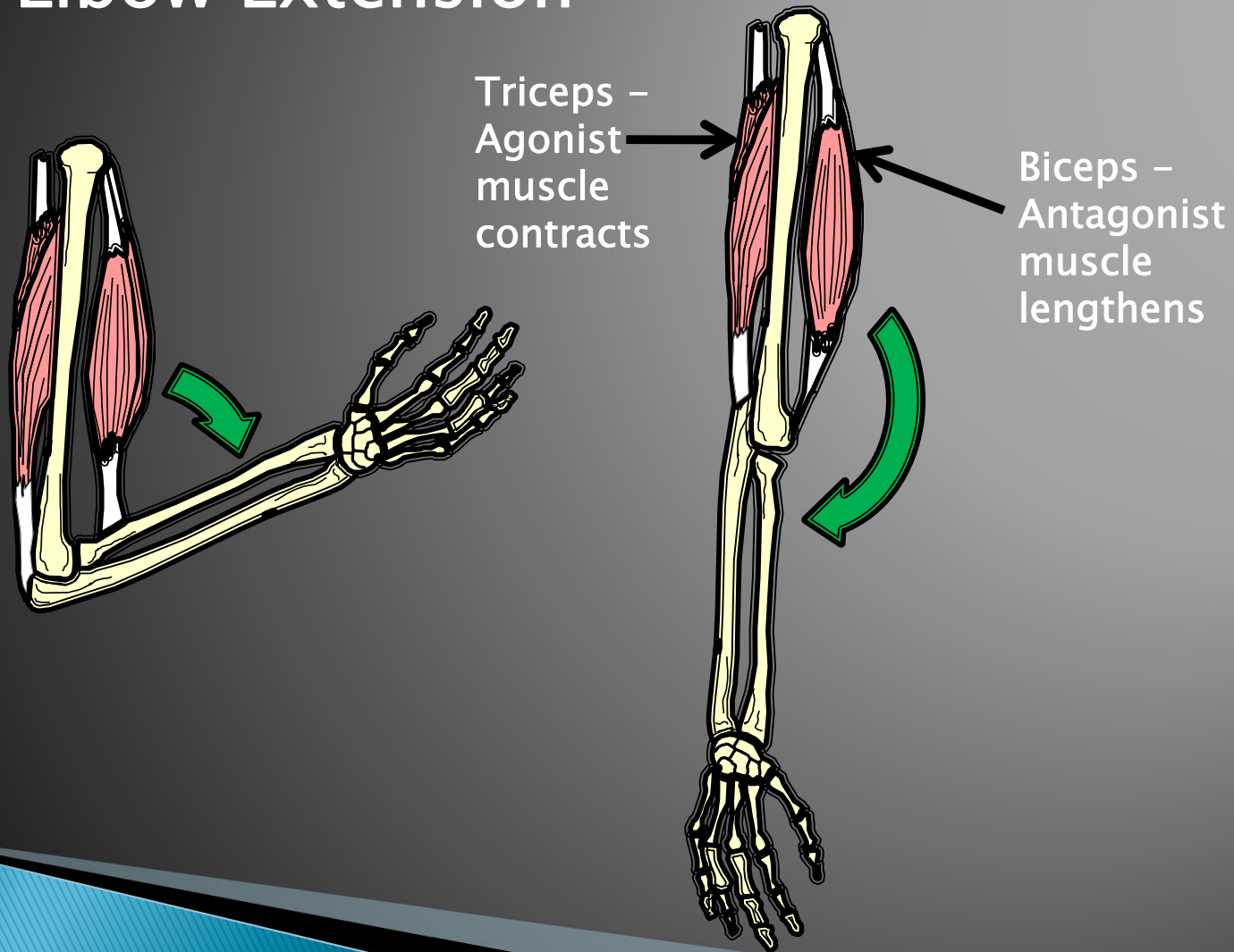
- ▶ Tender points – small discrete hypersensitive areas within myofascial structures that result in localized pain
- ▶ Trigger point – small discrete hypersensitive areas within myofascial structures – palpation causes referred pain away from site.



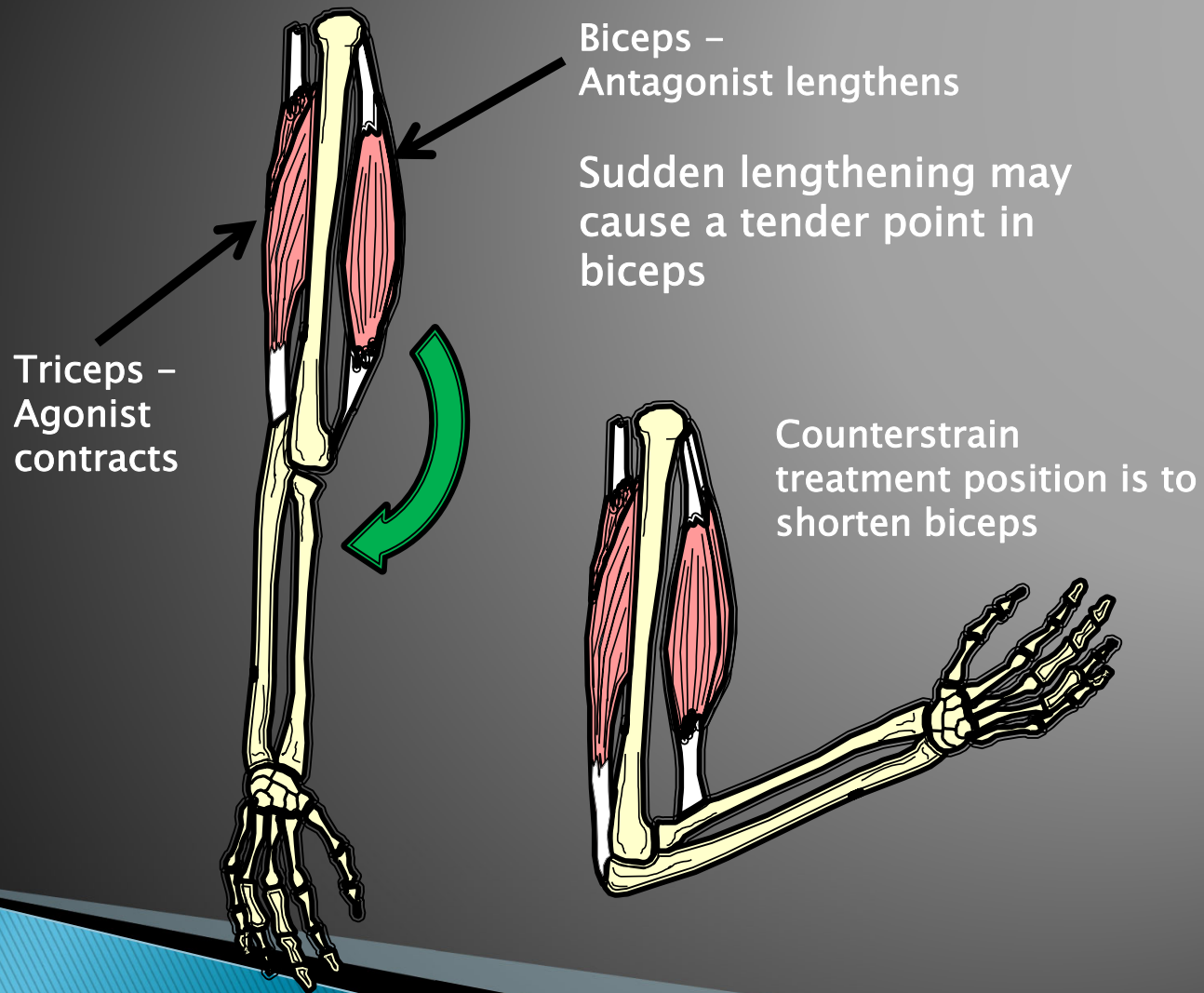
# Counterstrain

- ▶ Originally called *“Spontaneous Relief by Positioning”*
  - ▶ Then called *“Counterstrain”* or *“Strain and Counterstrain”*
  - ▶ Dr. Jones thought the tender points were caused by the sudden lengthening of antagonistic muscles in response to an agonist muscle injury.
  - ▶ The tender points are in the antagonistic muscle
  - ▶ Treatment position places the antagonist muscle in a shortened position while lengthening the agonist muscle
- 

# Elbow Extension



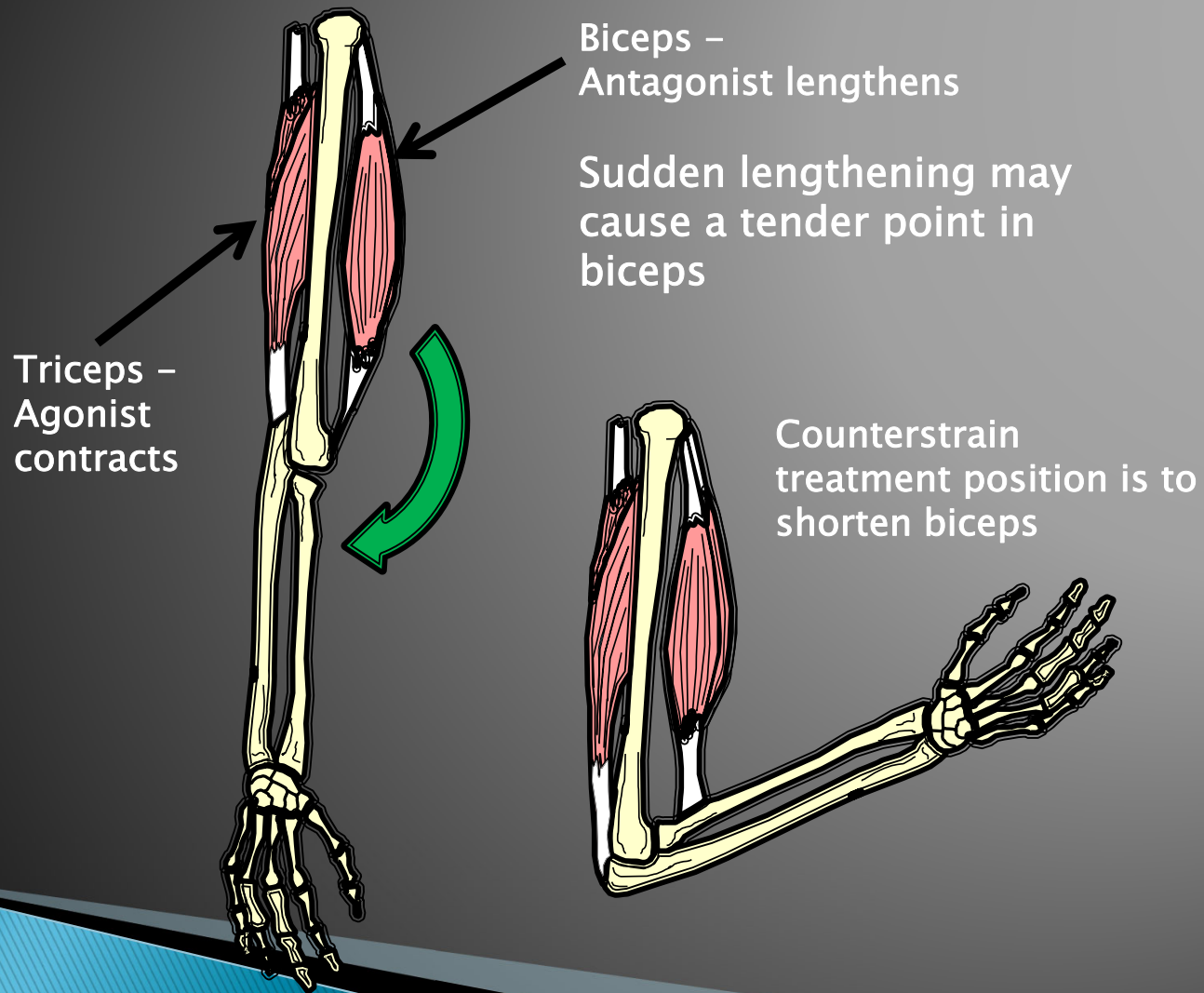
# Elbow Extension



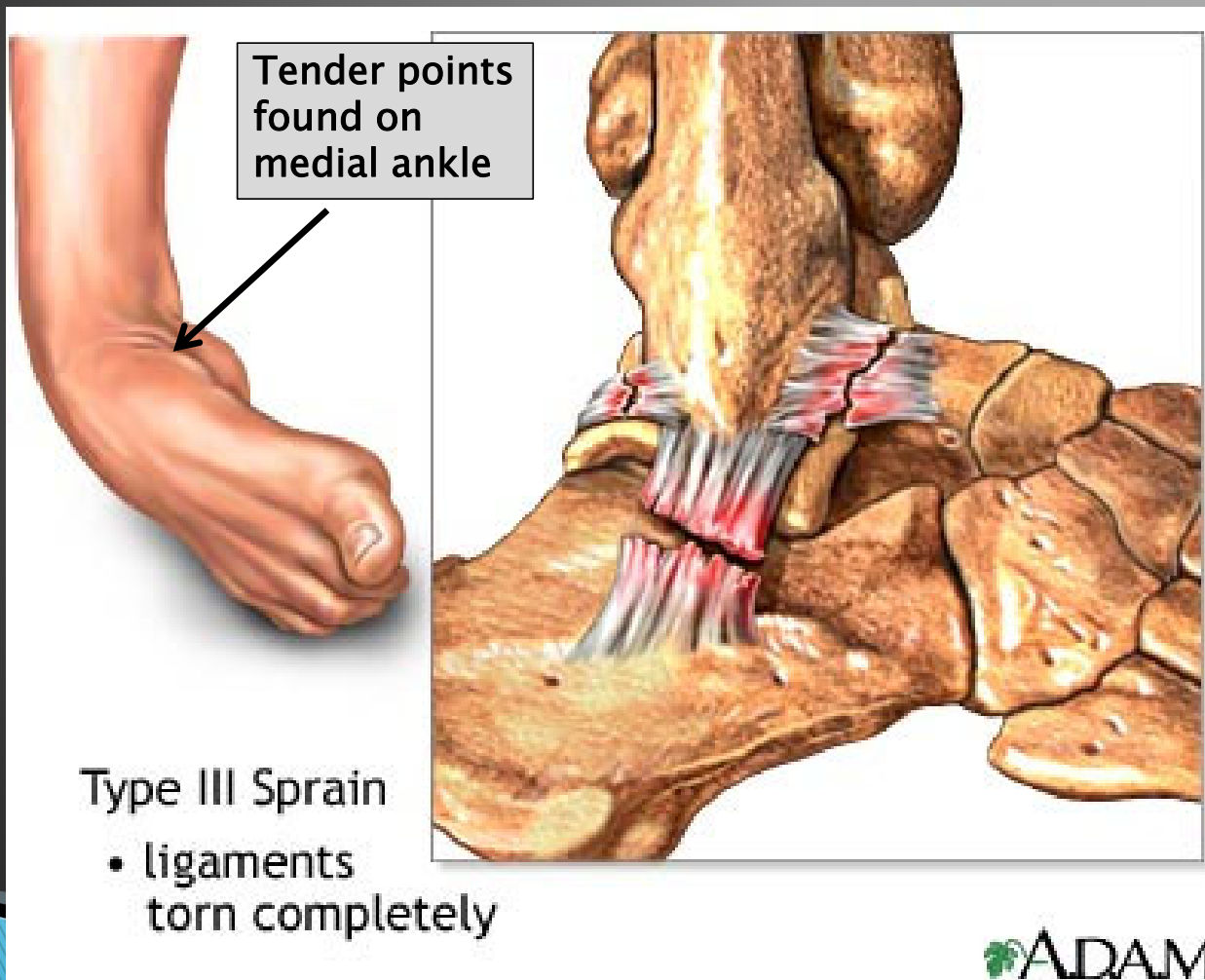
# Sudden Elbow Extension



# Elbow Extension



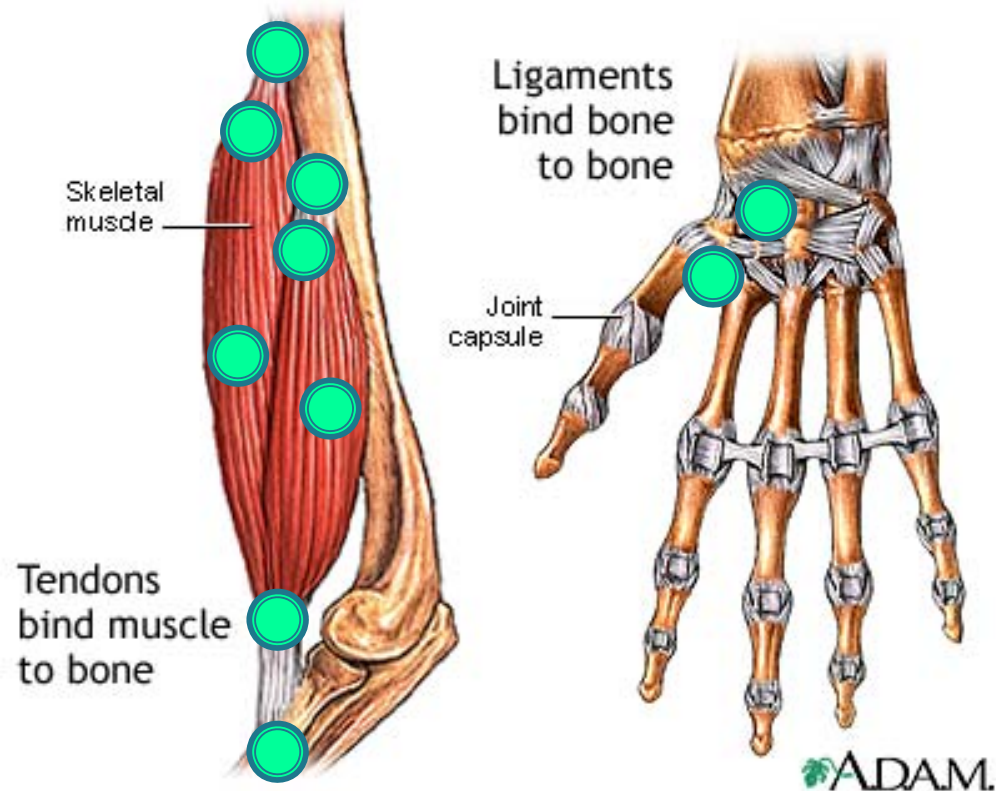
# Strain and Counterstrain



# Tender Points

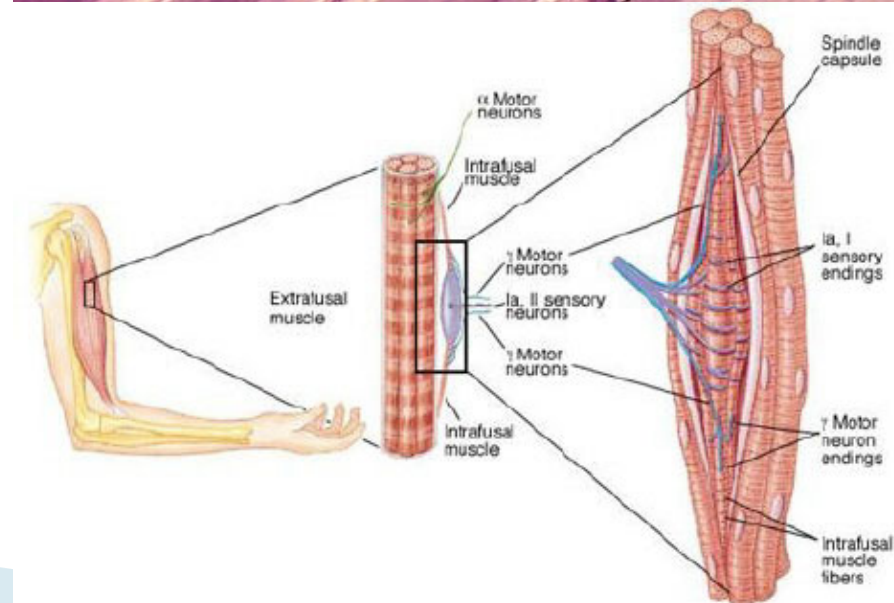
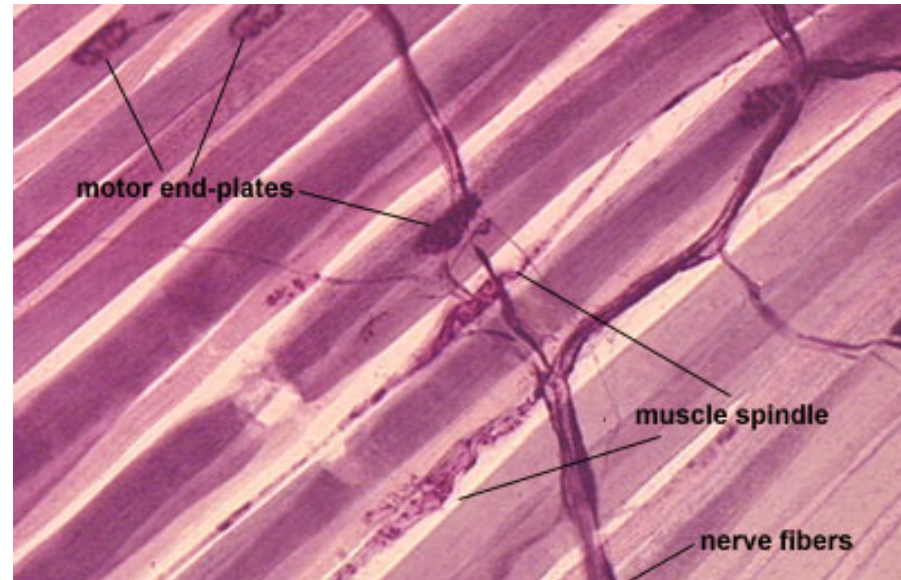
Tender points can be found in:

- Ligaments
  - Attachment to bone
  - Musculotendinous junction
- Tendons
  - Attachment to bone
  - Musculotendinous junction
- Muscles
- Fascia
  
- Fascia contains contractile elements



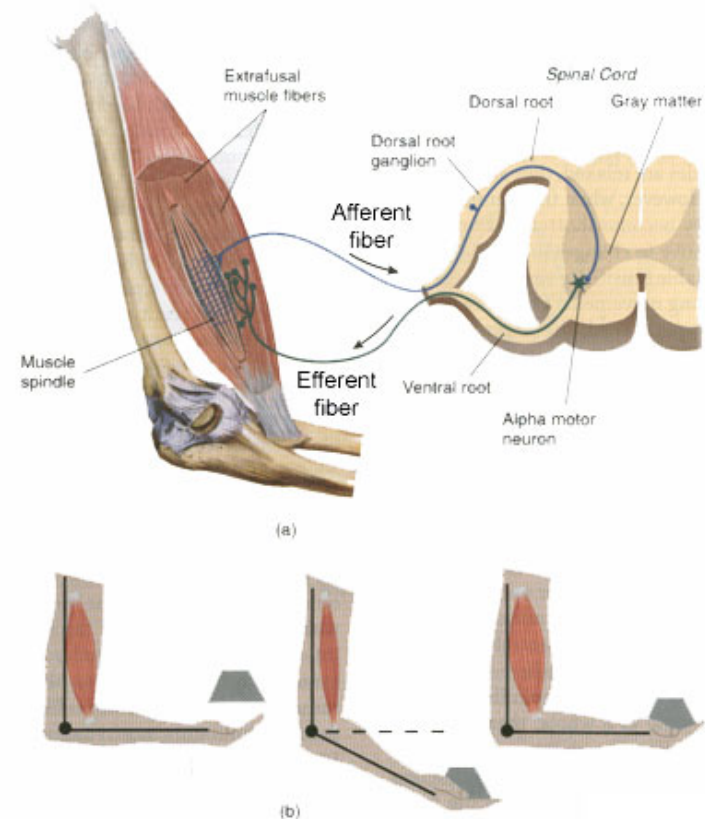
# Tender Points

Tender points usually associated with the location of a motor point – where a motor nerve pierces the fascia and enter the muscle



# Tender Points

- ▶ Sudden lengthening of muscles send nociceptive impute to CNS via afferent nerves
- ▶ CNS send efferent messages to contract antagonist to prevent injury to muscle
- ▶ An inappropriate feedback loop may result and cause local and central sensitization
- ▶ Gamma Efferent System

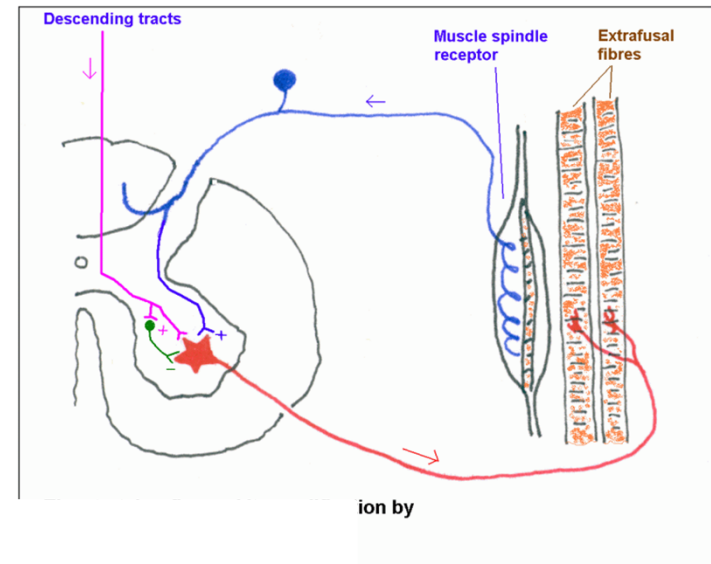


# Neurological Reflexes

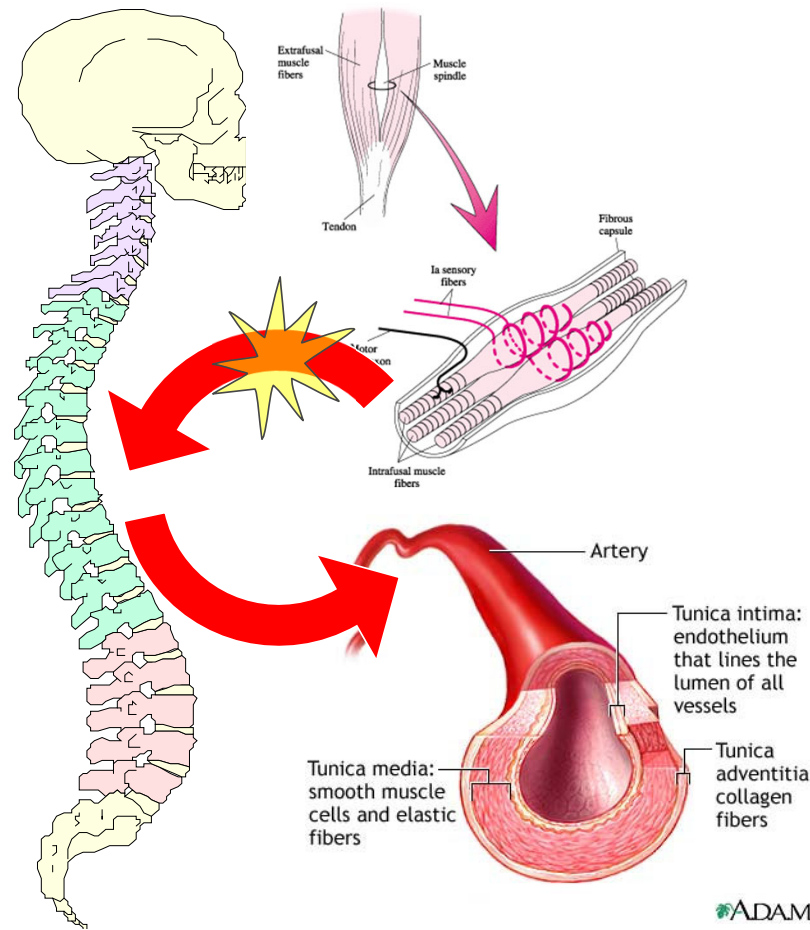
## Segmental Facilitation

- “sensitization” or “up gain”

Dysfunction of somatic structures results in hyper-irritation of neuron groups in related spinal cord segments. The result is that these areas become hyperresponsive to stimuli.

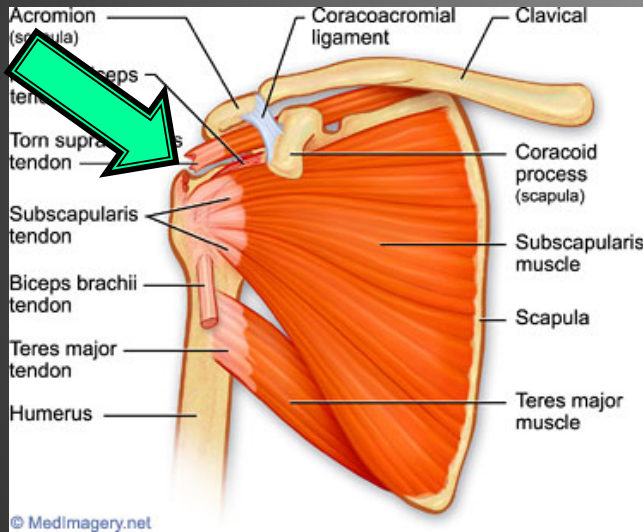


# Neurologic Reflex

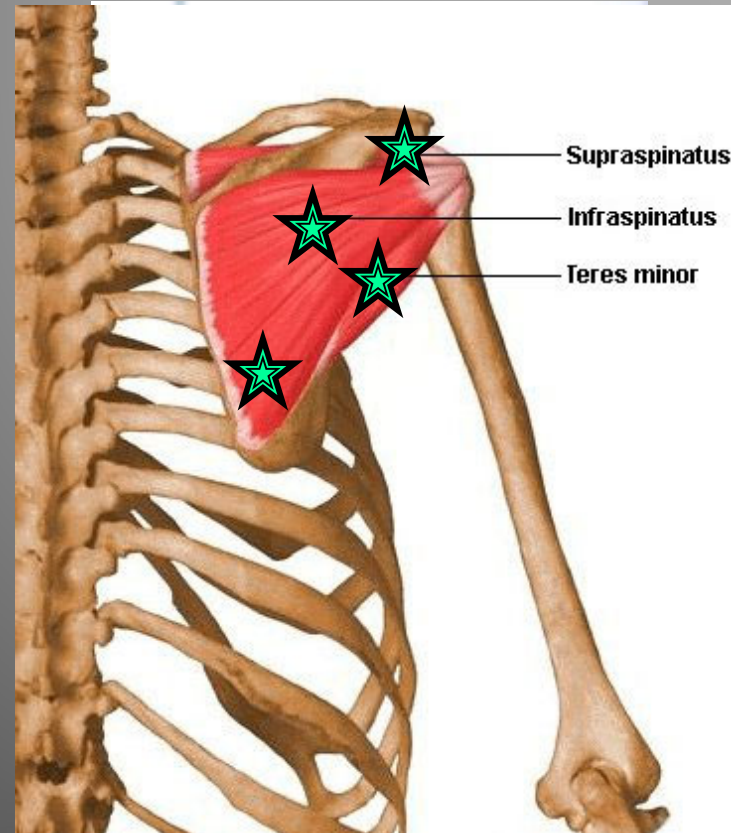


The cessation of nociceptive input into the spinal cord results in reduced sympathetic nervous system output

# Somatosomatic Reflex



Localized somatic stimuli producing patterns of reflex response in segmentally related somatic structures



# Segmental Facilitation

- ▶ Reduced excitatory threshold may develop throughout same spinal cord level
- ▶ Local changes in vascular and lymphatic tone will result



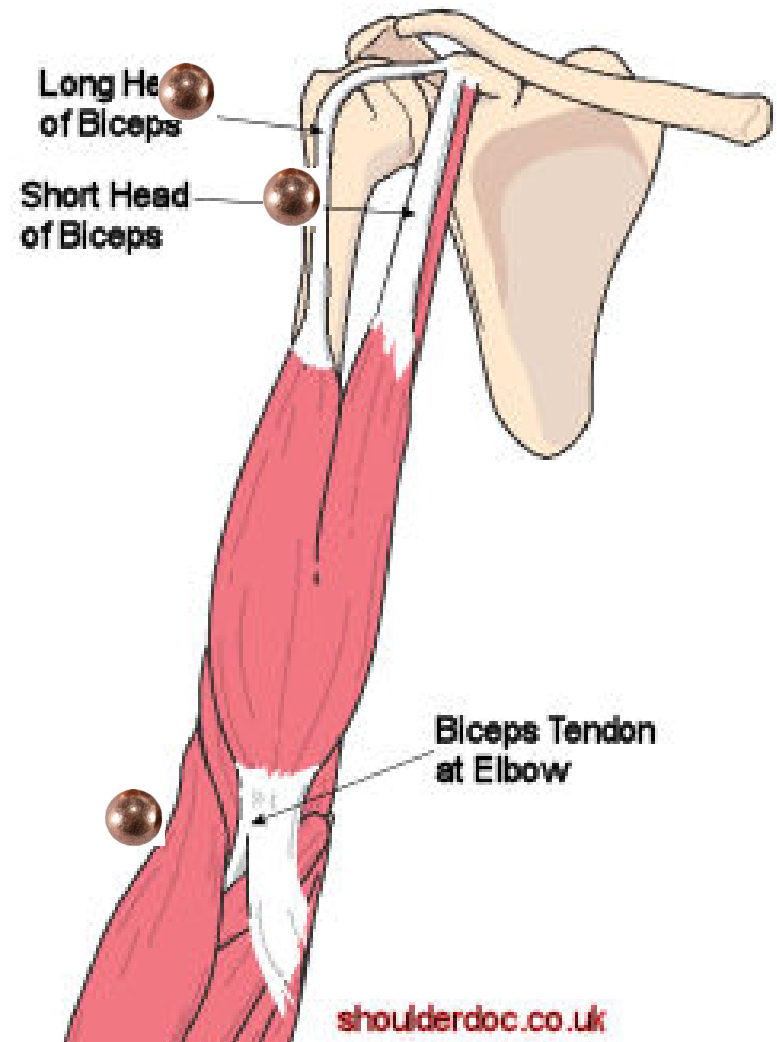
# Tender Points

- ▶ Palpate with enough direct pressure to contact the anatomic structure
- ▶ American College of Rheumatology describes tenderness with less than 4kg of pressure to be significant



# Tender Points

- ▶ Small, discrete area of hypertonicity and edema
- ▶ Tender to palpation, but may not hurt otherwise
- ▶ Patient often do not know they are present
- ▶ Feel like a small BB



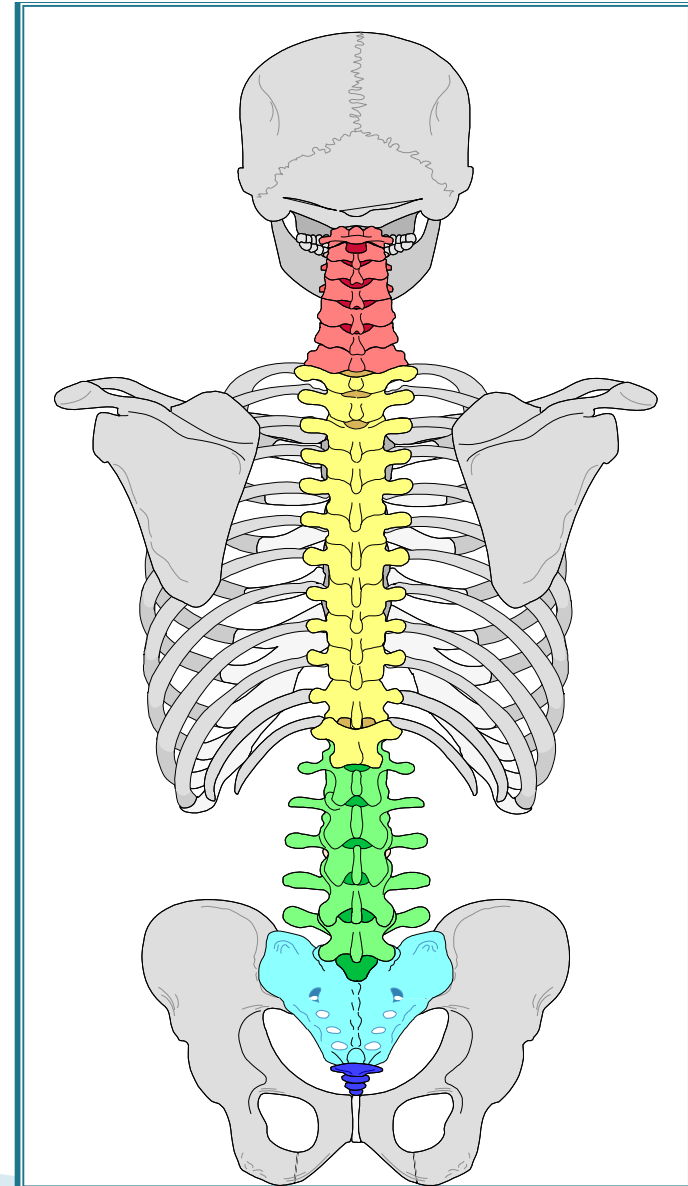
# Counterstrain Tender Points

## ▶ Thoracic

- Spinous processes
  - Midline
  - Inferolateral
- Transverse processes

## ▶ Lumbar

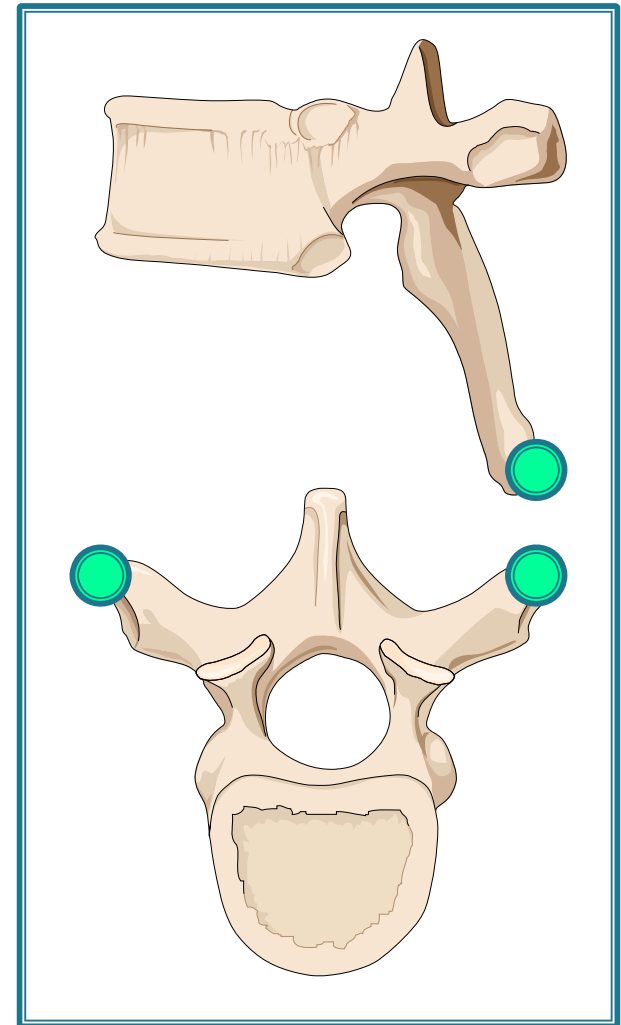
- Spinous processes
  - Midline
  - Inferolateral
- Transverse processes
- Upper Pole L5 (UPL5)



# Palpating Tender Points

## Thoracic spine

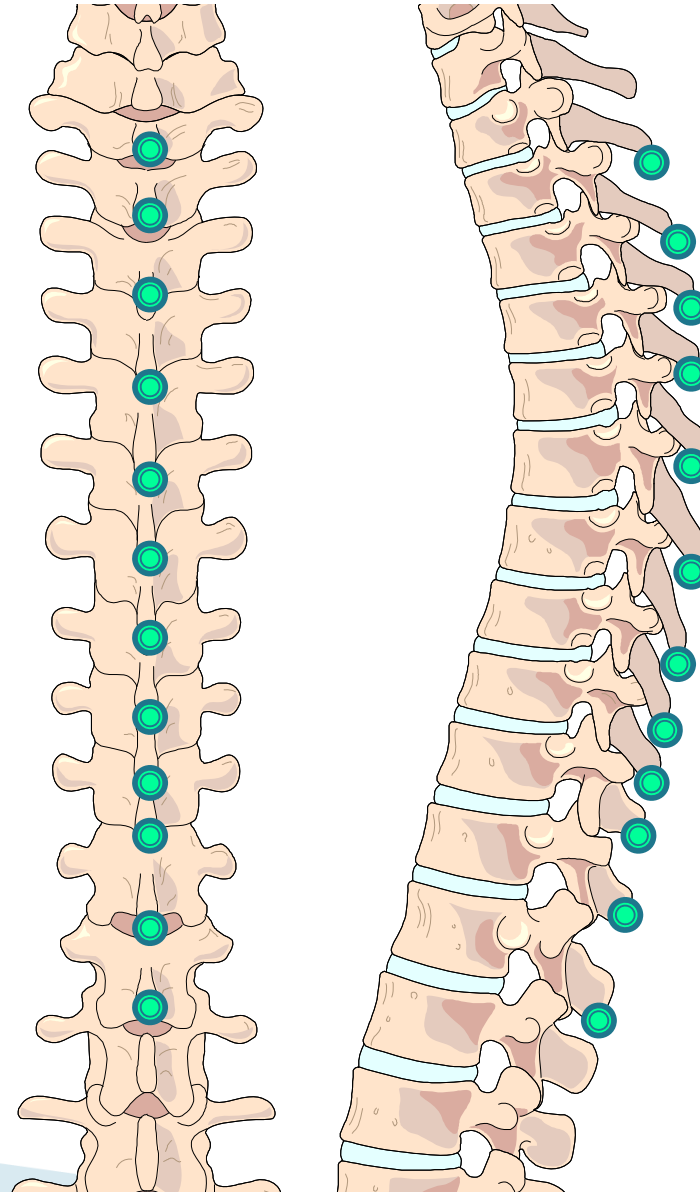
- ▶ Midline
  - On or between the spinous process
  - Inferolateral spinous process
- ▶ Lateral
  - Transverse processes



# Palpating Tender Points

## Thoracic spine

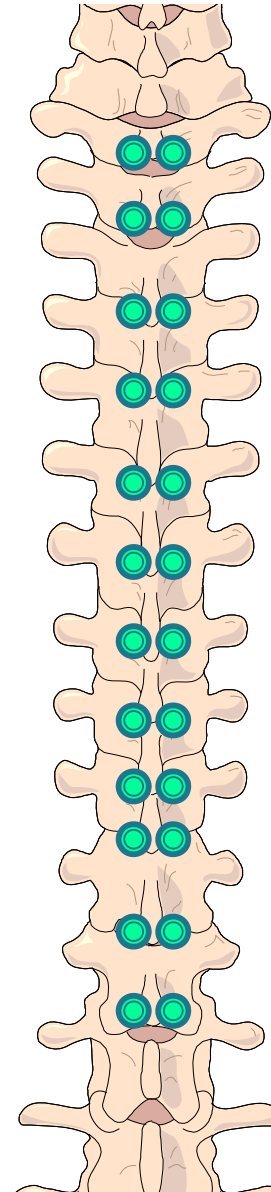
- ▶ Midline
  - On or between the spinous process
  - Inferolateral spinous process
- ▶ Lateral
  - Transverse processes



# Palpating Tender Points

## Thoracic spine

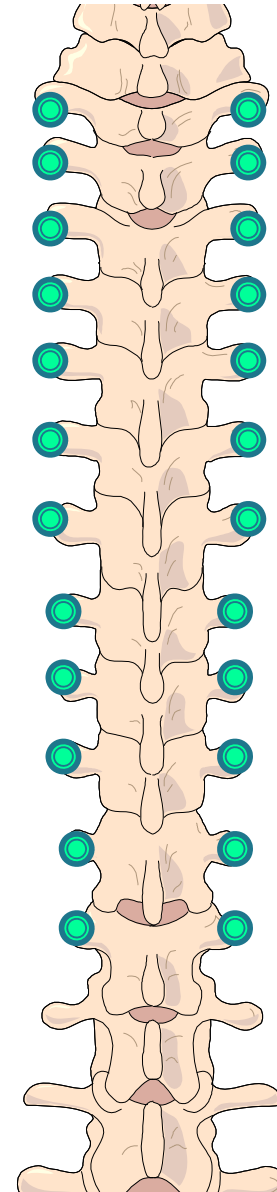
- ▶ Midline
  - On or between the spinous process
  - Inferolateral spinous process
- ▶ Lateral
  - Transverse processes



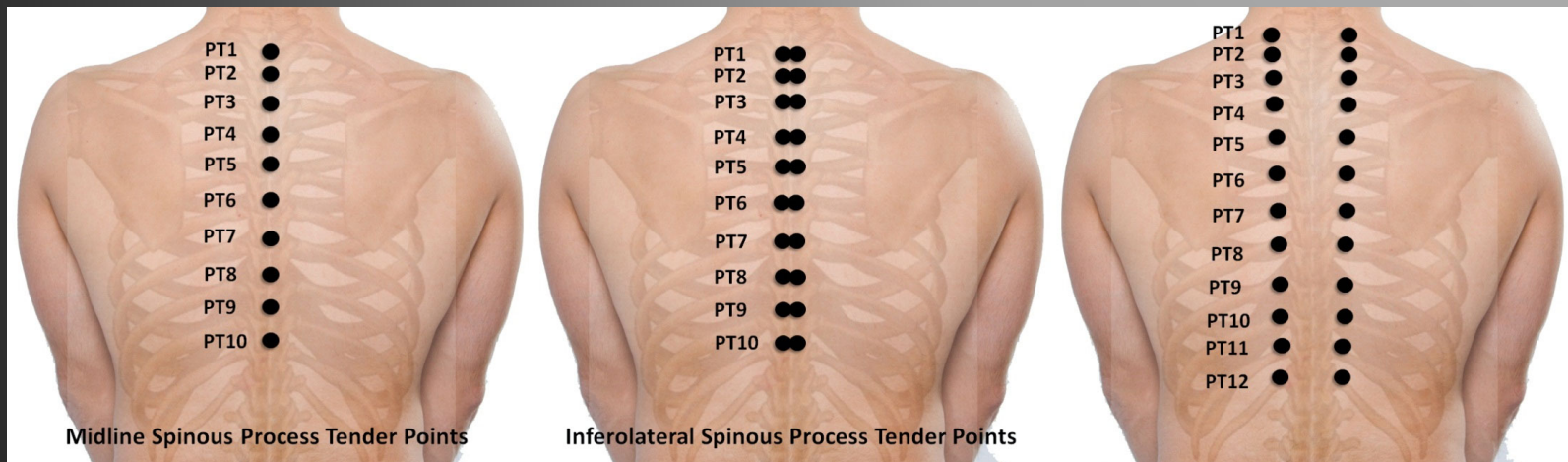
# Palpating Tender Points

## Thoracic spine

- ▶ Midline
  - On or between the spinous process
  - Inferolateral spinous process
- ▶ Lateral
  - Transverse processes



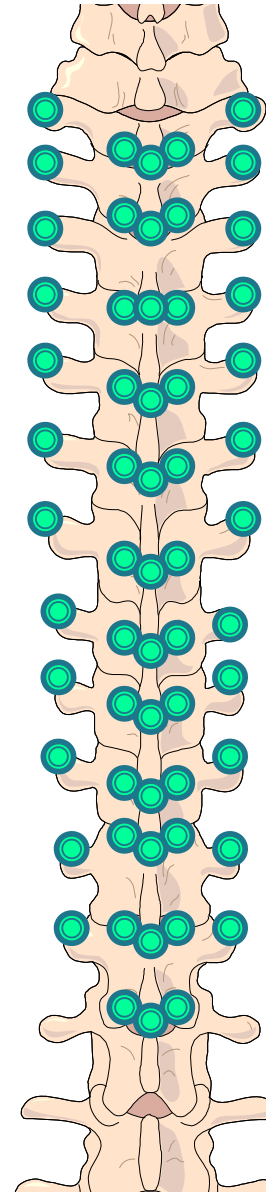
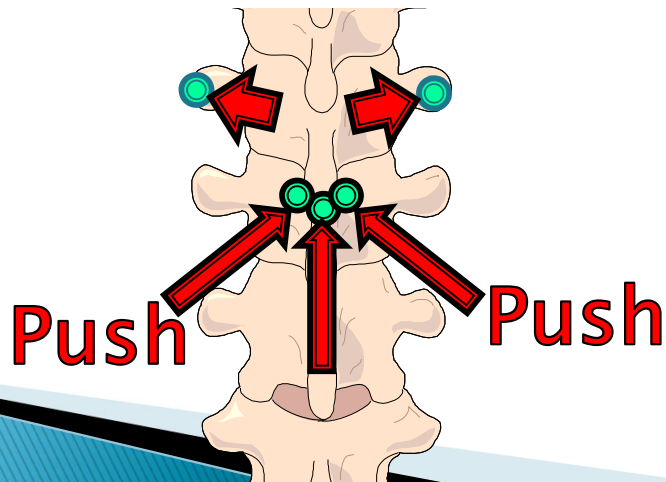
# Thoracic Tender Points



# Laboratory Exercise

## Palpate for thoracic spine tender points

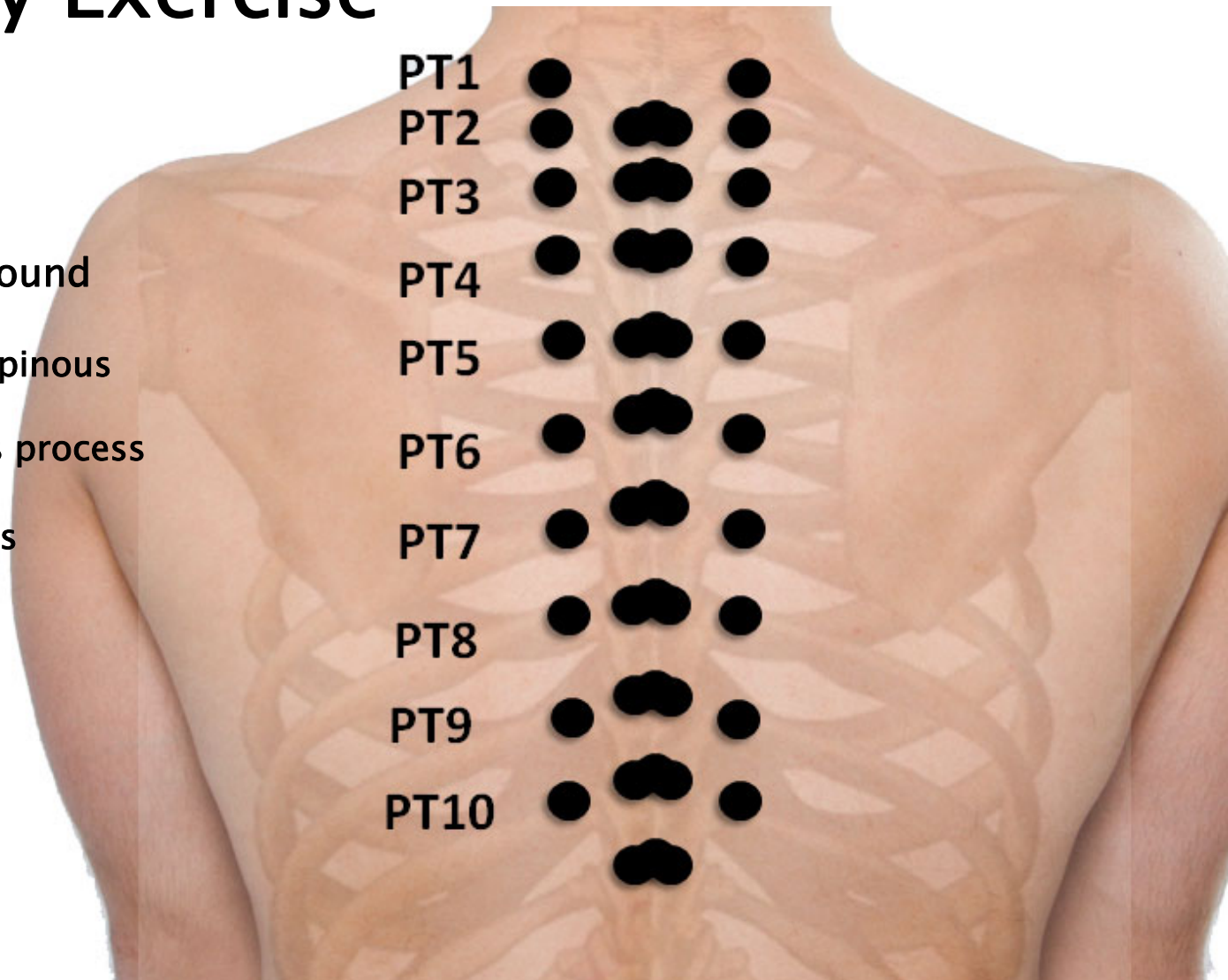
- ▶ Midline
  - On or between the spinous process
  - Inferolateral spinous process
- ▶ Lateral
  - Transverse processes



# Laboratory Exercise

Circle all tender points found

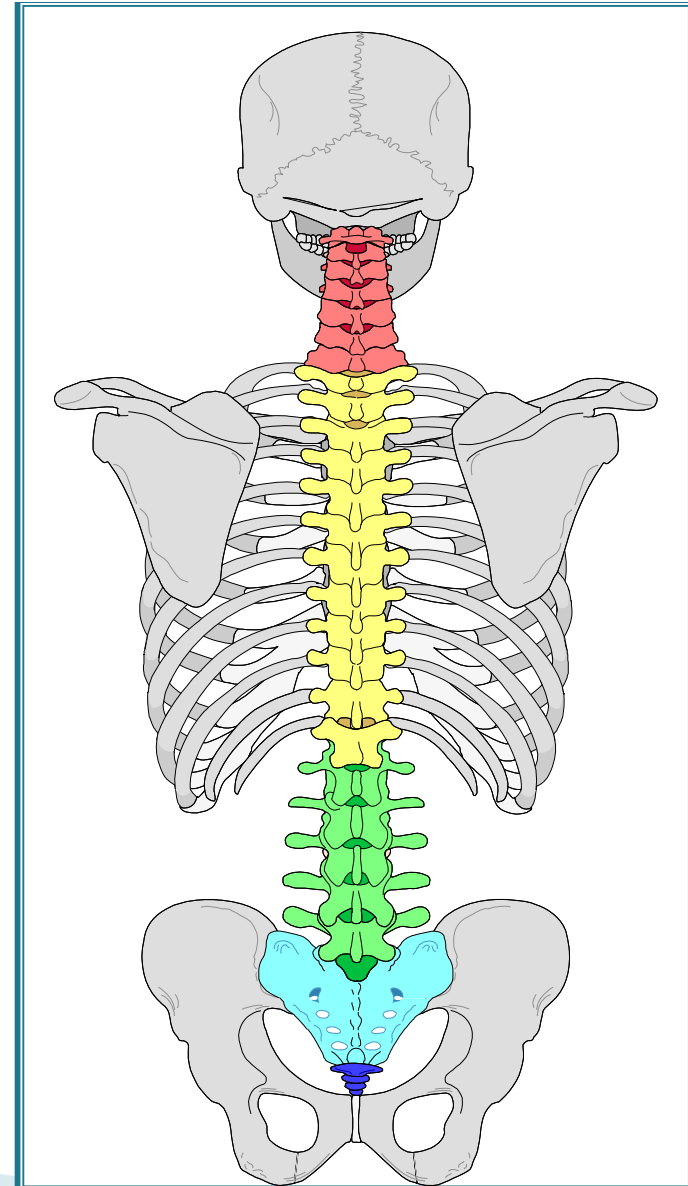
- Midline
  - On or between the spinous process
  - Inferolateral spinous process
- Lateral
  - Transverse processes



# Thoracic Tender Points

## Naming Tender Points

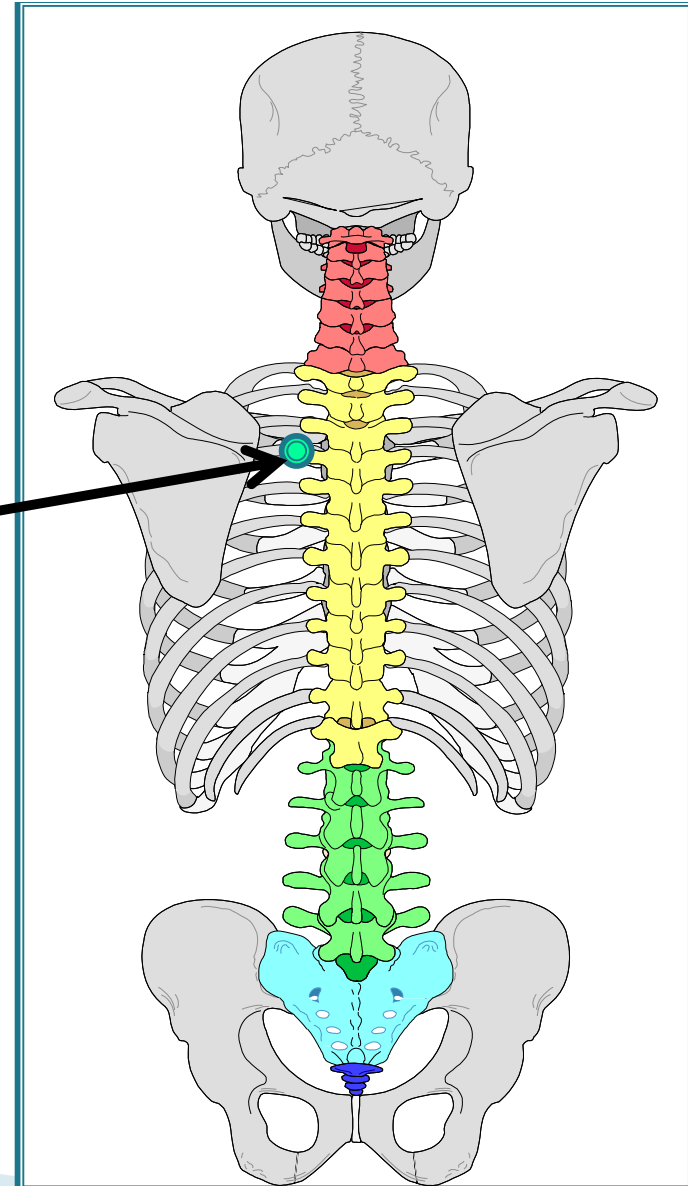
- ▶ The vertebral level
- ▶ Anterior vs Posterior
- ▶ Lateral versus Midline
- ▶ Left versus Right



# Thoracic Tender Points

## Naming Tender Points

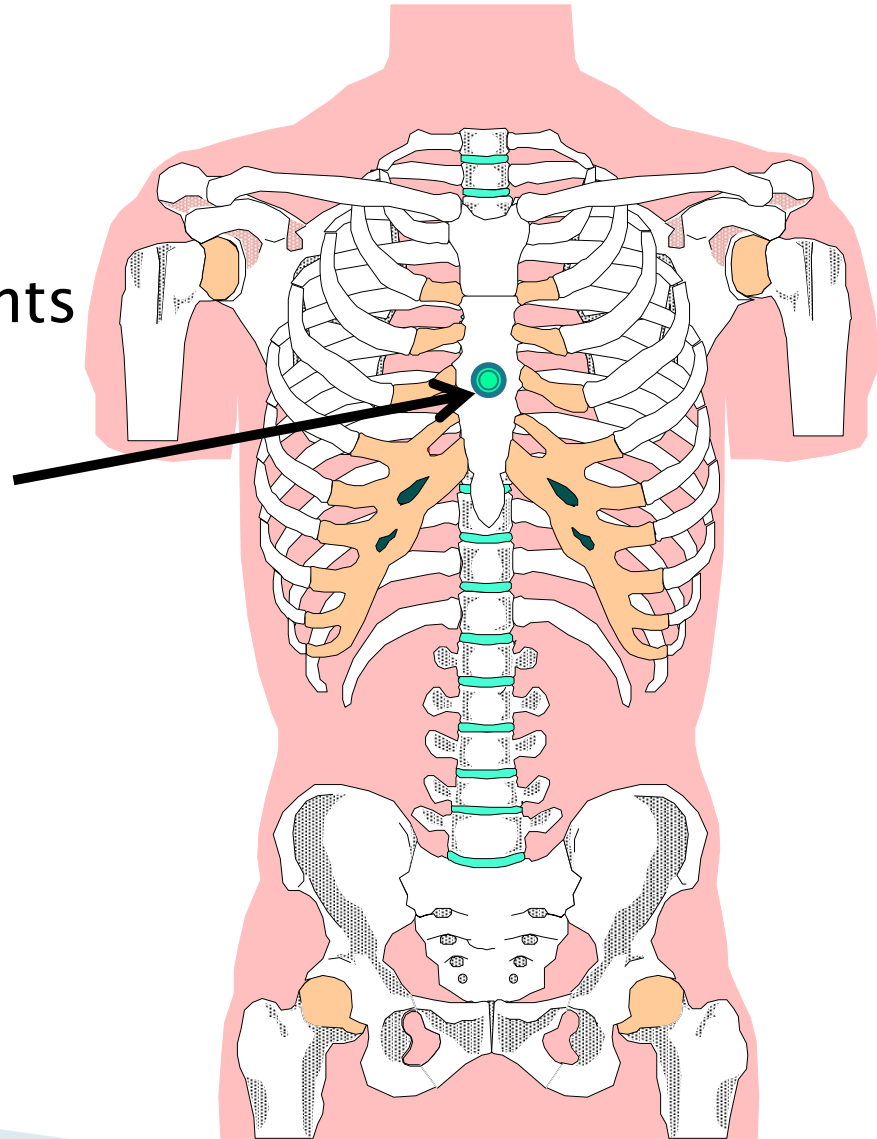
- ▶ Left Lateral Posterior T4
- ▶ Left T4 Transverse Process



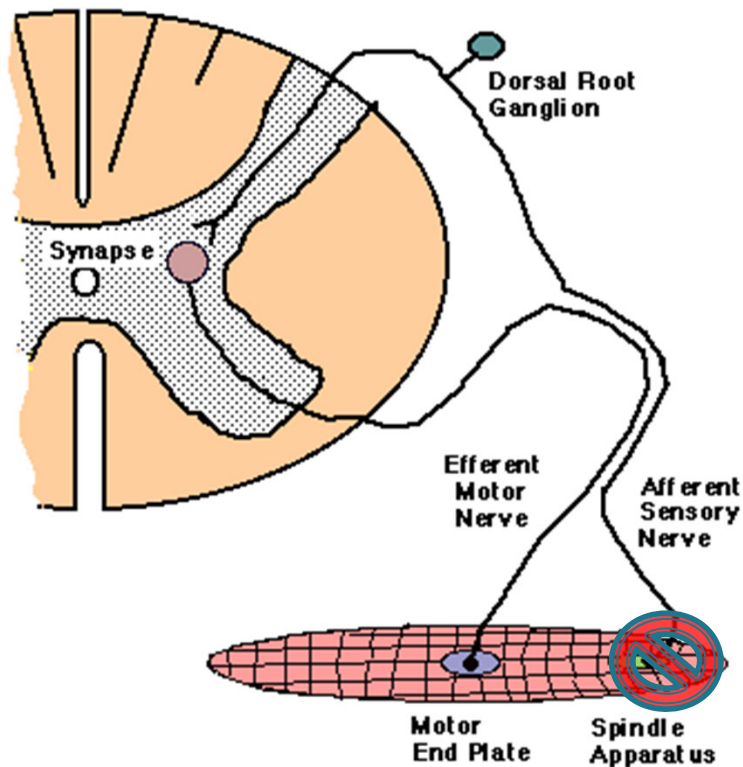
# Thoracic Tender Points

Naming Tender Points

- ▶ Anterior T4



# Counterstrain Treatment



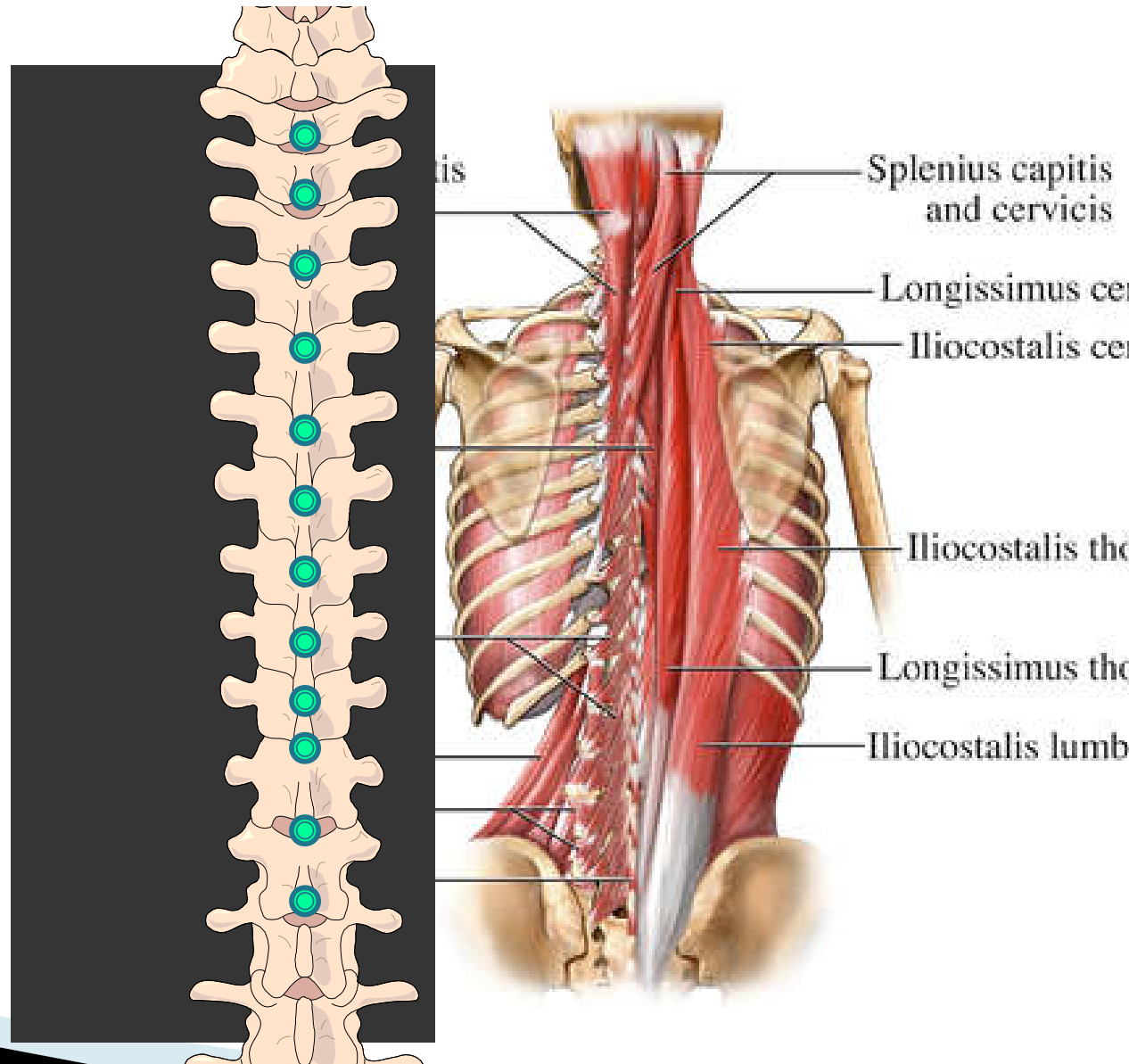
Approximate the **origin** and the **insertion** of the affected structure to diminish nociceptive input into CNS and stop the offending reflex arc

Hold for 90 seconds

# Anatomy

## Posterior Thoracic

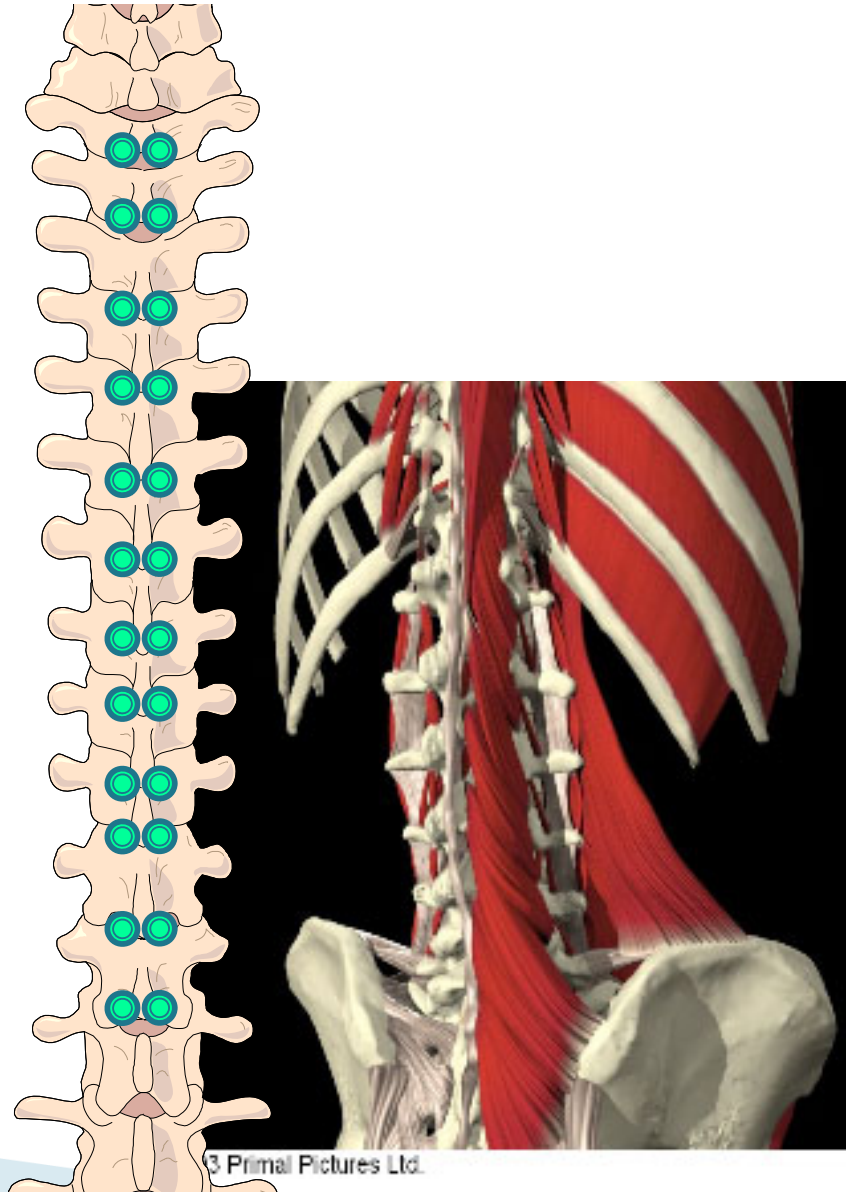
- ▶ Midline
  - On or between the spinous process
- ▶ Interspinalis
- ▶ Multifidus
- ▶ Spinalis thoracic
- ▶ Semispinalis thoracic (T1–6)



# Anatomy

## Posterior Thoracic

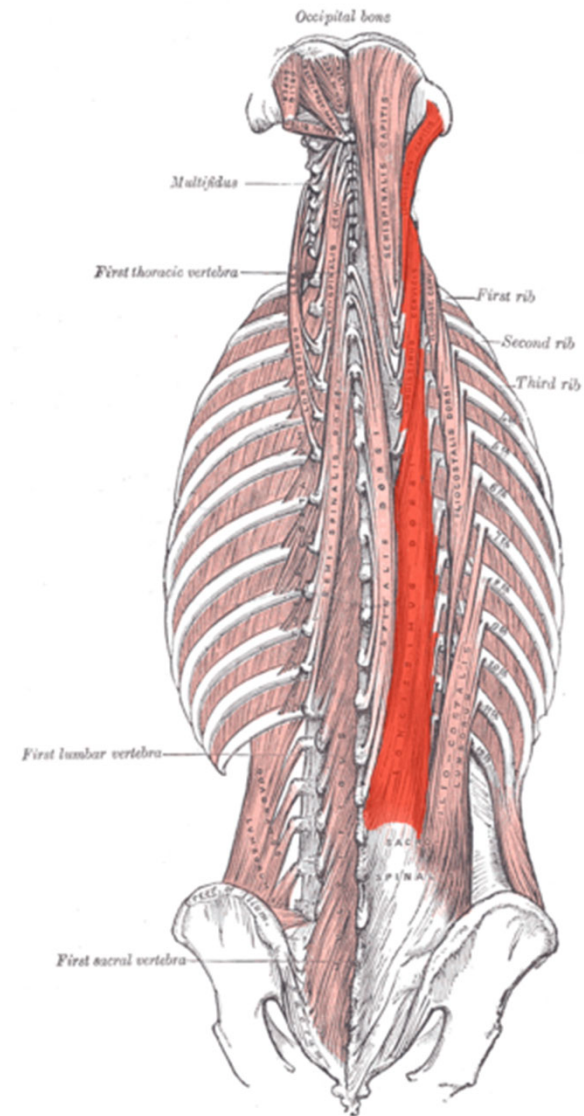
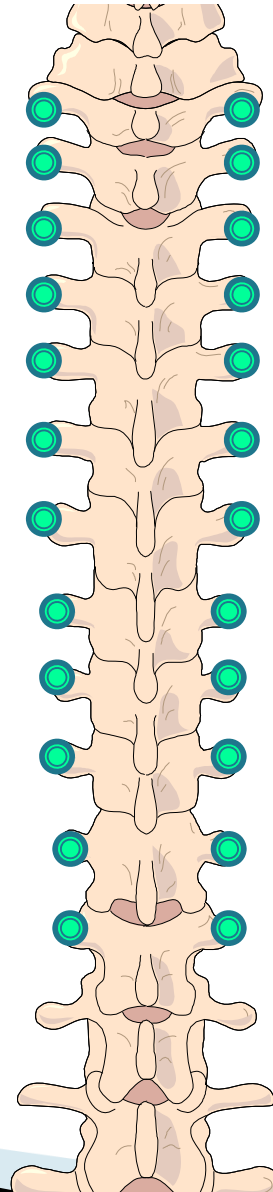
- ▶ Midline
  - Inferolateral spinous process
- ▶ Multifidus
- ▶ Rotatores
- ▶ Semispinalis thoracic (T1–6)



# Anatomy

## Posterior Thoracic

- ▶ Lateral
  - Transverse processes
- ▶ Levatores Costarum
- ▶ Longissimus thoracis
- ▶ Iliocostalis



## PT1-2 Spinous Process Locations

Midline spinous process tender points

Found midline on tip of spinous processes

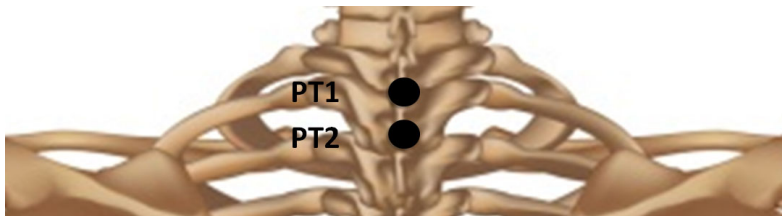
### Treatment

1. Supine or prone
2. Midline – Pure cervical extension without sidebending

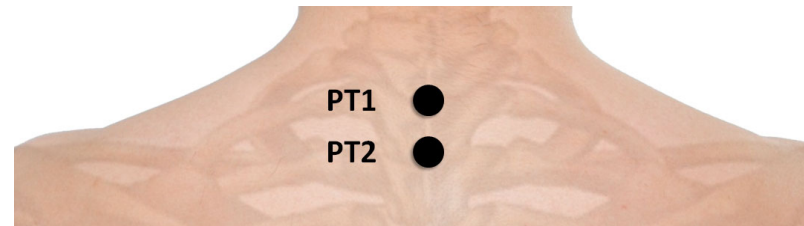
Note: Avoid excessive tension on anterior cervical fascia

*E*

### Anatomical Considerations



iCounterstrain p 55



Midline PT2 SP Tender Point Treatment

## PT1-2 Spinous Process Locations

Inferolateral spinous process tender points

Found on inferolateral aspect of spinous processes

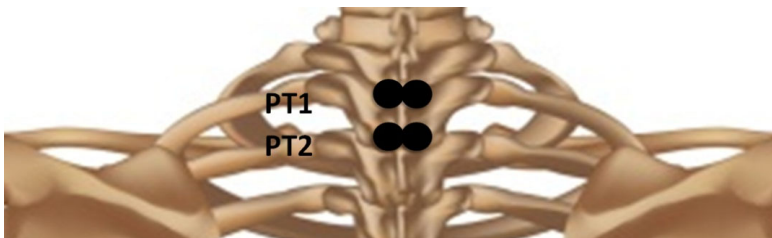
### Treatment

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

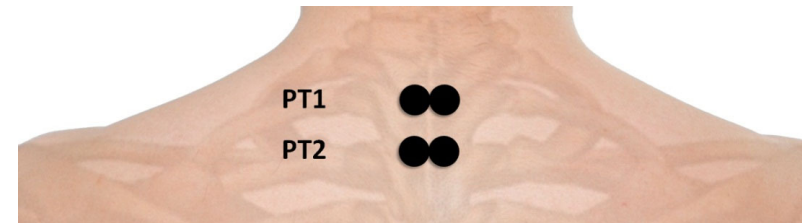
Note: Avoid excessive tension on anterior cervical fascia

### ESaRa

### Anatomical Considerations



iCounterstrain p 56



## PT1-2 Transverse Process Locations

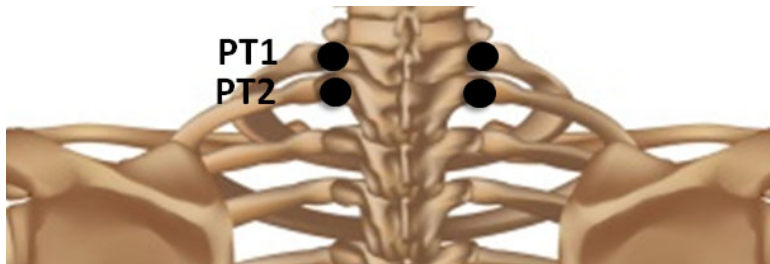
Found on posterior aspect of corresponding transverse processes

### Treatment

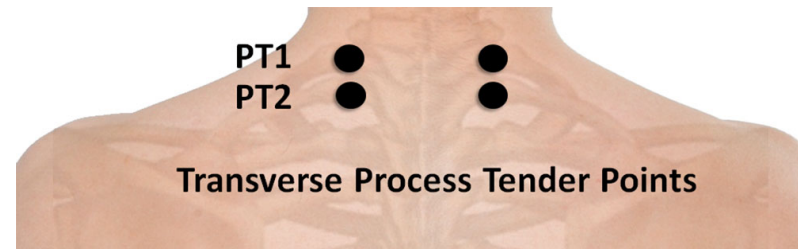
1. Supine or prone
2. Thoracic extension using head and neck with rotation towards and sidebending away from point

*ESaRt*


### Anatomical Considerations



iCounterstrain p 60



# Counterstrain Treatment

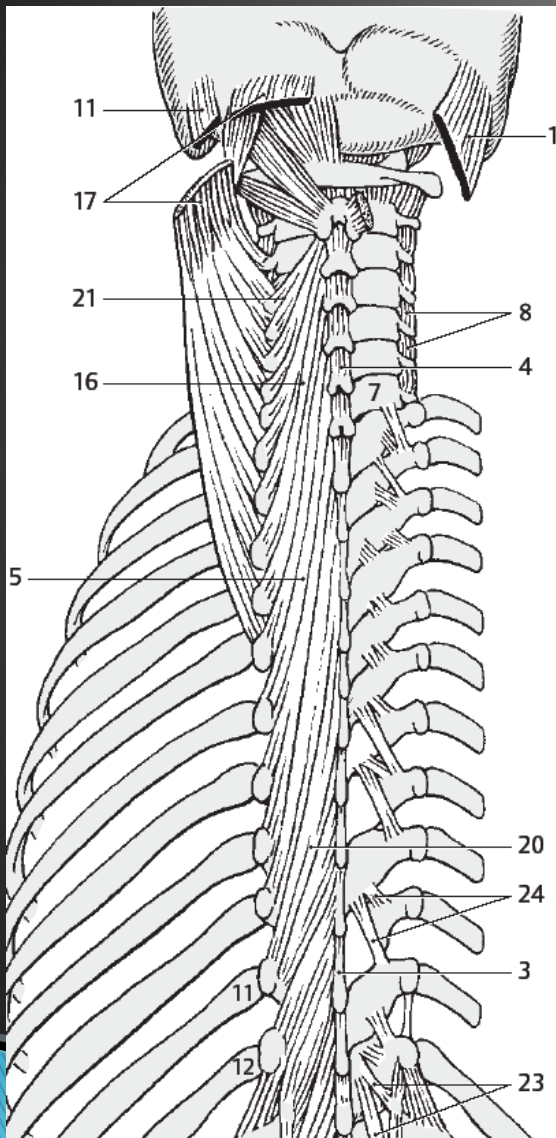
1. Find the tender point
  2. Establish a pain scale - Ex. "This is a dollar worth of pain"
  3. Position in standard treatment position – Usually wrap the body around the point or approximate the origin and insertion of the affected structure
  4. Recheck TP – "If you had a dollars worth of pain before, how much is left now"
    1. Goal is Zero - minimum is 30% of original pain (30¢)
    2. Fine tune position for maximum effect
  5. Monitoring finger decreases tissue pressure
    1. As tissue perfusion improves sometimes a therapeutic pulse is noticed
  6. Hold treatment position for 90 seconds – patient must be relaxed
  7. **Slowly** return to neutral
  8. Recheck point –Goal is Zero on pain scale - - minimum is 30% of original pain
- 

## Lab Exercise – Posterior T1–T2

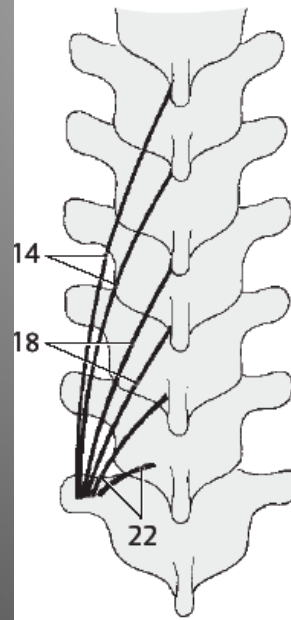
1. Find the tender point
2. Establish a pain scale
3. Position in standard treatment position
4. Recheck TP –Goal is Zero – minimum is 30% of original pain
5. Fine tune position for maximum effect
6. Hold treatment position for 90 seconds
7. **Slowly** return to neutral
8. Recheck point



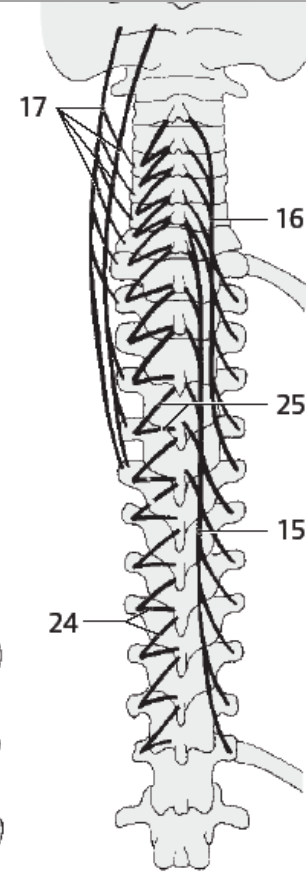




Interspinalis  
 Rotatores  
 Multifidus  
 Spinalis thoracis  
 Semispinalis thoracis (T1-6)



**C** Transversospinales muscles



**B** Transversospinales muscles

## PT3-10 Spinous Process Locations

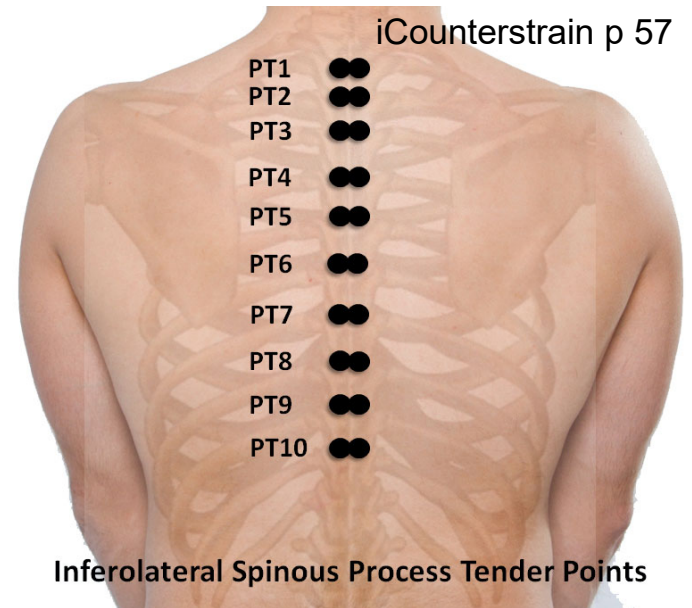
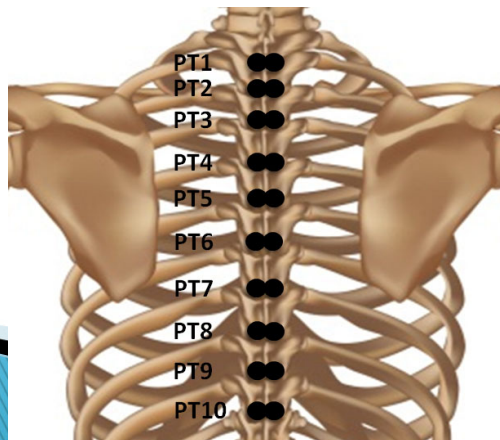
1. Midline: On tip of spinous processes
2. Inferolateral: On inferolateral aspect of spinous process

## Treatment

1. Prone or supine
2. Midline: Pure thoracic extension without sidebending down to level of point
3. Inferolateral: Thoracic extension with rotation and sidebending away from point by pulling contralateral shoulder inferior and posterior, creating slight extension and rotation away from point

**ESaRa**

## Anatomical Considerations



## PT3-10 Transverse Process Locations

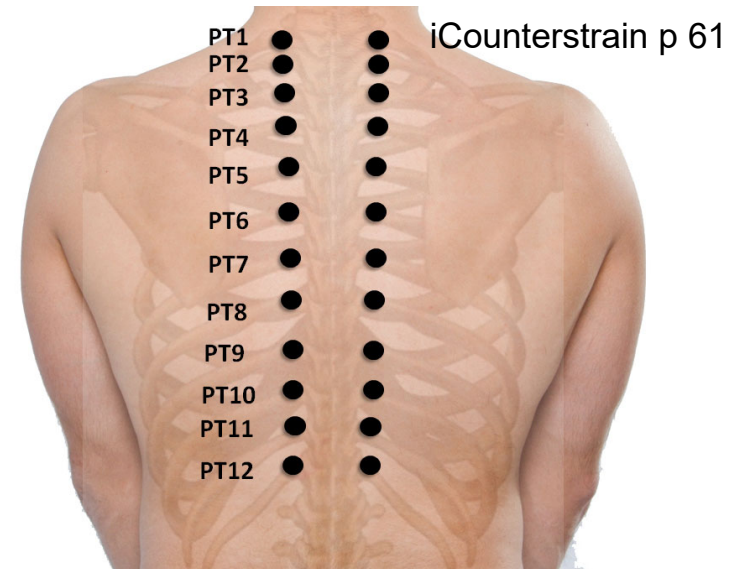
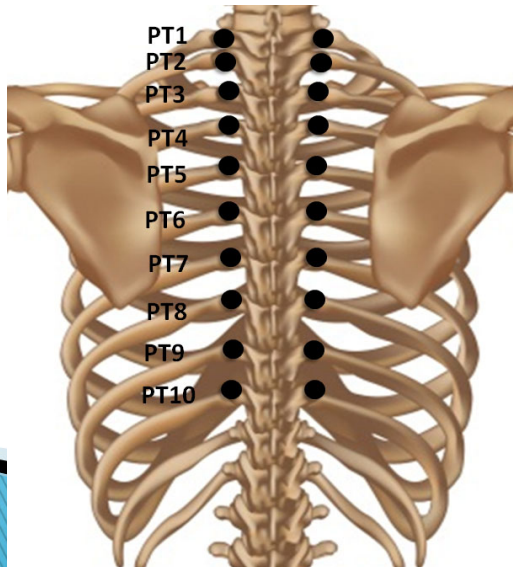
Found on posterior aspect of corresponding transverse processes

### Treatment

1. Prone
2. Rotate head towards point
3. Sidebend trunk away from point by abducting ipsilateral shoulder, creating slight extension and rotation towards point

### ESaRt

### Anatomical Considerations



## PT11-12 Transverse Process Locations

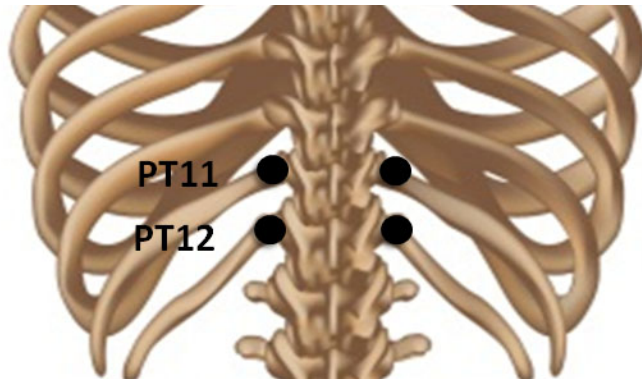
Found on corresponding transverse processes

### Treatment

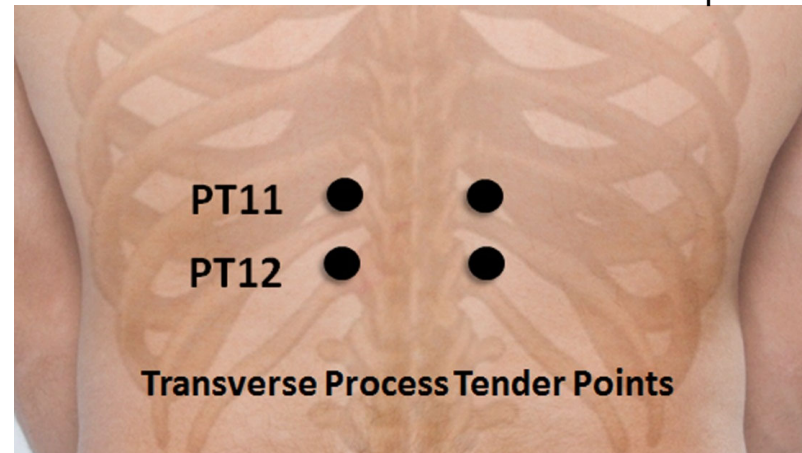
1. Prone
2. Extend ipsilateral trunk by rotating pelvis towards (**trunk away**) point or by extending ipsilateral hip, creating slight extension and sidebending away from point

*ESaRt*

### Anatomical Considerations

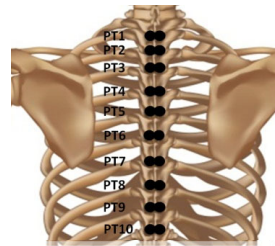


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## Lab Exercise – Posterior T3–T12

1. Find the tender point
2. Establish a pain scale
3. Position in standard treatment position
  1. Recheck TP –Goal is Zero – minimum is 30% of original pain
  2. Fine tune position for maximum effect
  3. Monitor tender point
  4. Hold treatment position for 90 seconds
  5. **Slowly return** to neutral
  6. Recheck point



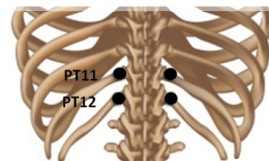
R/L Spinous Processes



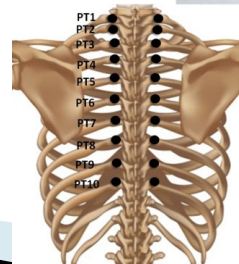
Right PT7 SP Tender Point Treatment



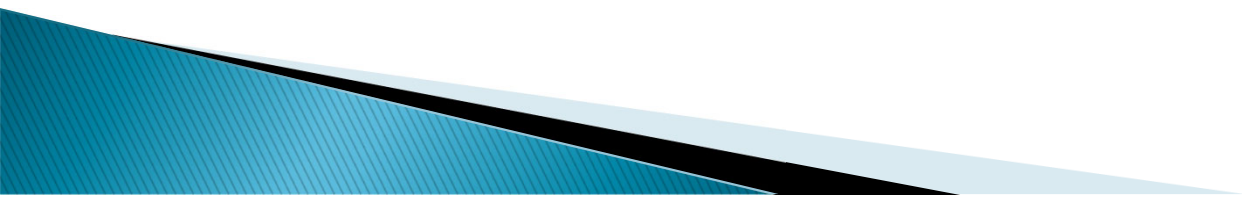
Right PT12 TP Tender Point Treatment



Transverse Processes



Right PT8 TP Tender Point Treatment



# How Do You Get Tenderpoints?

Posterior Thoracic

- ▶ Extension injuries
- ▶ Sudden strains
- ▶ Overuse
- ▶ Weekend Warrior

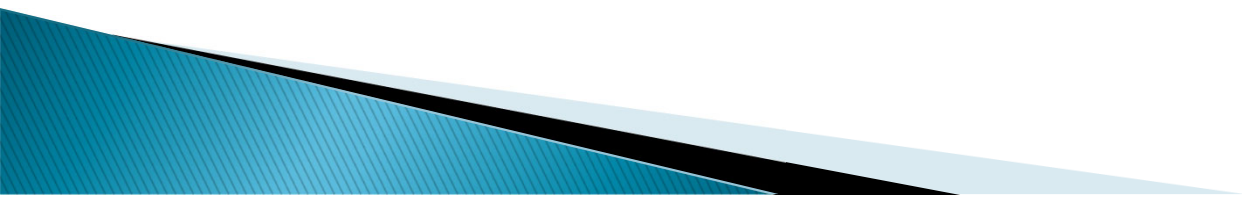


# Technique Modalities

Over twenty different types of techniques listed in the AOA glossary.

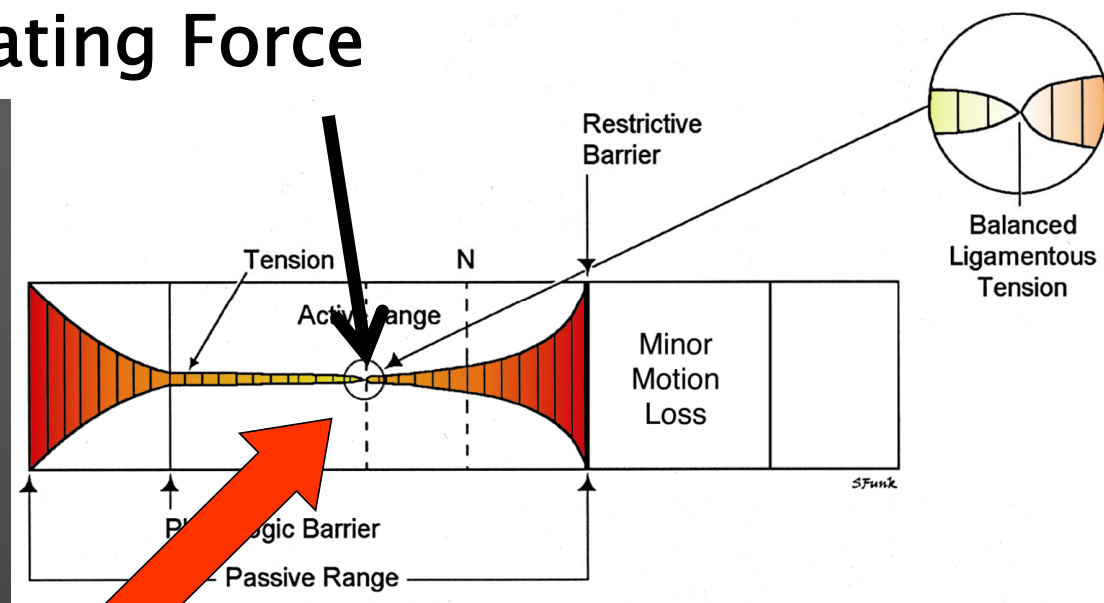
Usually classified as

- ▶ Indirect (away from the motion barrier)
- ▶ Direct (towards the motion barrier)
- ▶ Combination of both



# Counterstrain

## Activating Force



Hold tissues  
here for 90 sec

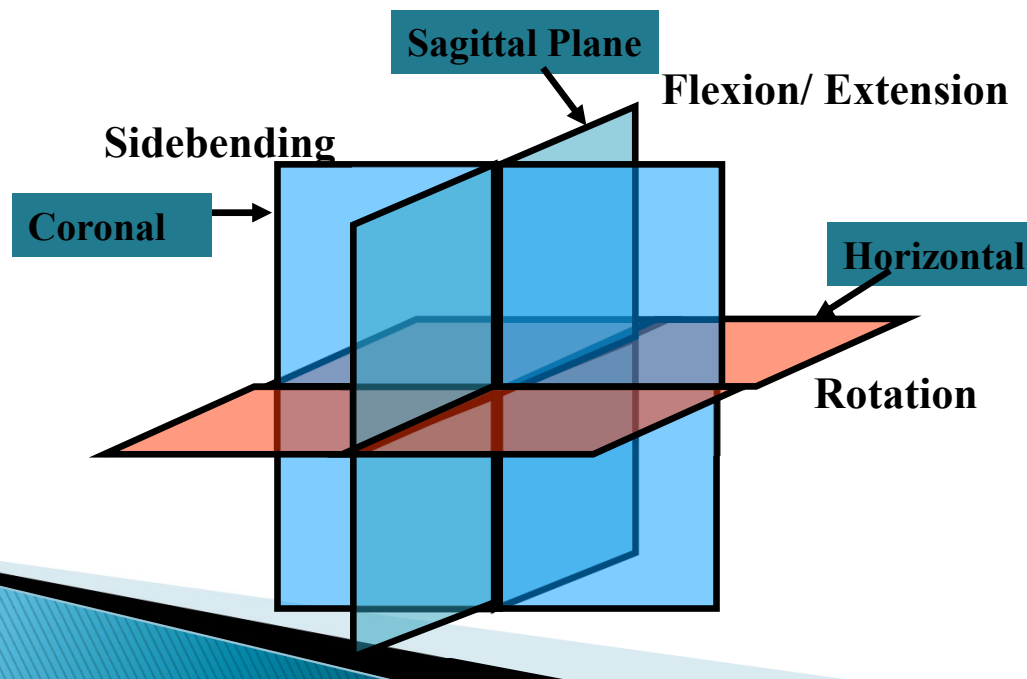
# Counterstrain

- ▶ Body adapts to injury to reduce further irritation of affected structures
- ▶ This adaptation reduces irritation to affected areas, but may cause strain on other structures to protect injured site
- ▶ To treat the patient's strain, the physician counters the strain by reintroducing the original strain, which is the point of ease




# Counterstrain

- ▶ Balance the tissue tensions in all three planes
- ▶ At the point of balance the tissue will soften



# Counterstrain

- ▶ At the point of balance the tissue will soften
  - ▶ Rechecking the tender point will reveal reduced tenderness – “0” optimum
  
  - ▶ As the point “releases” the tissue will
    - Become warm
    - Develop a “pulsation” sensation – **Therapeutic Pulse**
  - ▶ Hold for 90 seconds
  - ▶ Slowly return to neutral
- 

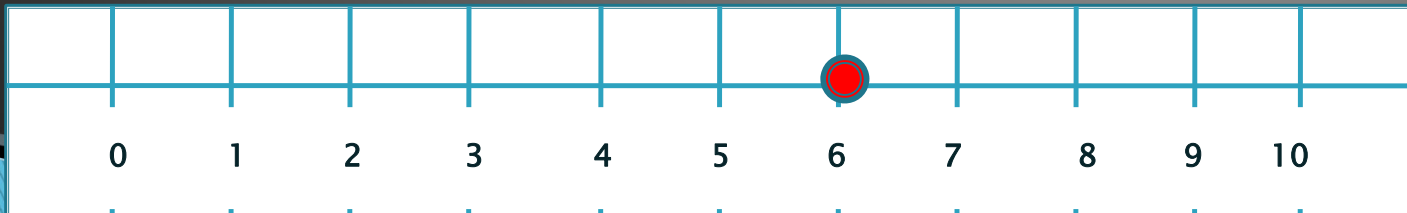
# Pain Scale




60 ¢

If you had a dollars worth of pain before, how much is left?

If your pain was a 10 before, how much is left?



# Counterstrain

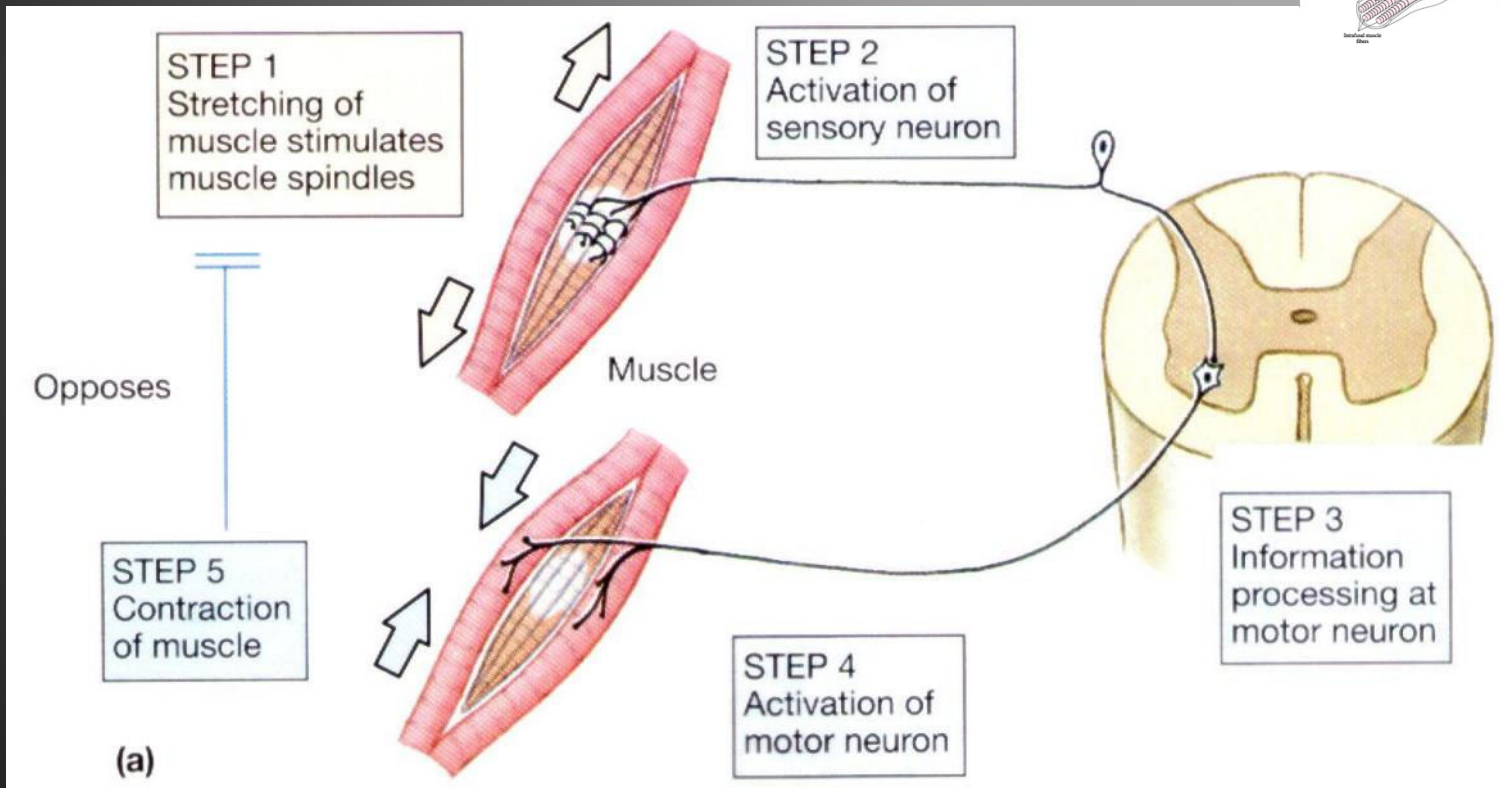
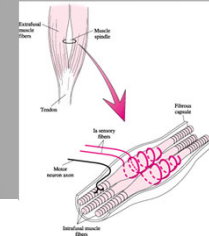
- ▶ At the point of balance the tissue will soften
  - ▶ Rechecking the tender point will reveal reduced tenderness – “0” optimum
  - ▶ As the point “releases” the tissue will
    - Become warm
    - Develop a “pulsation” sensation – **Therapeutic Pulse**
  - ▶ Hold for 90 seconds
  - ▶ Slowly return to neutral
- 

# Counterstrain

- ▶ As the point “releases” the tissue will
  - Becomes very warm
  - Develop a “pulsation” sensation
  - Tissue will relax and feel heavy




# Counterstrain



# Theories of Counterstrain Technique

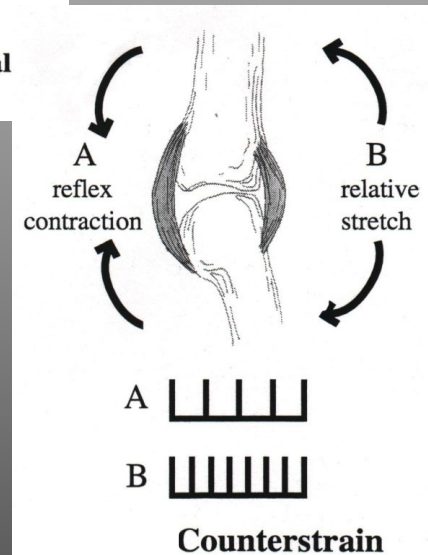
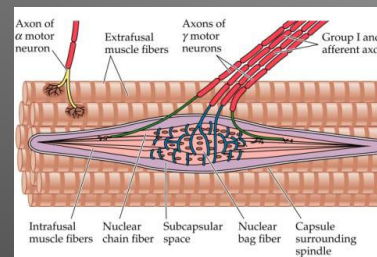
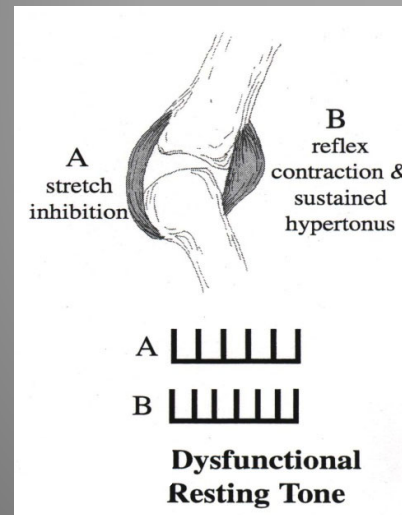
## Proprioceptive Theory

**The Proprioceptive Theory** proposes that tender points develop when muscle fibers are maintained in a hypertonic state due to an inappropriate proprioceptive reflex following an injury. During an injury, muscle spindles (composed of afferent sensory and gamma efferent nerves) are rapidly stretched, which causes the muscle being stretched (agonist) to reflexively contract to avoid further injury (through activation of alpha motor neurons). The reflexive contraction of the agonist muscle results in a sudden lengthening of the antagonist muscle. The sudden lengthening of the antagonist muscle likewise causes a reflexive contraction. The two opposing muscle contractions may lead to a muscular imbalance that manifests as altered motor neuron activity and tender points in the antagonist muscle which can persist after the original injury heals. Counterstrain treatment uses precise body positioning to shorten the antagonist muscle and reduce the muscle spindle activity and abnormal muscle contractions of both the agonist and antagonist muscles.



# How Does Counterstrain Work??

- ▶ Stops the feedback loop to the spinal cord
- ▶ Counterstrain resolves the inappropriate proprioceptive reflex
  - Tenderpoints are in antagonist muscle
  - Tx shortens antagonist muscle to reduce spindle feedback
  - Slow return to neutral to avoid reactivation
  - Gamma Gain Theory
  - Proprioceptive Theory



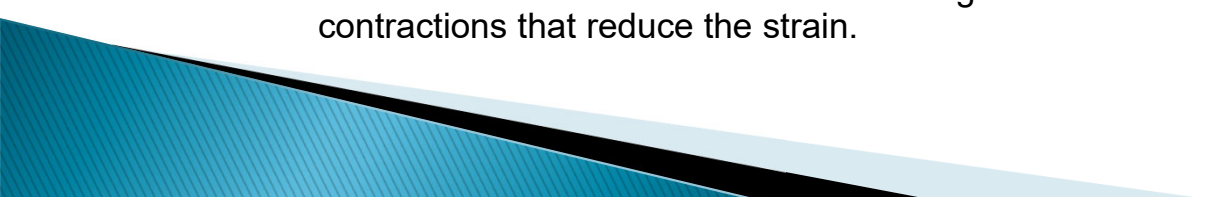
# Theories of Counterstrain Technique

## **Sustained Abnormal Metabolism Theory**

**The Sustained Abnormal Metabolism Theory** suggests tissue injury alters local body position, affecting local microcirculation and tissue metabolism. The local nutrient supply and metabolic waste removal is reduced while pro-inflammatory interleukin production is increased. These changes lower the firing threshold of sensory neurons causing localized neuronal sensitization. During palpation, these changes manifest as localized edema and tenderness. The precise body positioning used in Counterstrain restores local vascular circulation and reduces localized production of inflammatory mediators. These effects persist even after normal tissue resting length is restored.

## **Impaired Ligamento-muscular Reflex Theory**

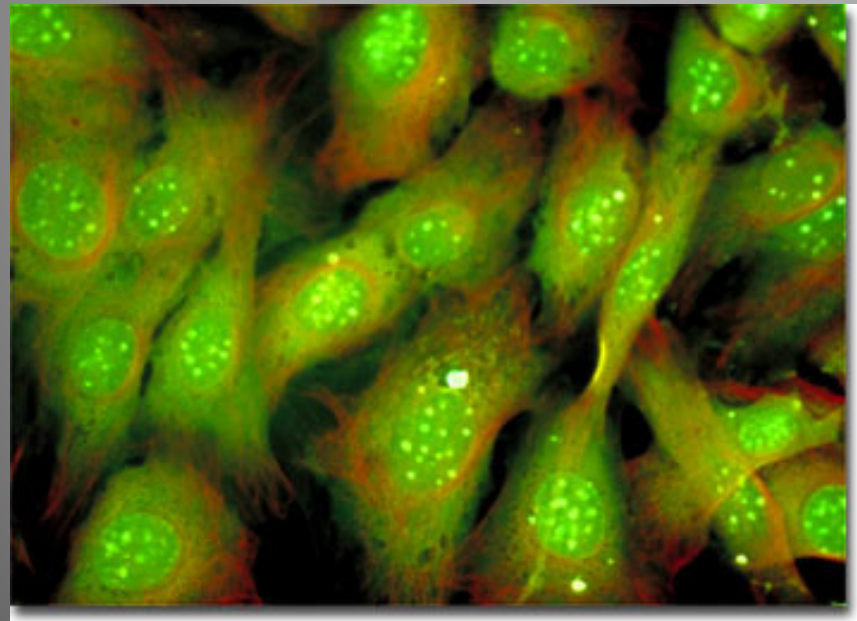
**The Impaired Ligamento-muscular Reflex Theory** is similar to the Proprioceptive Theory. This theory, however, purposes that dysfunction may result from a protective reflex that occurs when ligaments are placed under strain. A localized strain in a ligament can reflexively inhibit muscular contractions that increase the ligamentous strain and can stimulate muscular contractions that reduce the strain.

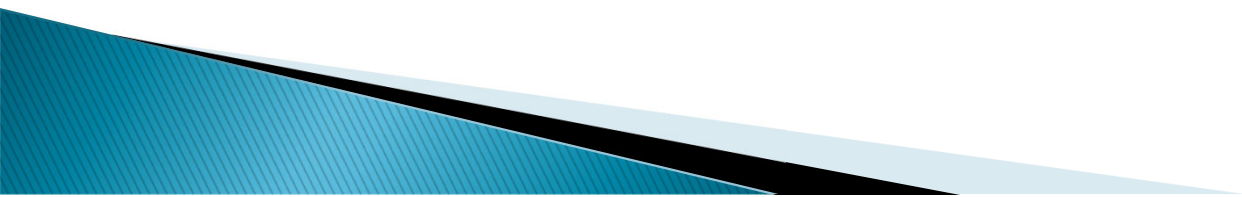


# Other Research

## In Vitro Biophysical Strain Model for Understanding Mechanisms of Osteopathic Manipulative Treatment (JAOA 2006)

- ▶ In vitro analysis of the effect strain on fibroblast gene expression
- ▶ Application of strain increased interleukin, cytokine and N<sub>2</sub>O production
- ▶ Leads to vascular extravasation, capillary fluid slowing and tissue congestion






# How Do You Get Tender Points?

Posterior Lumbar

- ▶ **Extension injuries**
- ▶ Sudden strains
- ▶ Overuse
- ▶ Weekend Warrior



# Counterstrain Summary

- ▶ If in doubt
    - Approximate the origin and insertion of the affected structure
    - Wrap the body around the point
    - The patient **MUST** relax
    - Hold for 90 secs
  - ▶ If the tender points radiates
    - It is a trigger point
    - Counterstrain may or not work
  - ▶ Tenderpoints that recur require lifestyle modification
- 

# Getting Rid of Tender Points

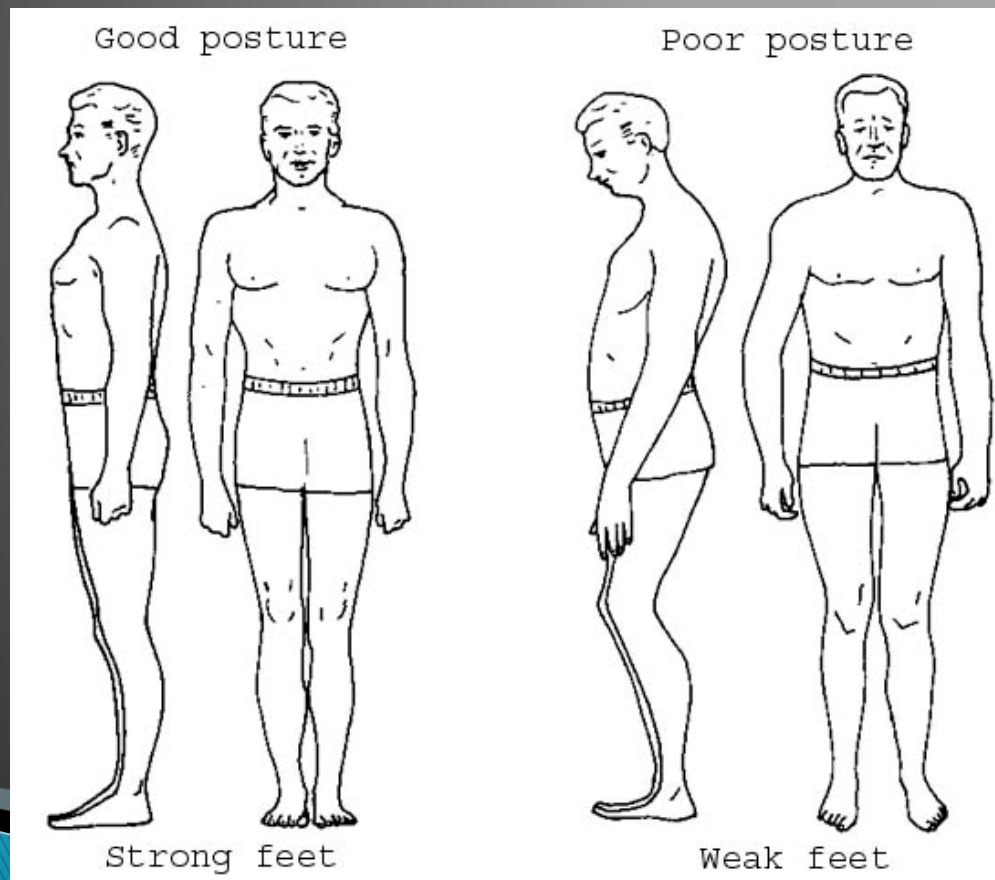
## Stress Management





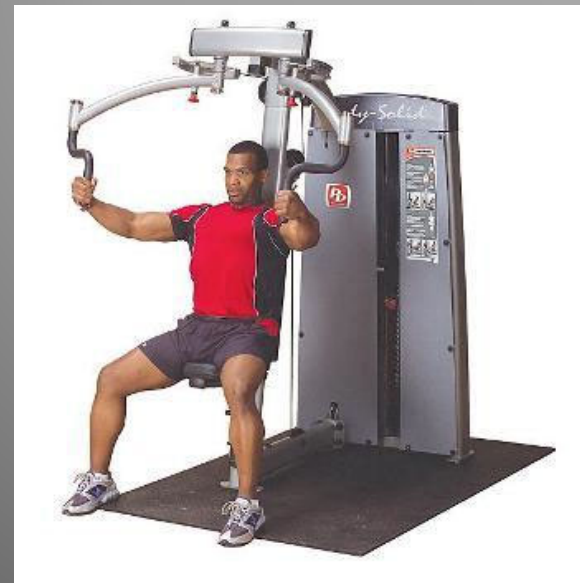
# Getting Rid of Tender Points

Postural Strain = Muscle Imbalance



# Getting Rid of Tender Points

Stretch and Strengthen



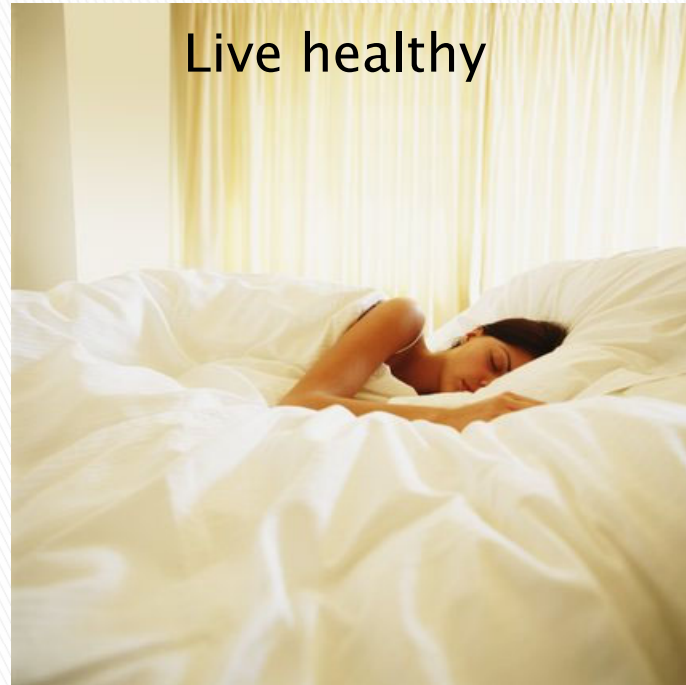
# Getting Rid of Tender Points

Live Well



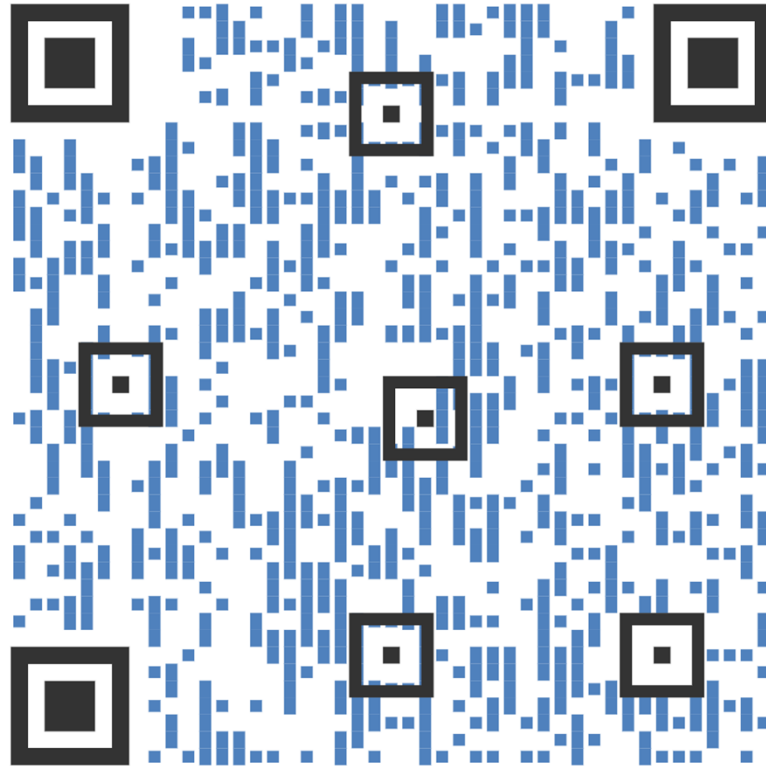
Eat well

Live healthy



Sleep well

Vhvvlrq#Hydxdwlrq



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Questions?