

# Scientific Program

International Conference and Expo on

# Novel Physiotherapies

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**KEY NOTE ADDRESS**

**Chicago**

**17<sup>th</sup> August 2015**



## **MANUAL THERAPY FOR UPPER CROSSED SYNDROME**

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**President, Manual Therapy Foundation of India®**

Neck pain is a **musculoskeletal disorder** and is a common cause for patients seeking treatment from health care providers(Leaver 2013).

1. Leaver AM, Maher CG, McAuley JH, Jull G, Latimer J, Refshauge KM. People seeking treatment for a new episode of neck pain typically have rapid improvement in symptoms: an observational study. *J Geophys Res.* 2013;59:31–7

Alarming, 30 to 50 % of the general population suffer from neck pain annually, with a point prevalence of around 15 % in males and 23 % in females; and these numbers are increasing( Haldeman et al 2008; Hogg-Johnson et. Al 2009).

1. Haldeman S, Carroll L, Cassidy JD, Schubert J, Nygren A. The bone and joint decade 2000–2010 task force on neck pain and its associated disorders: executive summary. *J Manipulative Physiol Ther.* 2008;32 Suppl 2:S7–9.
2. Hogg-Johnson S, van der Velde G, Carroll LJ, Holm LW, Cassidy JD, Guzman J, et al. The burden and determinants of neck pain in the general population: results of the bone and joint decade 2000–2010 task force on neck pain and its associated disorders. *J Manipulative Physiol Ther.* 2009;32 Suppl 2:S46–60

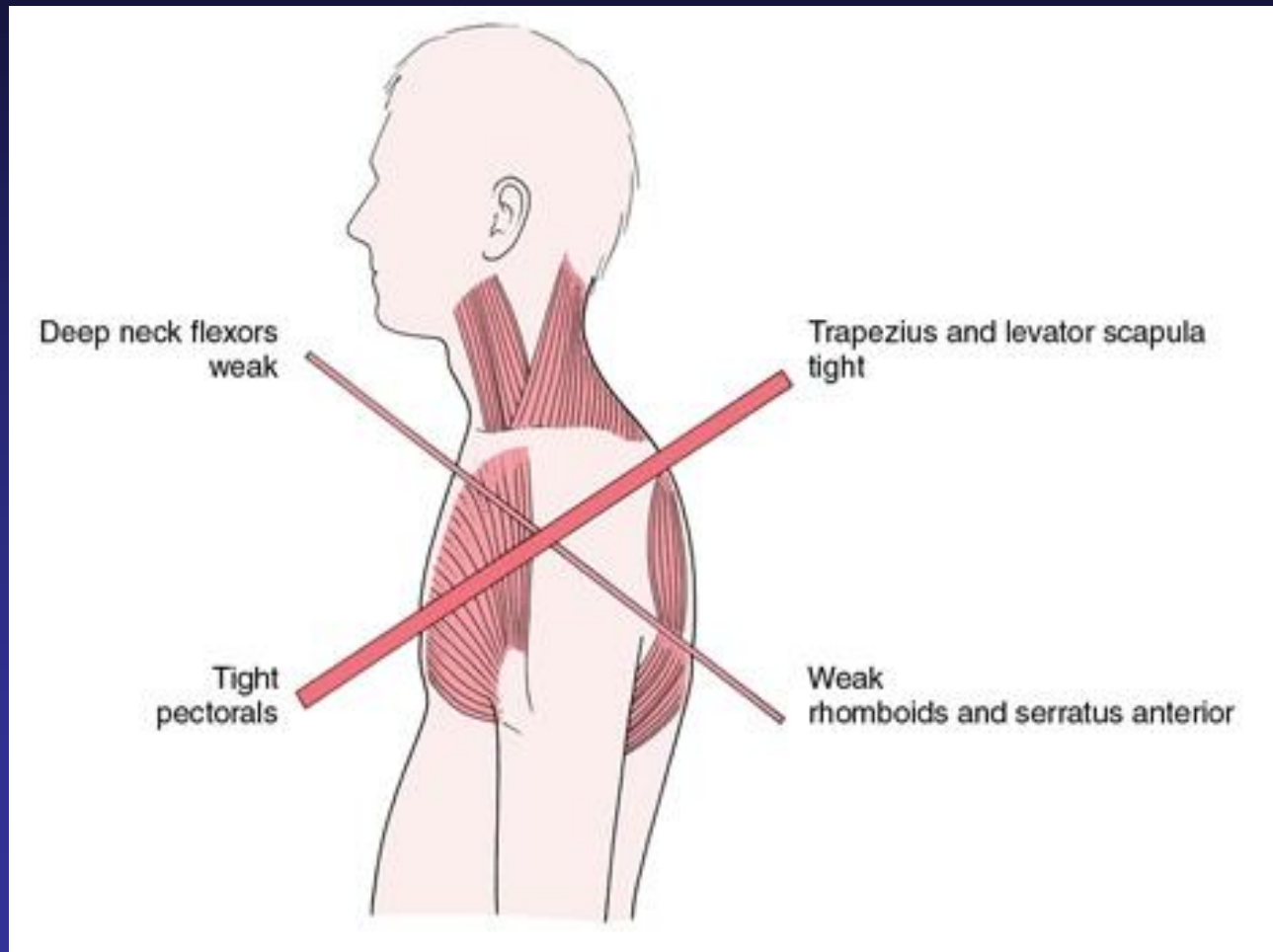
# Bifocal Posture



Poor body posture, as well as poor design of the workstation, may lead to muscle pain, particularly in the shoulders, neck, lower arms and wrists, which, if not attended to, may develop into what are commonly called Repetitive Strain Injuries (RSI).



# Upper Crossed Syndrome(Janda)

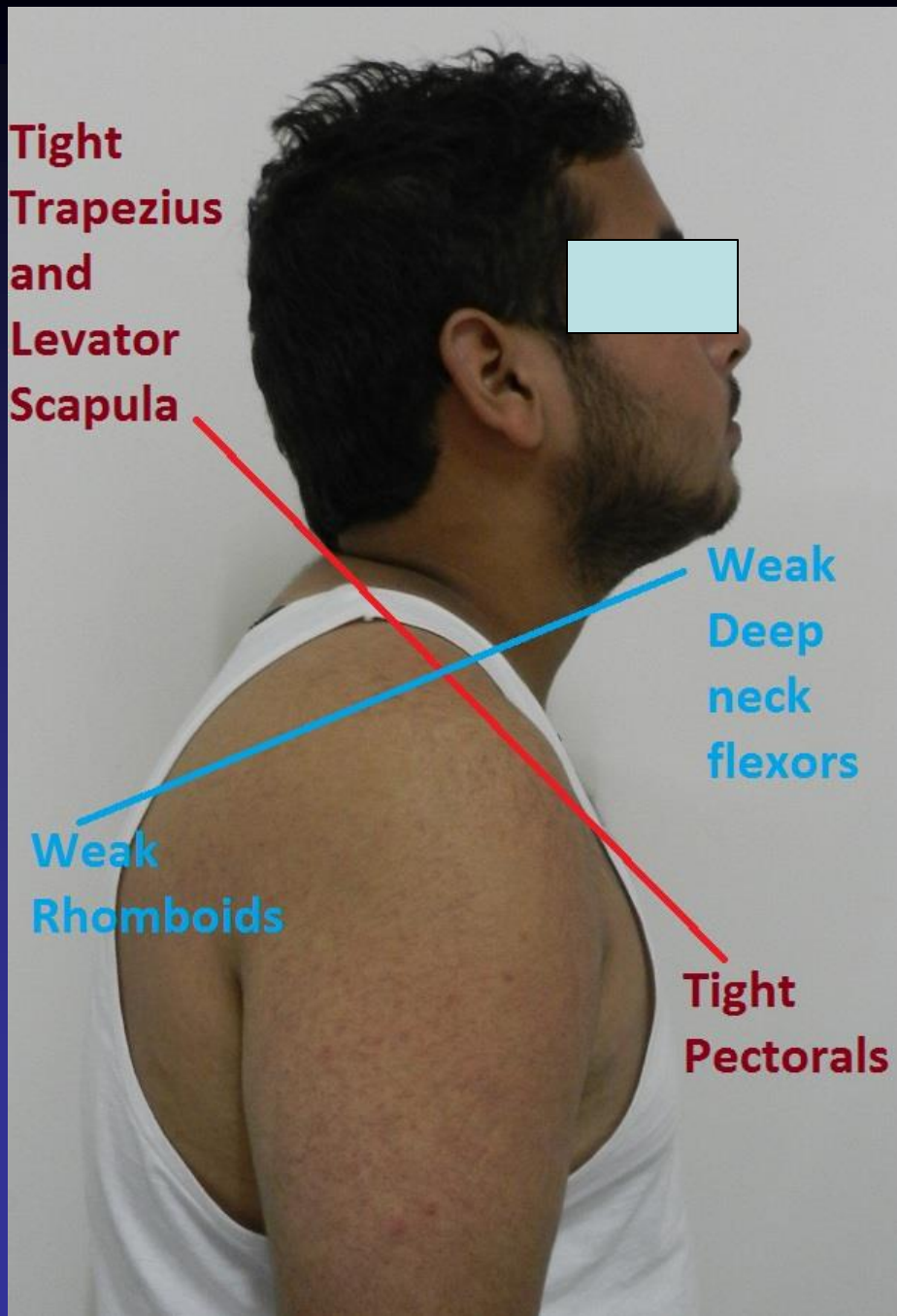


**Tight  
Trapezius  
and  
Levator  
Scapula**

**Weak  
Deep  
neck  
flexors**

**Weak  
Rhomboids**

**Tight  
Pectorals**



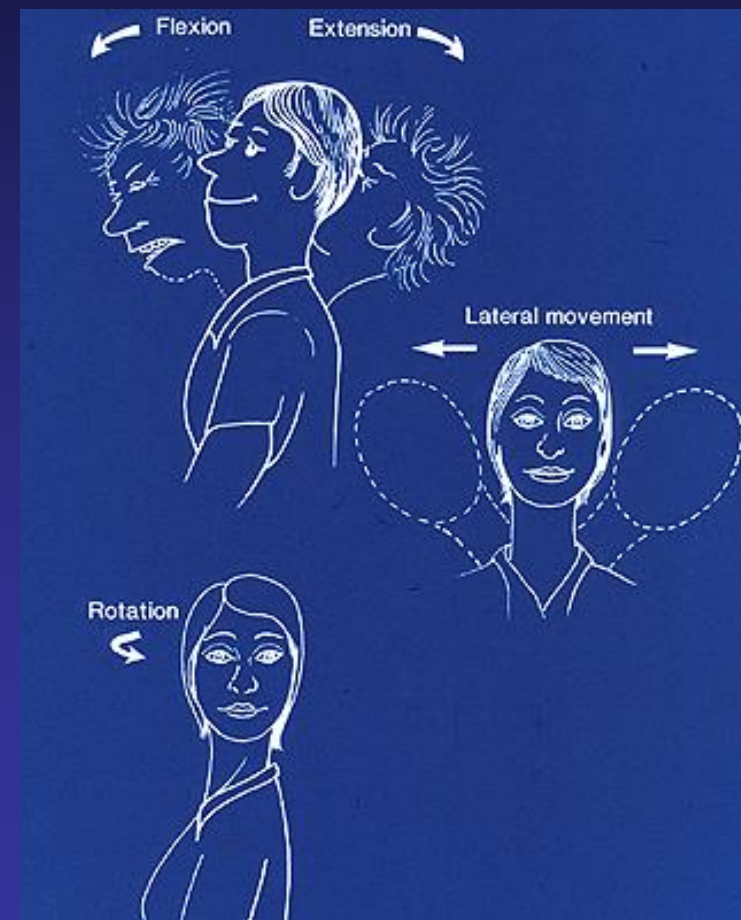
The term upper crossed syndrome was coined by **Dr. Vladimir Janda**. The upper crossed syndrome is defined as tightness of the upper trapezius, pectoralis major, and levator scapulae and weakness of the rhomboids, serratus anterior, middle and lower trapezius, and the deep neck flexors (Rectus Capitus Anterior, Rectus Capitus Lateralis, Longus Capitus, Longus Colli) and the **scalene muscles**( Janda, 1988).

Janda, V. 1988. Muscles and Cervicogenic Pain Syndromes. In Physical Therapy of the Cervical and Thoracic Spine, ed. R. Grand. New York: Churchill Livingstone.



**Cervical Spine Function:** The cervical spine is the most slender, mobile region of the spine with wide ranges of flexion, extension, side bending & axial rotation

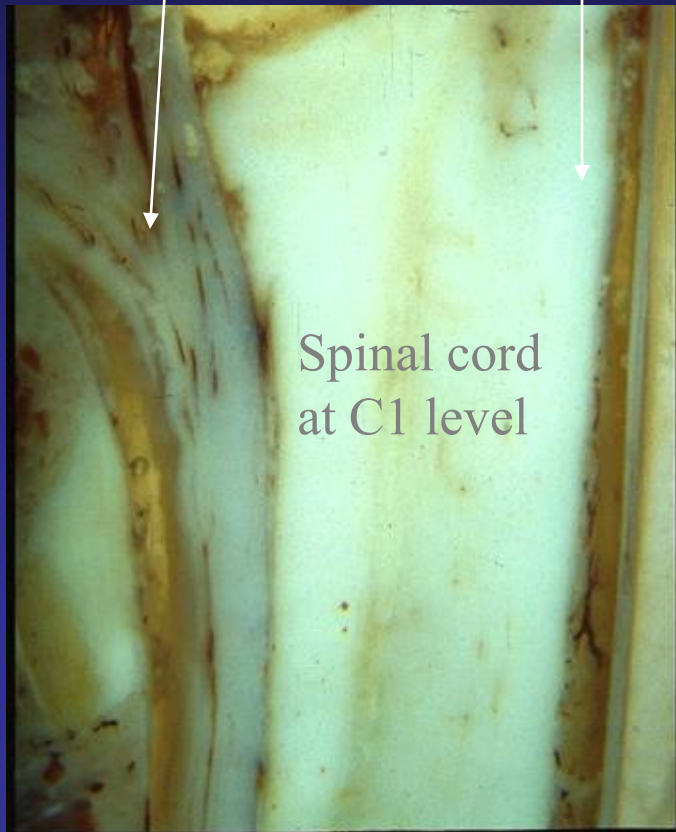
Head – neck region: most complex Neuromechanical system in the body  
( **Winters and Peles 1990** )



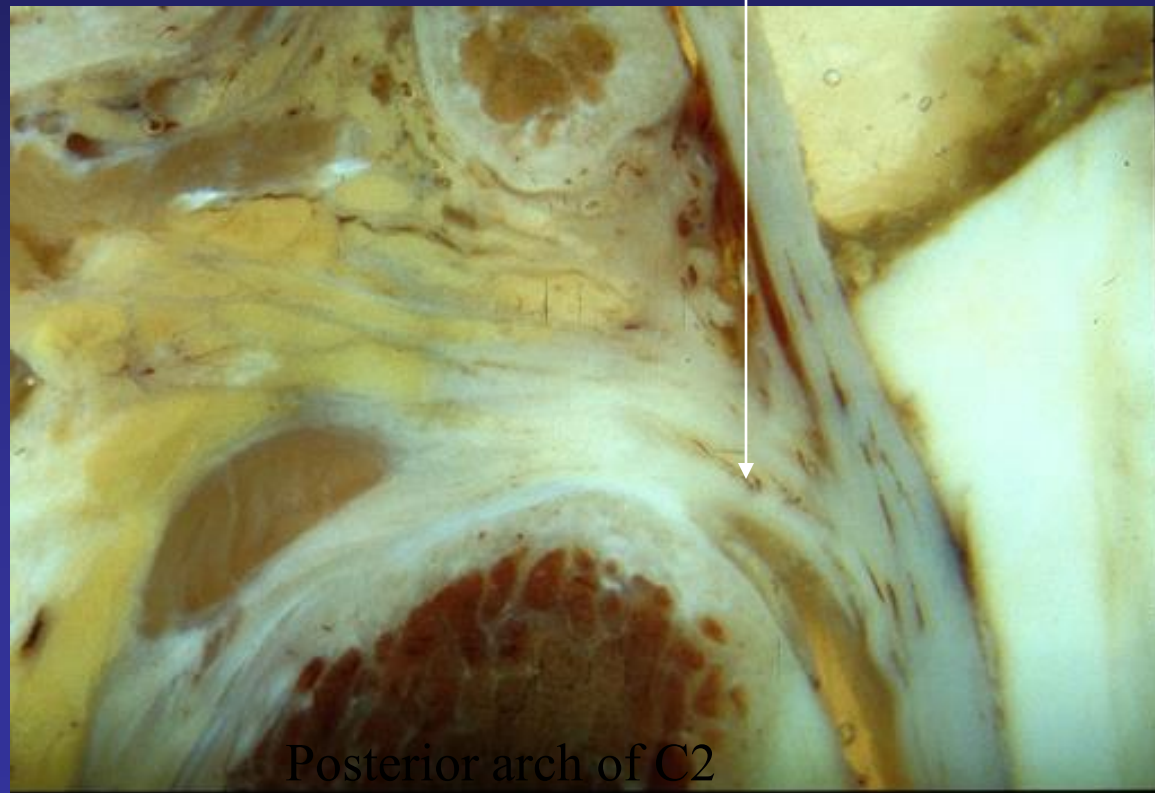
**The upper cervical dura:** Left:- Contrast the thick posterior dura with the thin anterior dura; A small tendon from rectus capitis posterior minor inserts into the posterior dura to keep the dura tight when the neck is extended.

Posterior dura

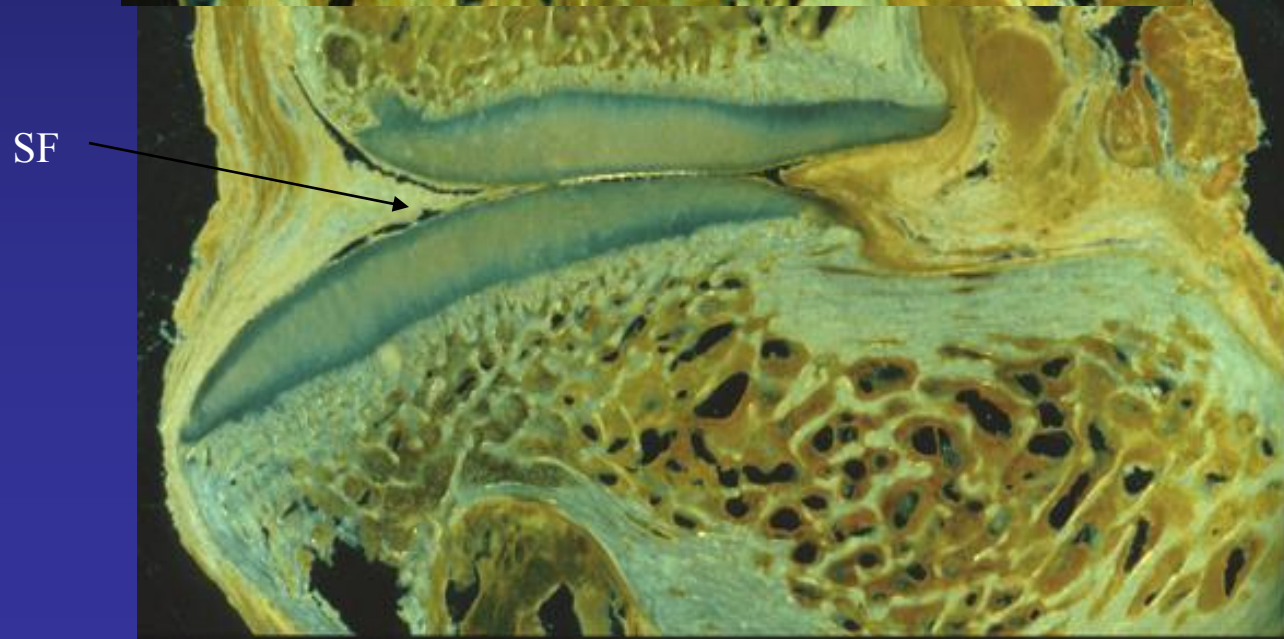
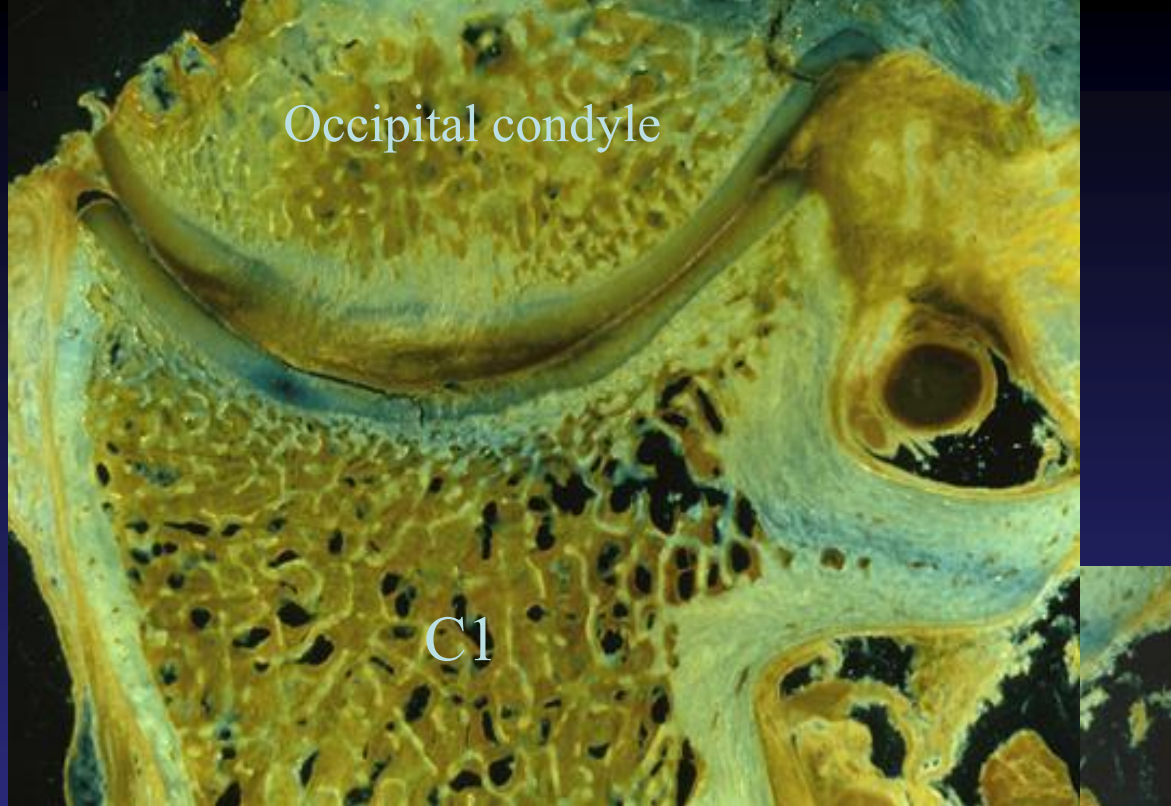
Anterior dura



Partial insertion of rectus capitis posterior minor into posterior dura



# Co-C1 Joint Complex



# Sagittal sections in the plane of the cervical facets



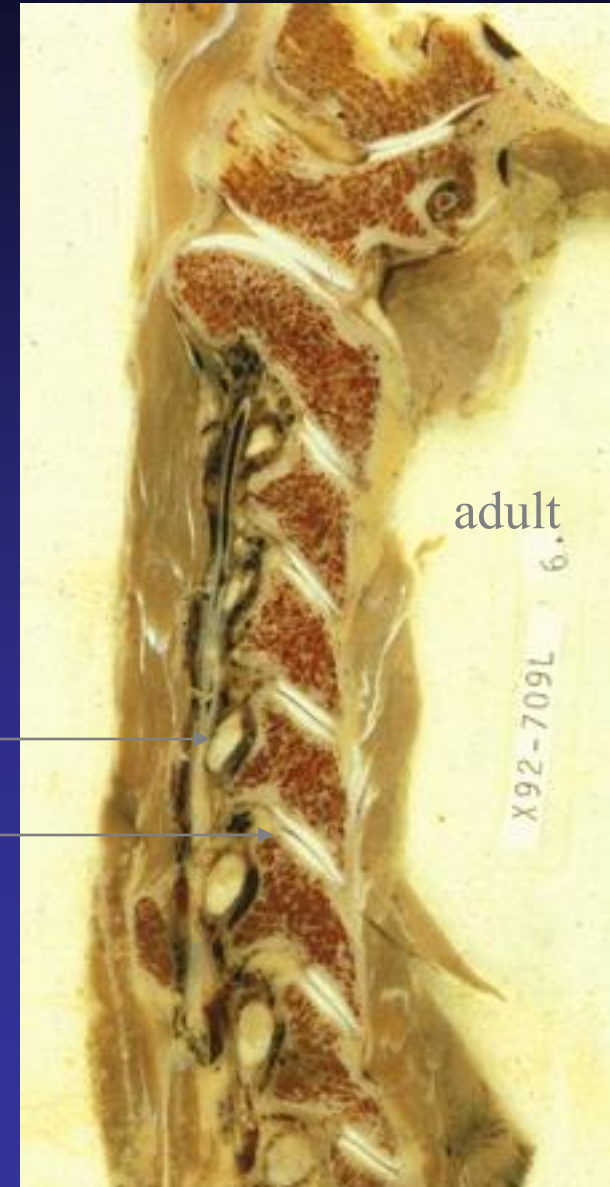
Note the large posterior muscles compared to the small anterior muscles;

The vertebral artery shows a regular calibre.

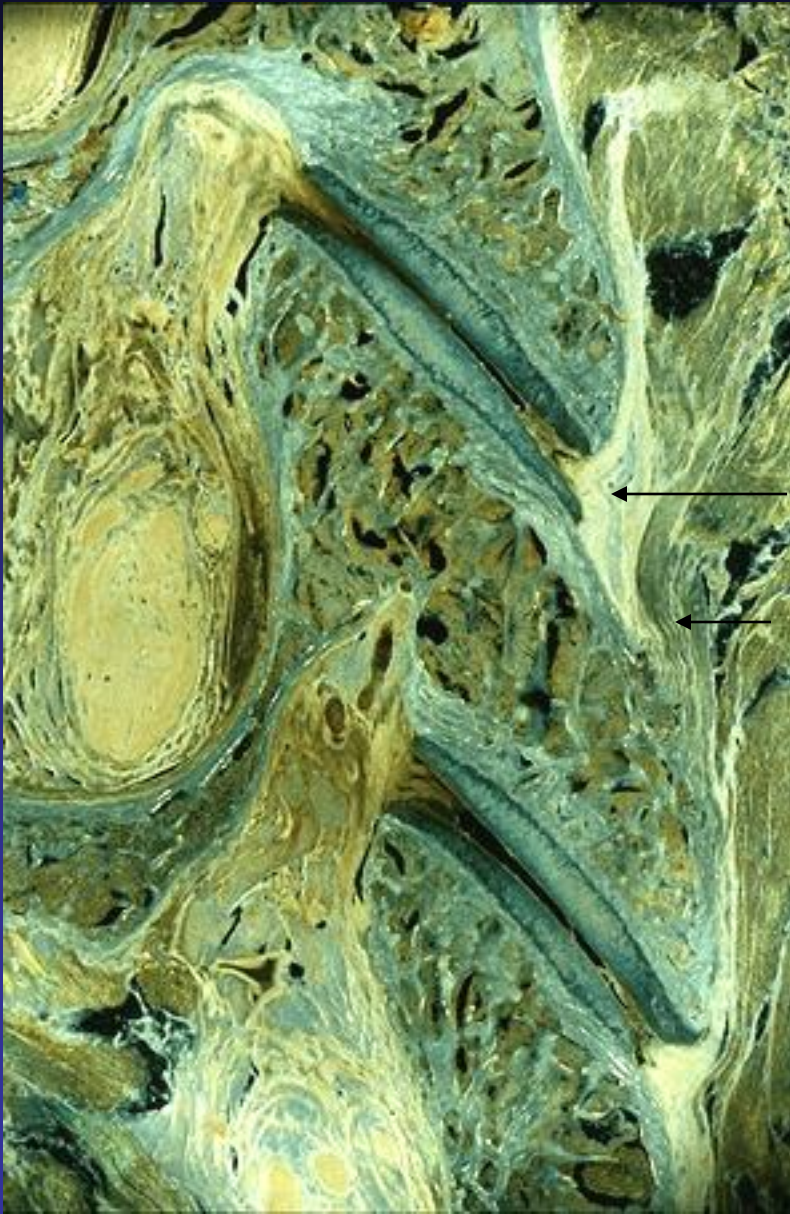
The nerve roots are much larger from C5 downwards

The facet joints are oriented at about  $45^\circ$  to the long axis of the spine in adults, with larger angles in children.

C4-5 & C3-4 show the highest angles



# Facet joints: sagittal sections from 35 year male; C5-7 ; C6-7

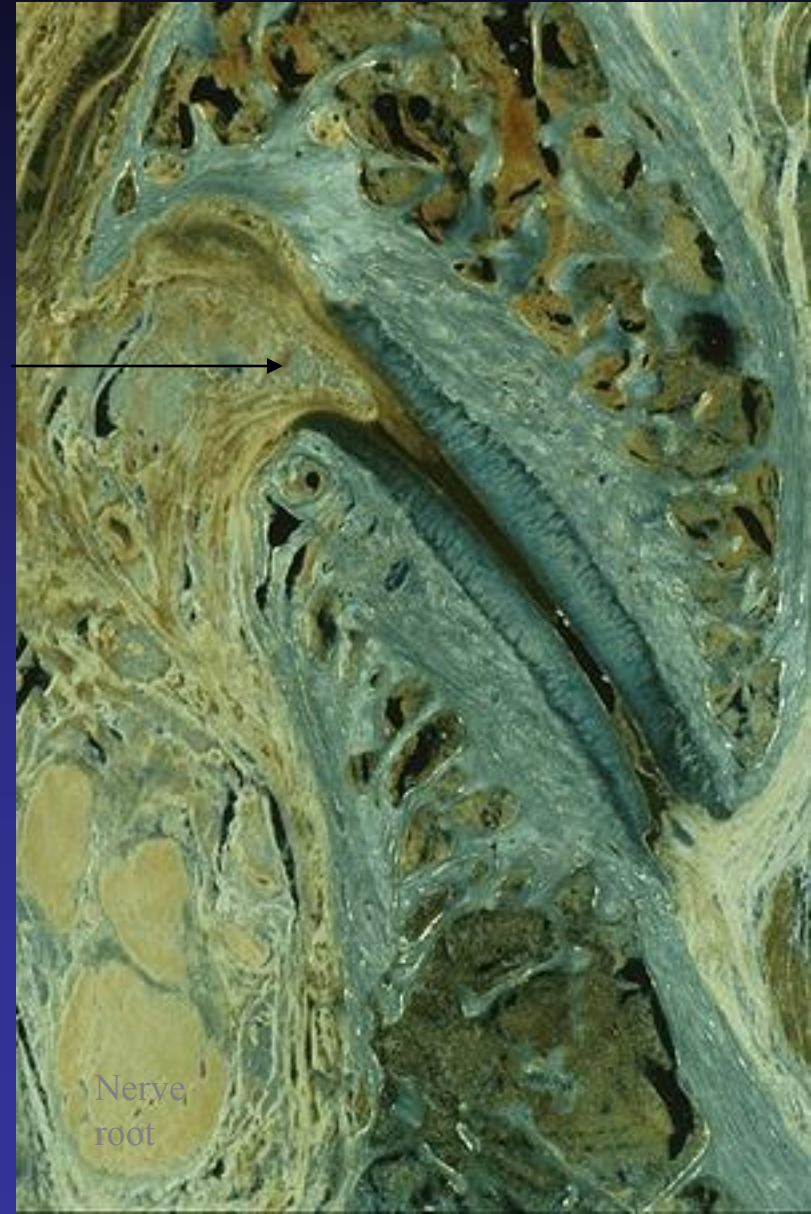


Synovial  
fold

Inferior  
recess

Multifidus

Dark  
ground  
lighting



Nerve  
root

# Facet joint fat pads near joint margin

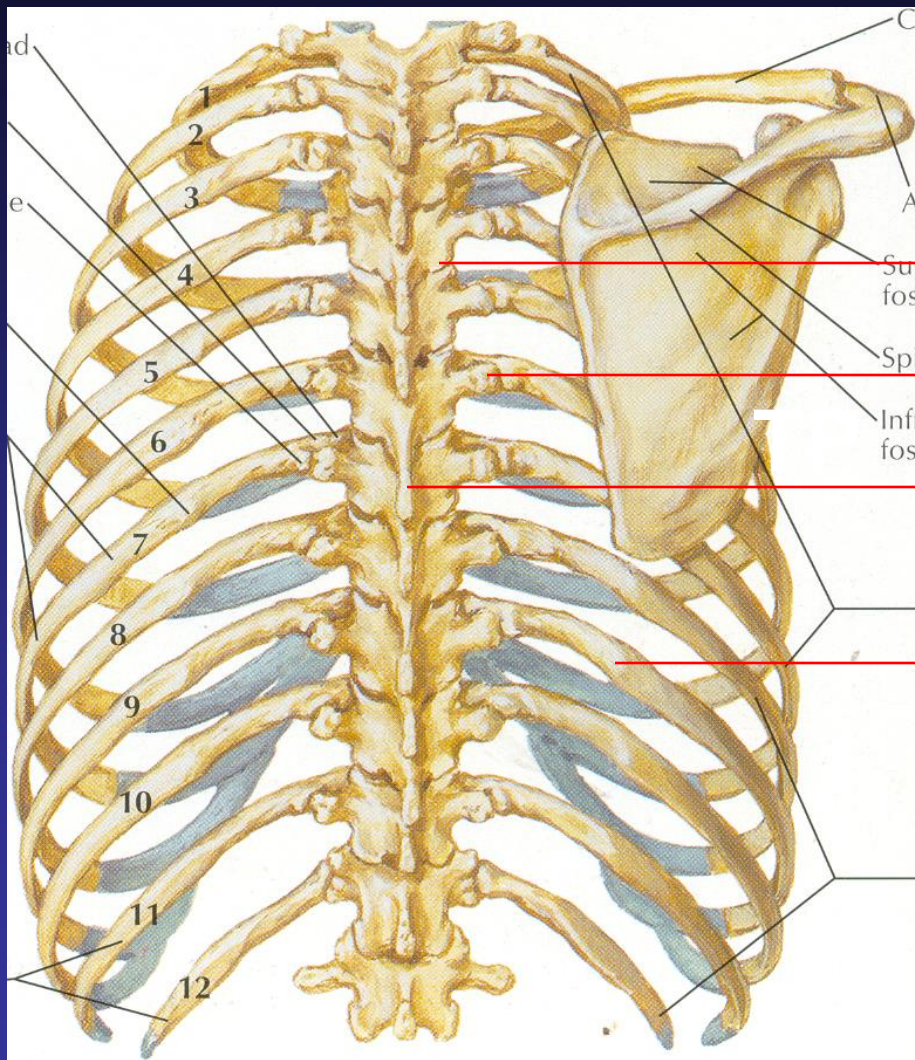
← Large synovial lined fat pad extending into anterior joint space

Meniscoids, also called synovial folds, are intraarticular fat pads covered by the synovial membrane

Klaus M. Friedrich, 2007



# Anatomy and Biomechanics



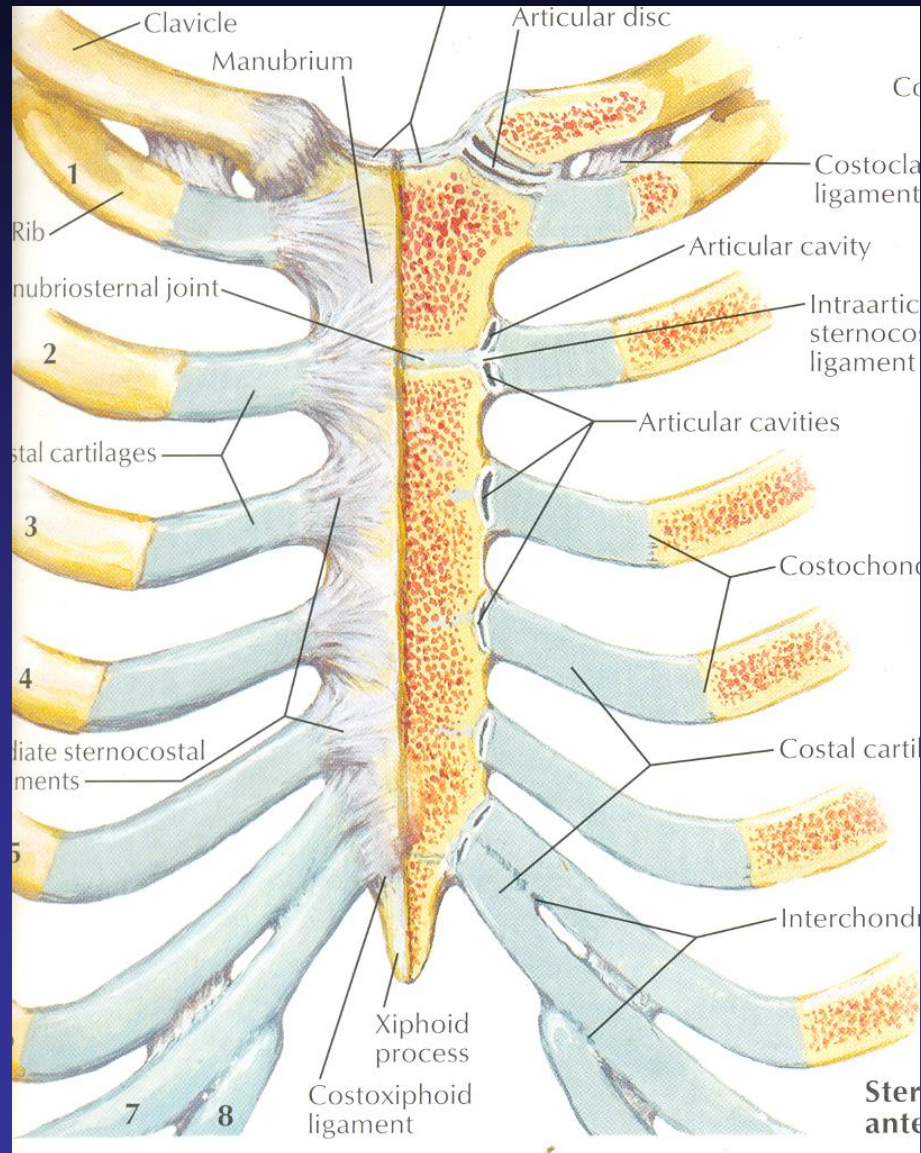
Z-Jt

TP

SP

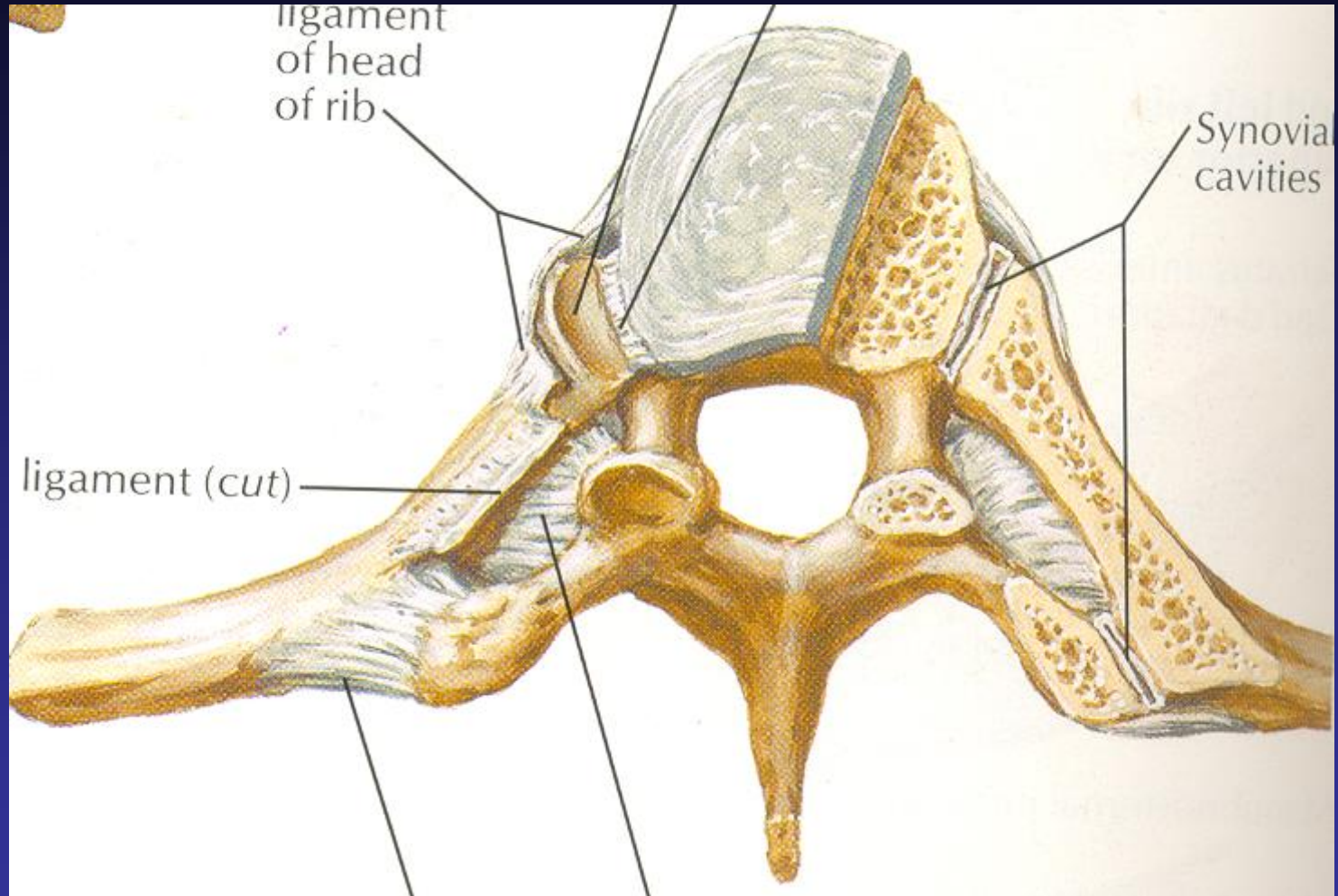
Angle

# Anatomy and Biomechanics

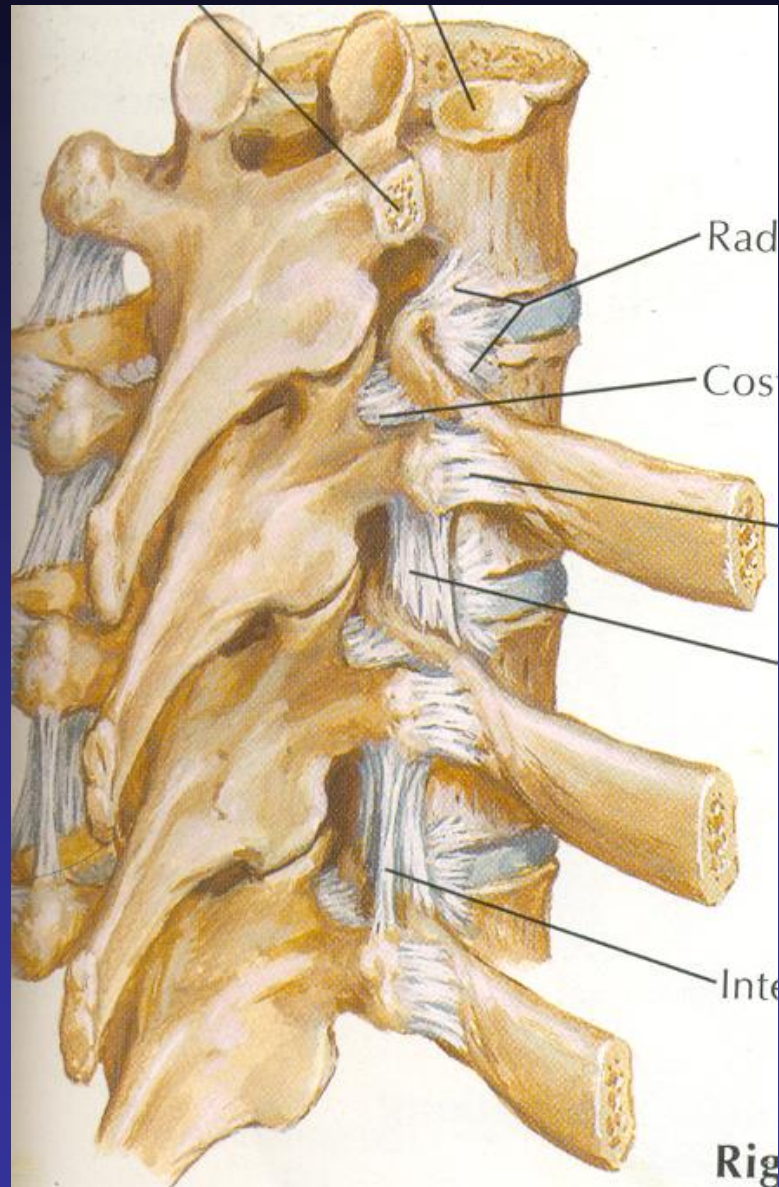




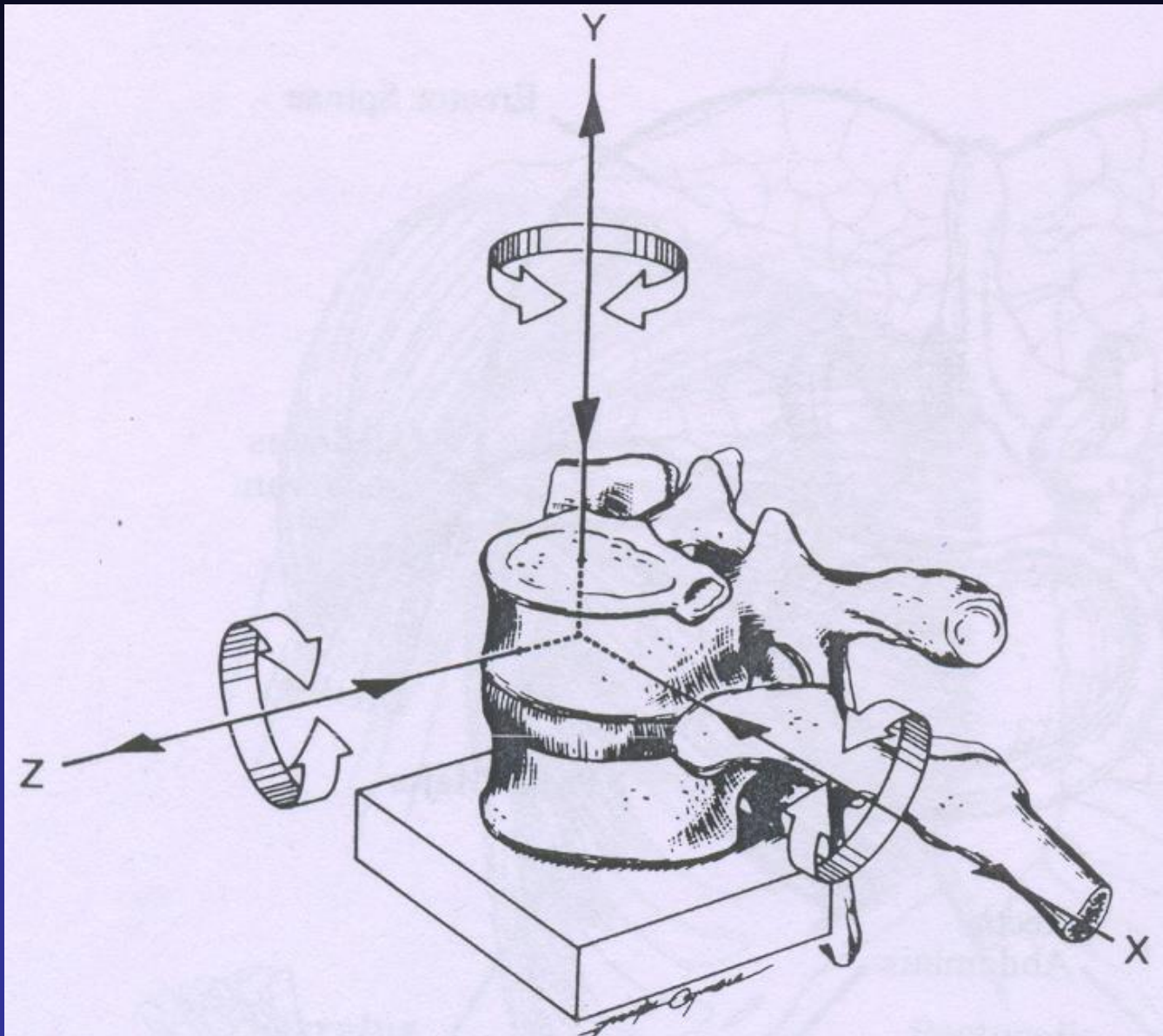
# Anatomy and Biomechanics



# Anatomy and Biomechanics



# Anatomy and Biomechanics



# Observation(Post)



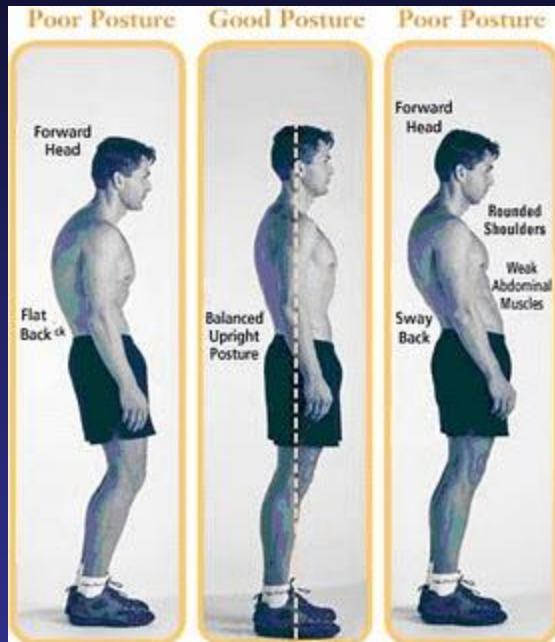
## Observation(Post)



# Observation(Lat)



# Lateral Observation



Kendall et al( 2005), the ideal standing position viewed from the side is a **plumb line** passing through the earlobe, midway through the shoulder joint, midway through the trunk, through the greater trochanter, slightly anterior to the midpoint of the knee, and slightly anterior to the lateral malleoli.



## Faulty Habits



## Checking For Various Movements and Combined Pattern



# CERVICAL PPIVM's



## Lateral P-A Pressure ( PAIVM's)



Reliability is quite good for detecting tenderness over the zygapophyseal joints (Hubka and Phelan 1994).

# VBI Testing



Posterior cerebral arteries

Basilar artery

V4 (intradural)

V3 (C2 to dura)

V2 (foraminal)

V1 (pre-foraminal)



F. Gaillard  
2008  
© Radiopaedia.org

# Transcranial Doppler



# Pincer Palpation



# vimentin, desmin, cytokeratin

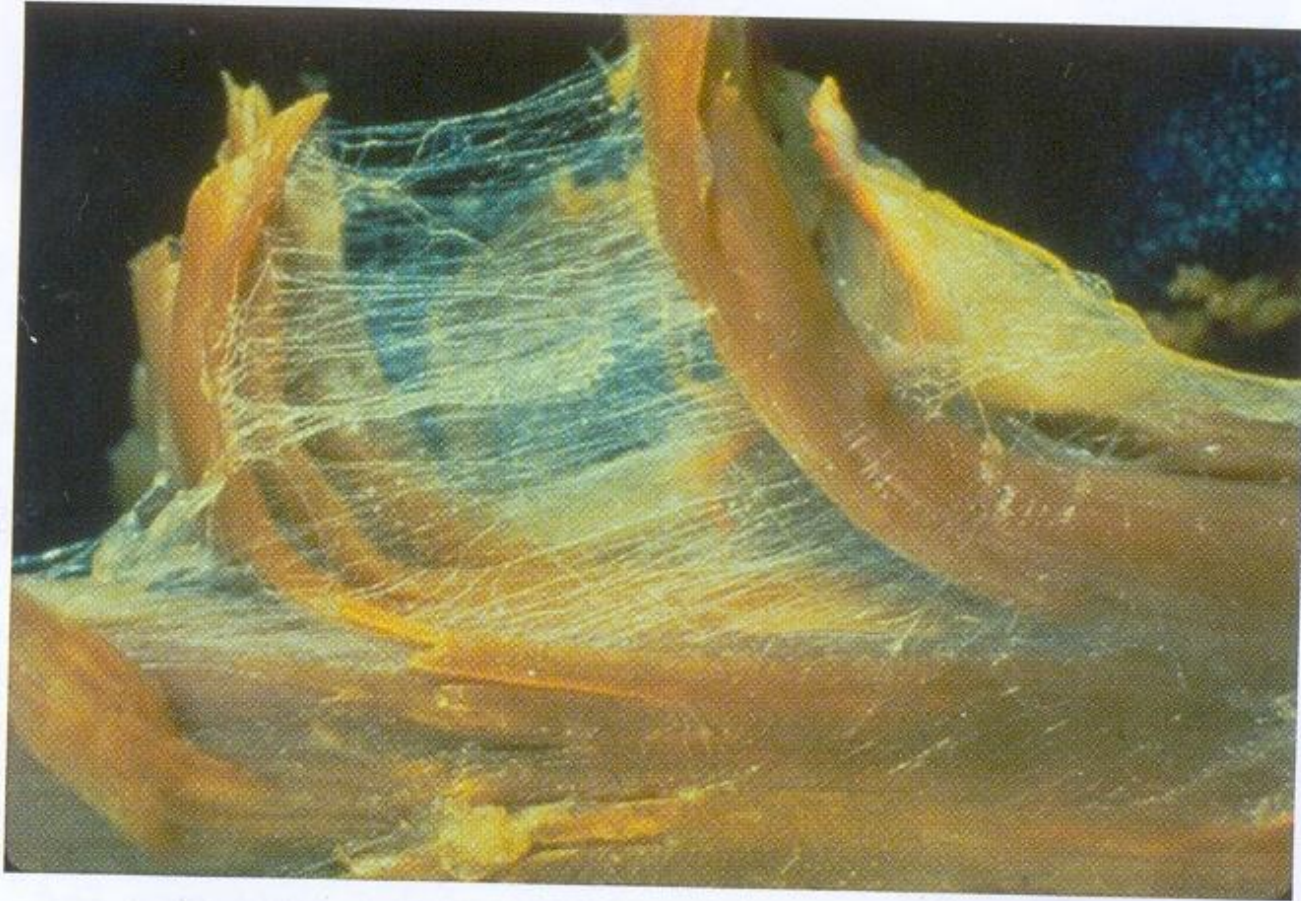


Fig. 1. C. A. ...



# Mohanty Flat Palpation Grades

The various layers palpated by the therapist are as follows

Layer 1 = Skin

Layer 2 = Subcutaneous tissue.

Layer 3 = Superficial muscles

Layer 4 = Deep muscles with fascia

The grades are described as follows.

Grade 1 = Adherence of 1,2,3 & 4

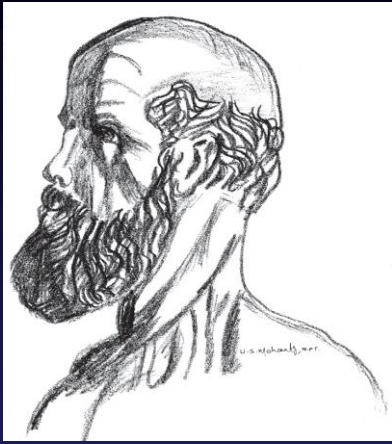
Grade 2 = Adherence of 2,3 & 4

Grade 3 = Adherence of 3 & 4

Grade 4 = Toughness in deep fascia

Grade 5 = Normal

Mohanty Umasankar: Manual Therapy Of The Pelvic Complex.1<sup>st</sup>  
Edition: MTFI Healthcare Publications,2010.



## Father of Medicine Hippocrates (460-355BC)

The oldest of reference of manual therapy traces back to ***Srimad Bhagavat Mahapurānam***, an ancient Indian religious literature written between 3100BC



SB 10.42.7 ( Srimad Bhagavatam, Canto 10 Chapter 42 Verse 7)  
padbhyām ākramya prapade  
dry-aiguly-uttāna-pāēinā  
pragāhya cibuke 'dhyātman  
udanēnamad acyutaū

Pressing down on her toes with both His feet, Lord Acyuta placed one upward-pointing finger of each hand under her chin and straightened up her body.

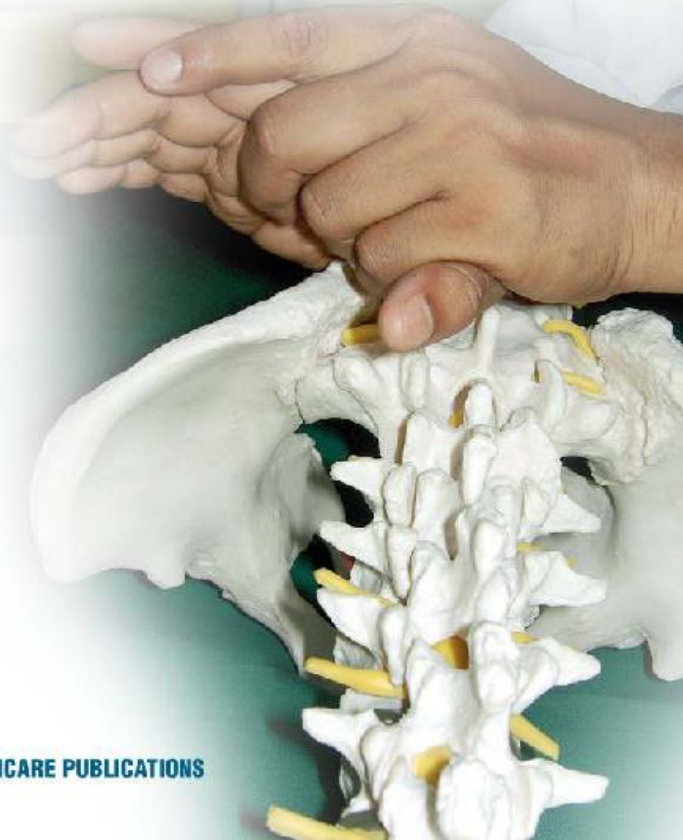
# MANUAL THERAPY OF THE PELVIC COMPLEX

A compendium of Illustrated Manual Therapy Techniques

FIRST EDITION

Umasankar Mohanty

Includes CD-ROM 



MTFI HEALTHCARE PUBLICATIONS

## Treatment of Upper Crossed Syndrome



MET For Pect Major

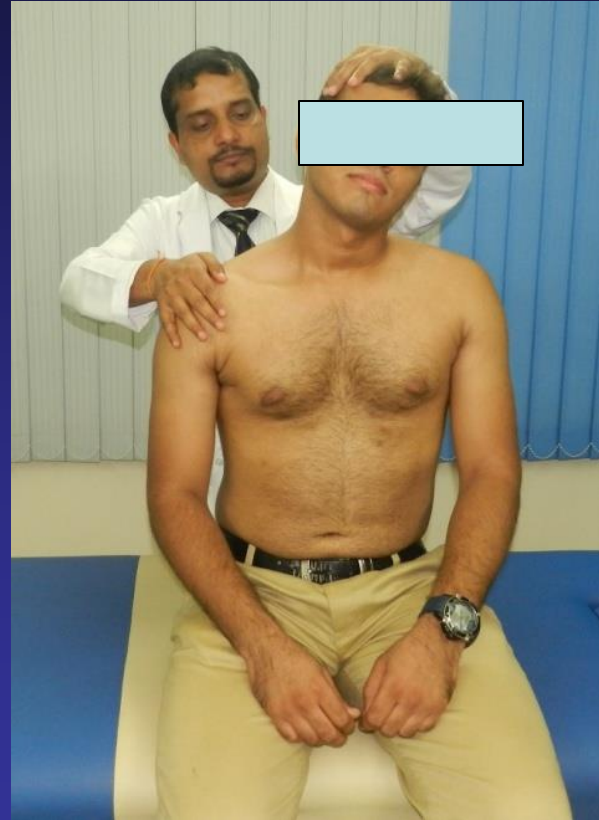


**Pectoralis Minor**



Anterior aspect of  
Shoulder raised  
suggesting Pectoralis  
Minor tightness.

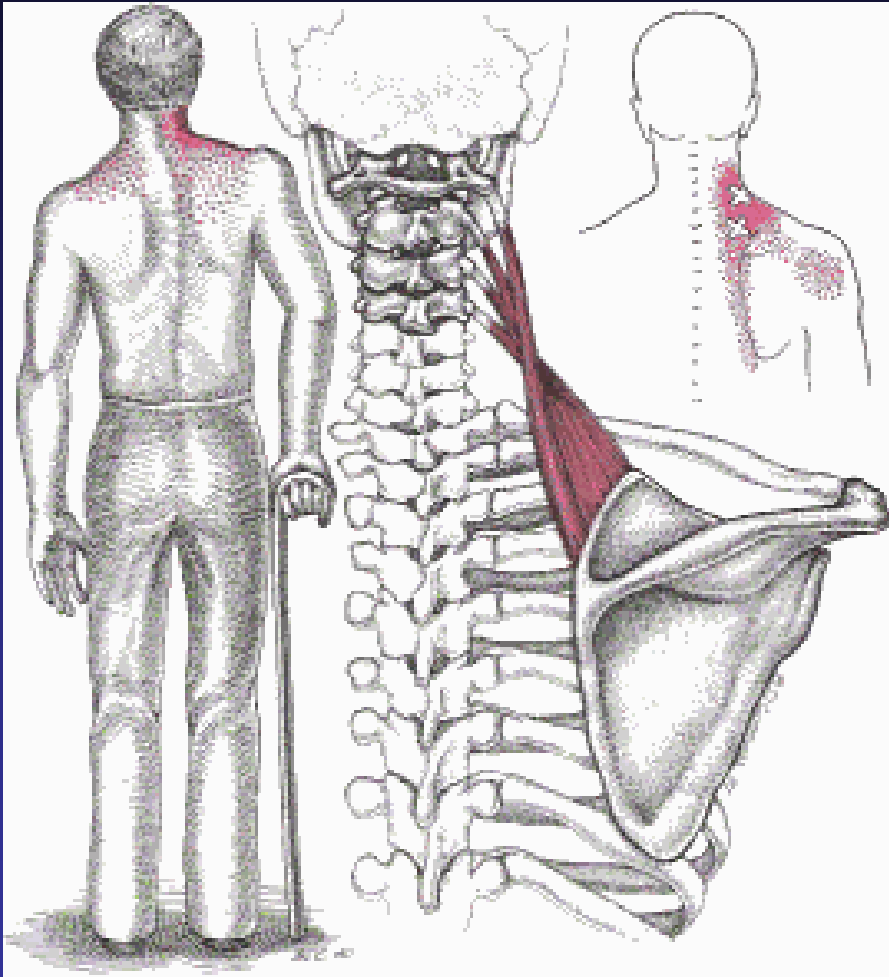




MET For Trapezius



## MET For Levator Scapulae



# Scapular Stability Training

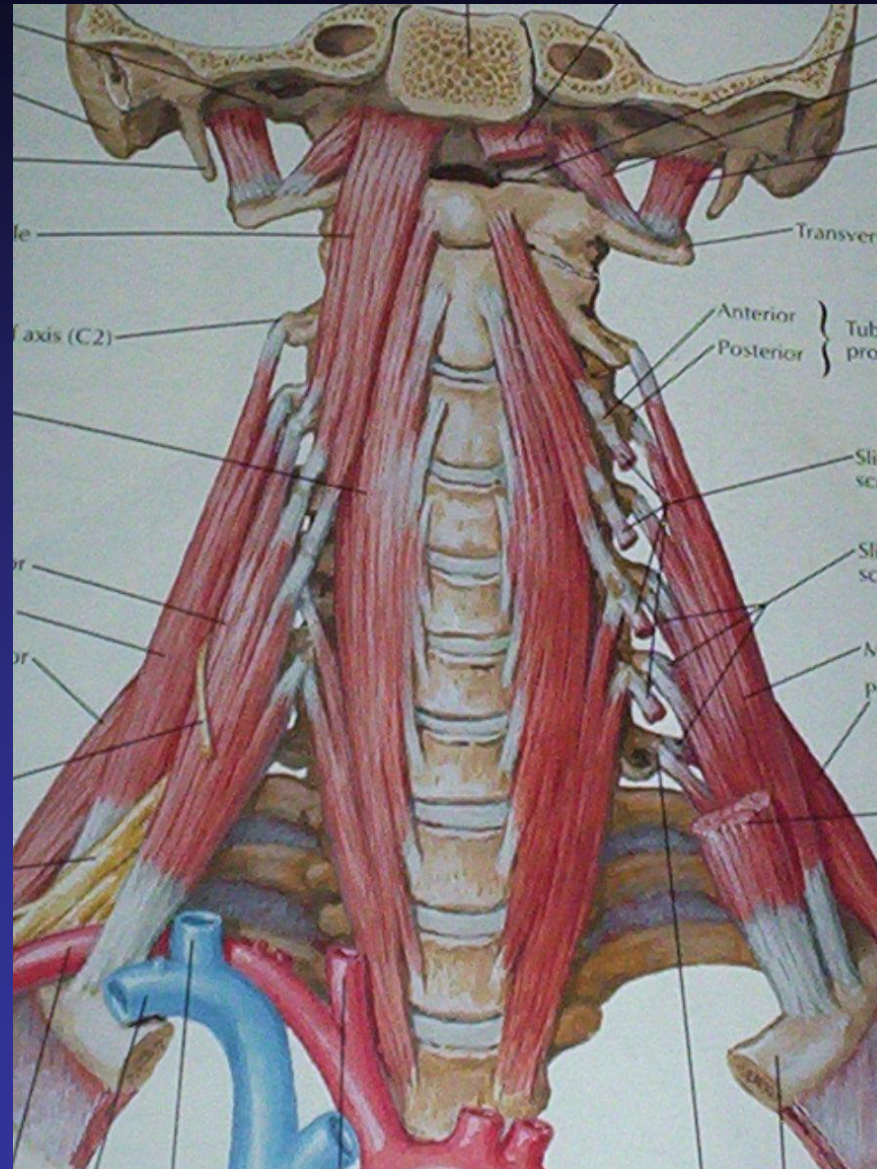




## Clinically Flexors

- . Lose endurance capacity with neck dysfunction (**Silverman 1991, Watson and Trott 1993, Treleaven et al 1994**)
- . An imbalance develops in the neck extensor/ flexor ratio and flexors become relatively weaker (**Vernon et al 1992**)
- . Neck flexors become more fatigue in chronic neck pain. (**Falla et al 2002**)

# Anatomy review



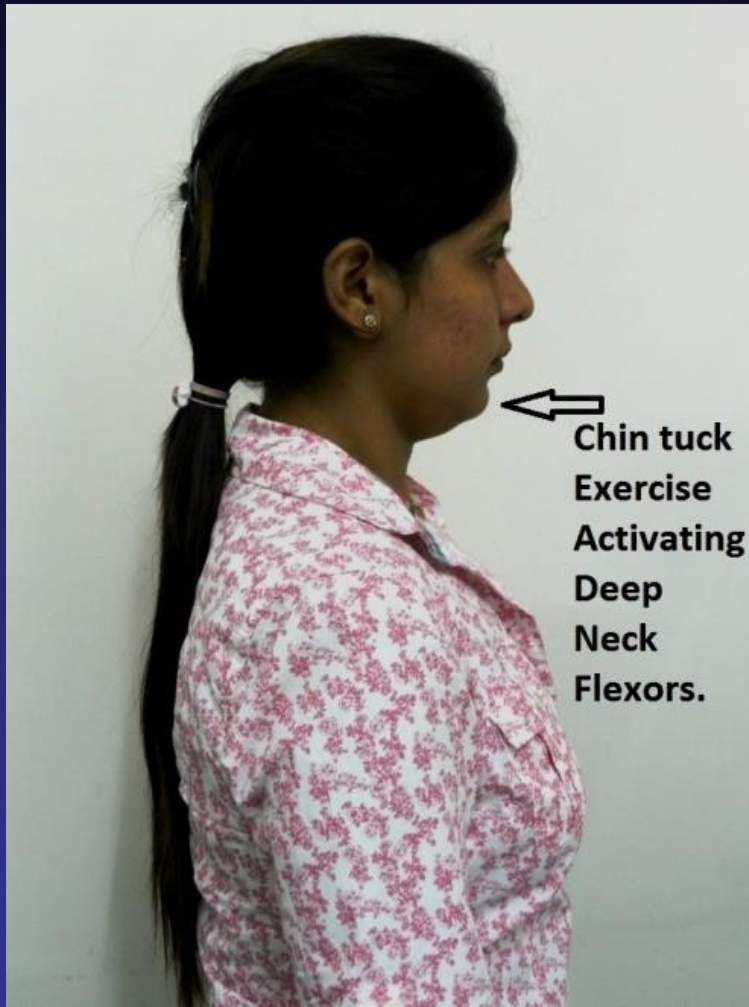
# **Cranio-cervical flexion Test**

## **The Starting Position**

- 1. The testing position is in crook lying position with the cranio-cervical and cervical spine in a mid range neutral position.**
- 2. Layers of towel may be placed under head to achieve the neutral position. Ensure that the towel is aligned with the base of the occiput and the upper cervical region is free.**

# Pressure Bio-feedback unit ( Chattanooga Group)





**Chin tuck  
Exercise  
Activating  
Deep  
Neck  
Flexors.**





**Cervical A-P Glide**



**HVT In sitting Position**



**Facet Joint Manipulation**









# Nobel Lecture

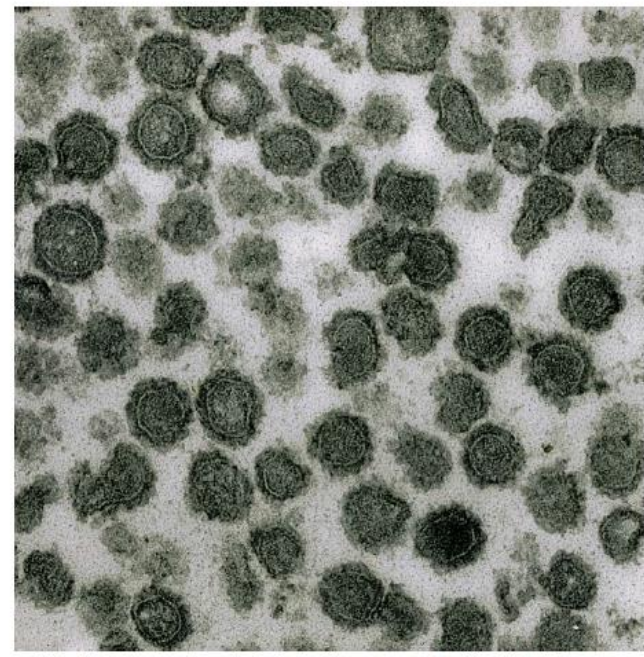
James E. Rothman  
Yale University

## “The Principle of Membrane Fusion in the Cell”

Karolinska Institutet  
Stockholm  
December 7, 2013



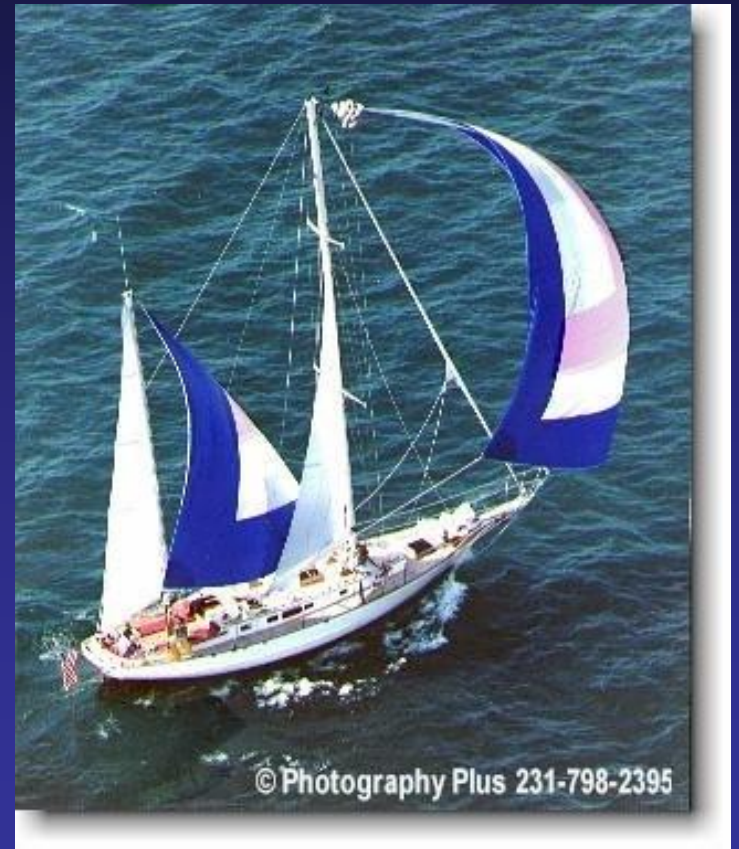
## GTP $\gamma$ S Inhibition Accumulates Transport Vesicles Encased in Protein Coat (COPI)



→ Purification of vesicles, discovery of the coat protein, and the budding mechanism

Malhotra, Orci & Rothman Cell, 1989

# Tensegrity Concept





**Tensegrity Concept**



## How MT Helps

Restoration of Joint play and Release of minor adhesions ( **Rahlmann 1987**)

Restoration or rebalancing the **arthrokinetic reflex** by mobilisations, manipulations (Cassidy and Kirkaldy-willis 1988).

## How Manual Therapy Helps



**Neck Trapped Model**

## Change in pain threshold

Increase in serum  $\beta$ -endorphin level following manipulations( Terrett & Vernon, 1984)

## Triggering of reflex activity due to manipulation

Muscle spindle reflex ( during mobilisation)

and capsule mechanoreceptor reflex(during manipulation, Conway PJW, Brodeur).

Elicited from mechanoreceptors(joint, cutaneous and proprioceptors, Herzog & Scheele)

Reflex inhibition of spastic muscles, reduction of pain.

## . Physiological changes following cracking sounds

Cracking sound occurs due to coaptation of the articular gases in synovial joints( Roston JB, Haines RW). There is a refractory period during which articulation experiences a greater degree of intraarticular freedom of movement.

## .Central pain mechanisms

Analgesia due to long range afferents i.e large diameter fibers. Participation of C.N.S through OMAS ( Friends et al, 1989)



## *Neck Pain*

*Multi-Modal Therapy* — Multi-modal (combined) treatments inclusive of **cervical passive mobilisation** in combination with specific exercise alone or specific exercise with other modalities are more effective for acute neck pain in the short term compared to rest, collar use and single modality approaches. LEVEL I, II, Based on a systematic review done by **Gross et al. 2002** and two randomised controlled trials **Bonk et al. 2000**, **Hoving et al. 2002**.



## MTFI Inspirations

Take up one idea  
make that one idea your life  
think of it  
dream of it  
live on it



let the brain, muscles, nerves every part of your body  
be full of that idea and just leave every other idea alone.  
This is the way to success.

**Swami Vivekananda**



Thank You

[www.mtfi.net](http://www.mtfi.net), [info@mtfi.net](mailto:info@mtfi.net)