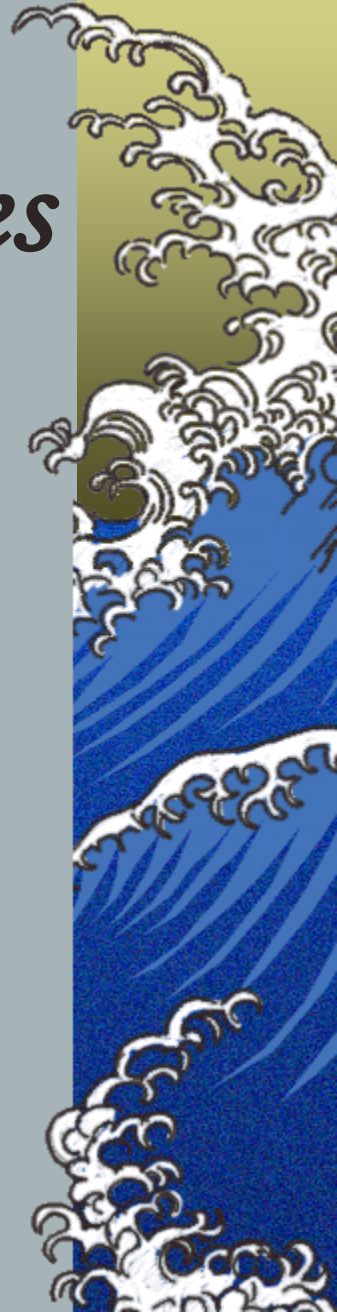


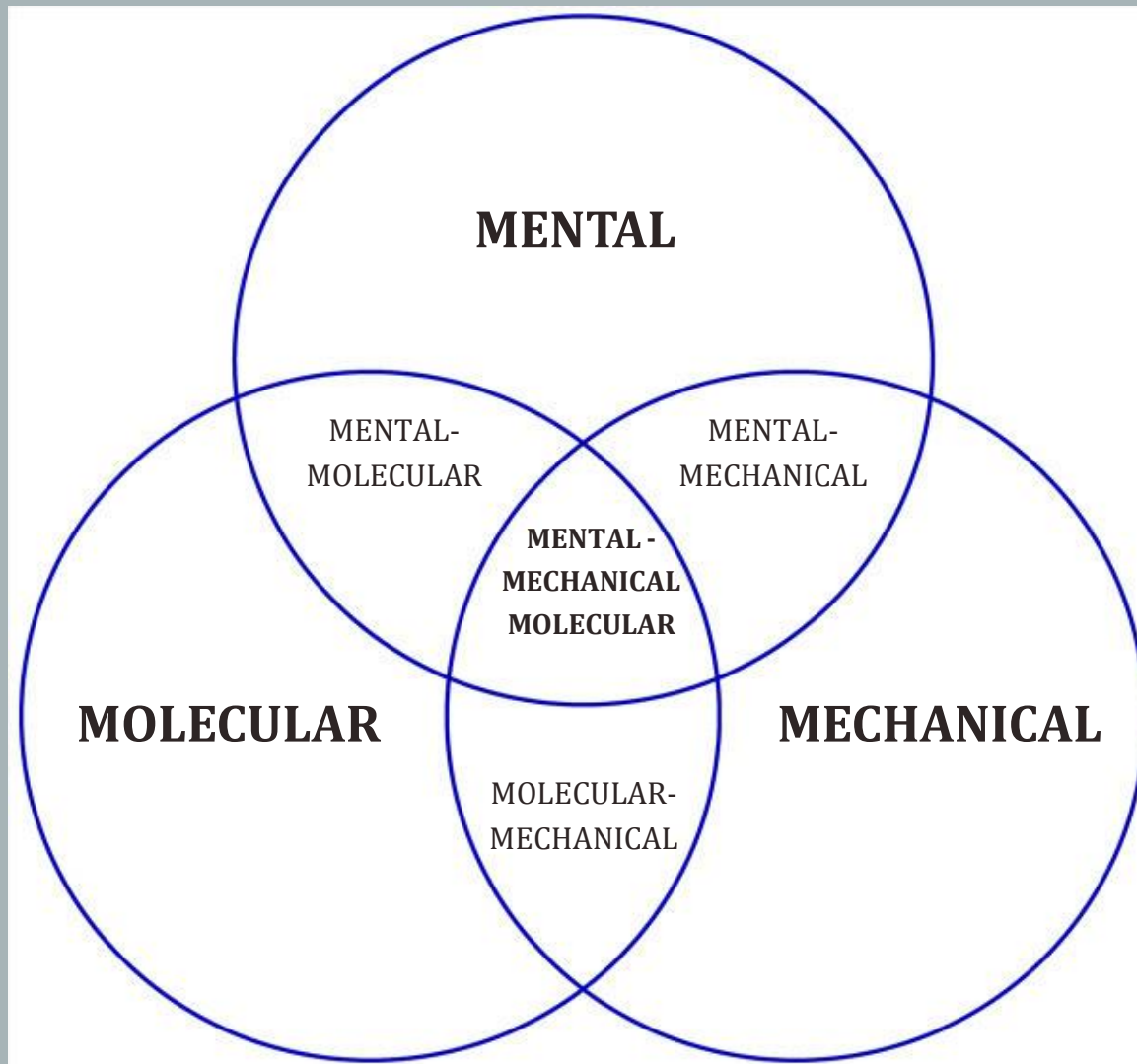
ERL Clinical Reasoning Strategies

Gary Jacob, DC, LAc, MPH, DipMDT

garyjacob.com



3M



Locus of Control



- ▶ External Locus of Control
 - ▶ dependence on powerful external forces
- ▶ Internal Locus of Control
 - ▶ dependence on self



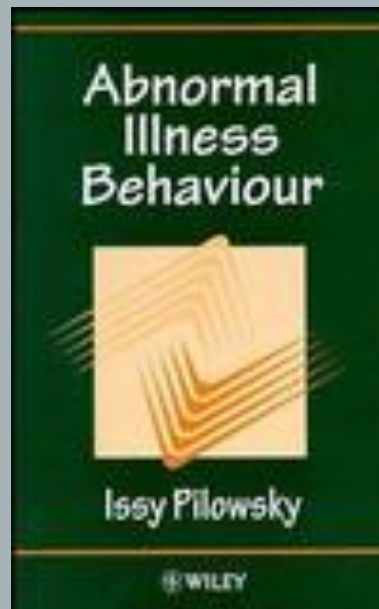
Illness Behavior - Sick Role

- ★ Sick Role - Talcott Parsons 1964
 - ★ Not responsible for
 - ★ sickness or recovery
 - ★ care
 - ★ usual obligations
- ★ Illness Behavior - Mechanic 1962
 - ★ The way symptoms are
 - ★ perceived
 - ★ evaluated
 - ★ acted upon



Abnormal Illness Behavior

- ▶ Ill suited to most effective way of maximizing ones own health
- ▶ Inappropriate, maladaptive evaluation and acting in relation to one's own health



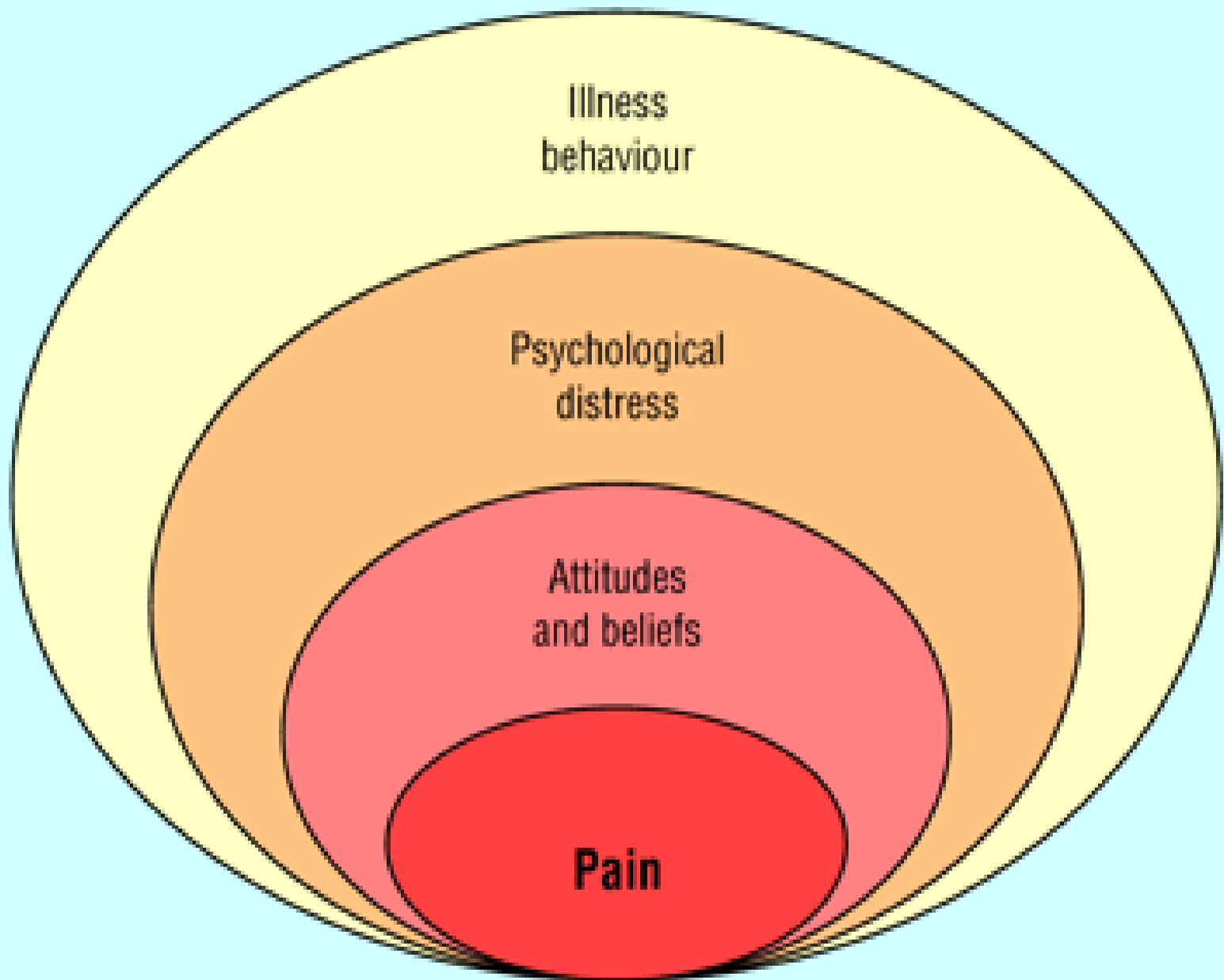
Social

Illness
behaviour

Psychological
distress

Attitudes
and beliefs

Pain





Fear of Movement/Re-Injury, Avoidance & Pain Disability in Chronic LBP Patients,

Vlaeyen J.W.S., Krombez G., Manual Therapy (1999) 187 - 195

▲ Confrontation

- ▲ Adaptive response
- ▲ Not unduly concerned
- ▲ Not serious problem
- ▲ Does not
 - ▲ Take over
 - ▲ attention
 - ▲ lives

▲ Avoidance

- ▲ Maintenance of fear
- ▲ Exacerbation of fear
- ▲ Augments disability
- ▲ Catastrophic thinking
- ▲ 3-Ds
 - ▲ Disuse
 - ▲ Depression
 - ▲ Disability



LBP COMMON PATTERN

<u>factors</u>	<	Ø	>
<i>sitting</i>	<i>X</i>		
<i>sit-stand</i>	<i>X</i>		
<i>bending</i>	<i>X</i>		
<i>walking</i>			<i>X</i>
<i>a.m.</i>	<i>X</i>		
<i>post-a.m.</i>			<i>X</i>
<i>p.m.</i>	<i>X</i>		
<i>stationary</i>	<i>X</i>		
<i>moving</i>			<i>X</i>



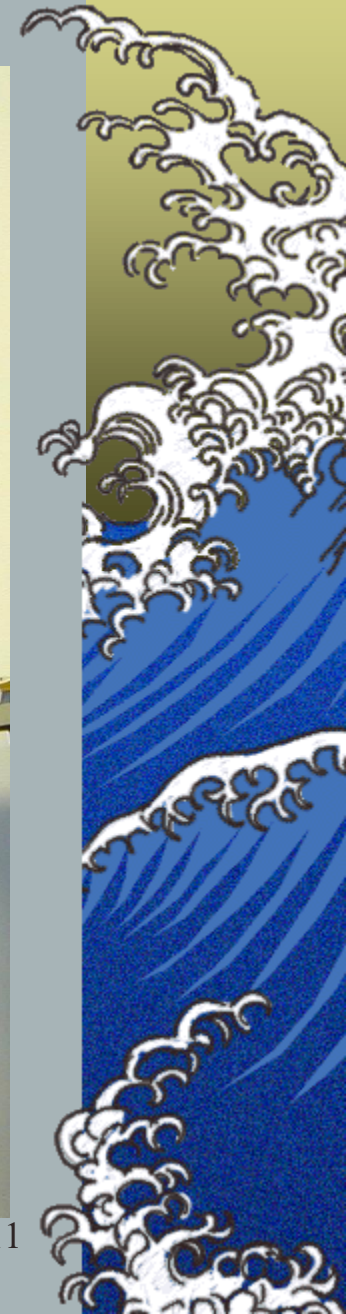
Sitting

Root of Most Postural Spinal Evil

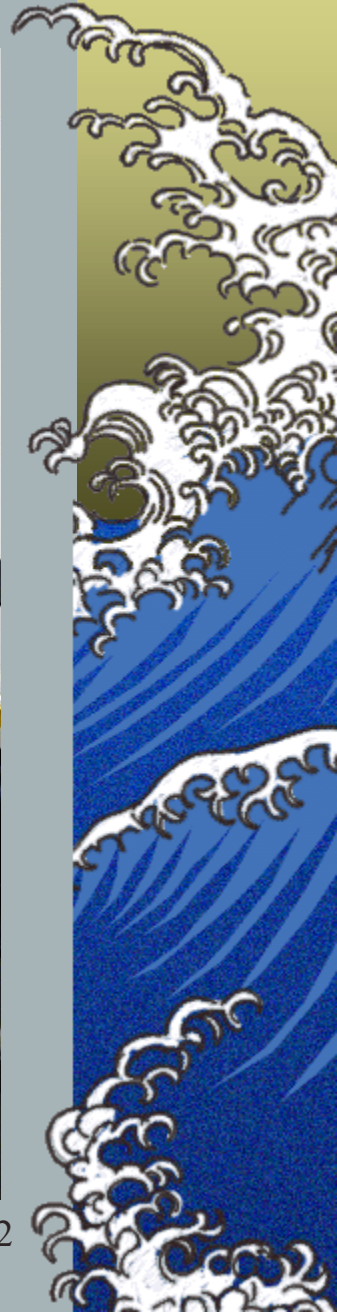
- ▶ Cause, perpetuator, aggravator
- ▶ Upper cervical *extension*
- ▶ Cervico-thoraco-lumbar flexion
- ▶ Shoulder int. rotation & adduction
- ▶ Hip flexion
- ▶ Knee flexion



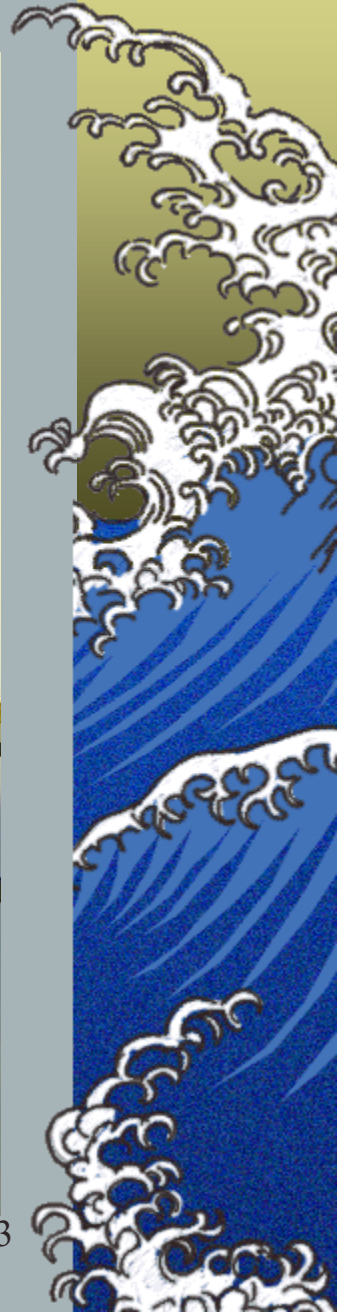
McKenzie Slouch – Overcorrect - Back off 10%



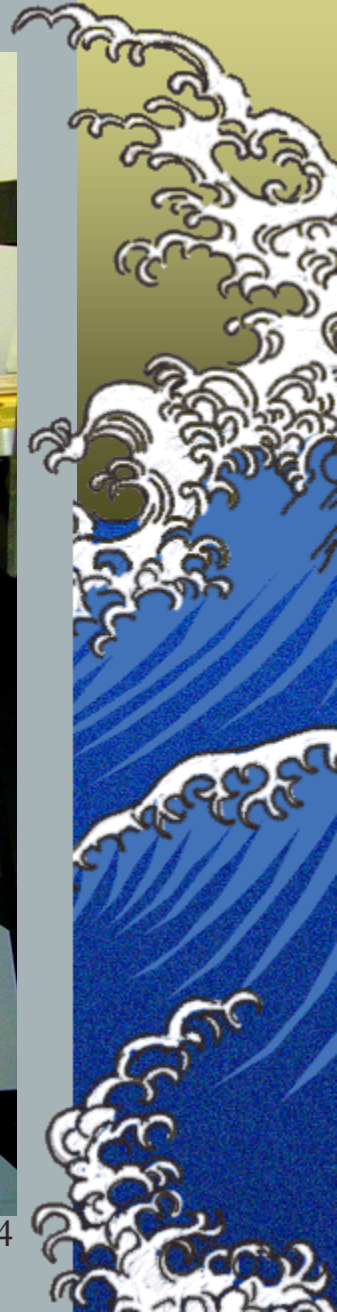
McKenzie Slouch – *Overcorrect* - Back off 10%



McKenzie Slouch – Overcorrect - *Back off 10%*



Sit Like you Stand

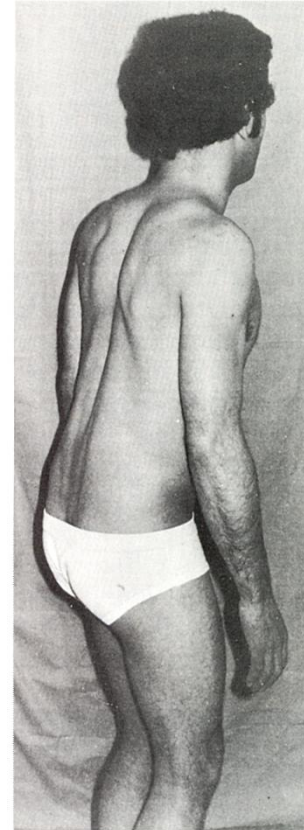


The Myth of Muscle Spasm



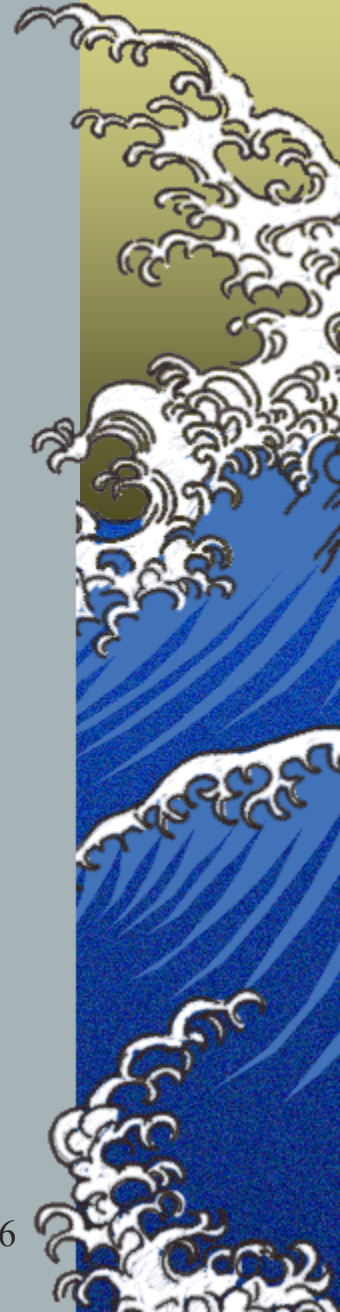
Fig. 3 Paravertibral muscle spasm.

WHAT?



Typical deformity of "lumbago": Slight forward bending of the trunk, limitation of lumbar motion. Severe spasm of the back extensor muscles.

Left Antalgia Away From Right Sided Pain



Opisthotonus: spasm of spinal extensors



Coming to *Terms* With Short Tissue

- ▲ Spasm
- ▲ Hypertonic
- ▲ Hyperactive
- ▲ Tight
- ▲ ≠ Spastic
 - ▲ CNS disorder
- ▲ Adaptive Shortening
- ▲ Contracted
- ▲ Scar
- ▲ Dysfunction (McK)
- ▲ Myofascial!



Short Muscle Predictions

- ▶ Motion loss and symptom provocation . . .
 - ▶ Consistent with muscle claimed to be short
 - ▶ In direction opposite action of culpable muscle
 - ▶ Rx: muscle stretch to recover motion
 - ▶ Inconsistent with muscle claimed to be short
 - ▶ Consider resistance to intra-articular compression
 - ▶ Rx: intra-articular compression to recover motion



Short Muscle Behavior

Muscle Short

Paravertebral

QL

Psoas

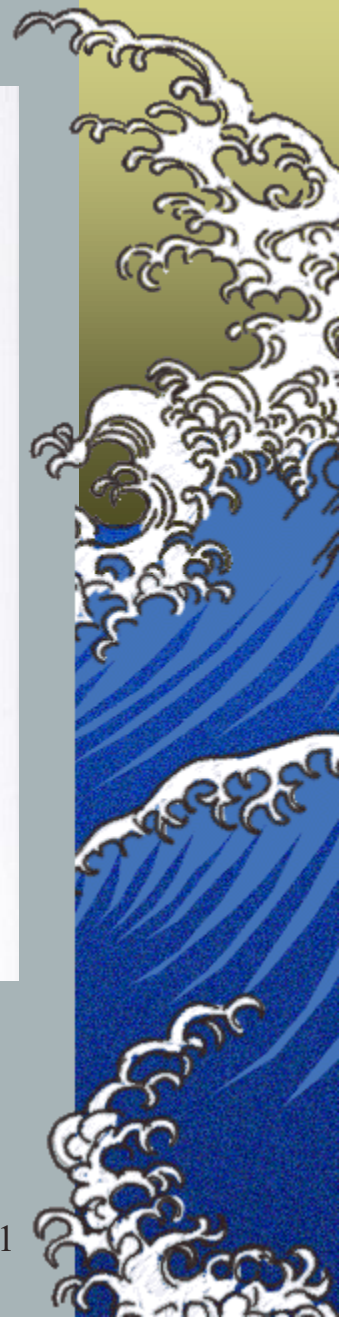
Motion loss & Symptoms Expected

Flexion of the involved spinal area

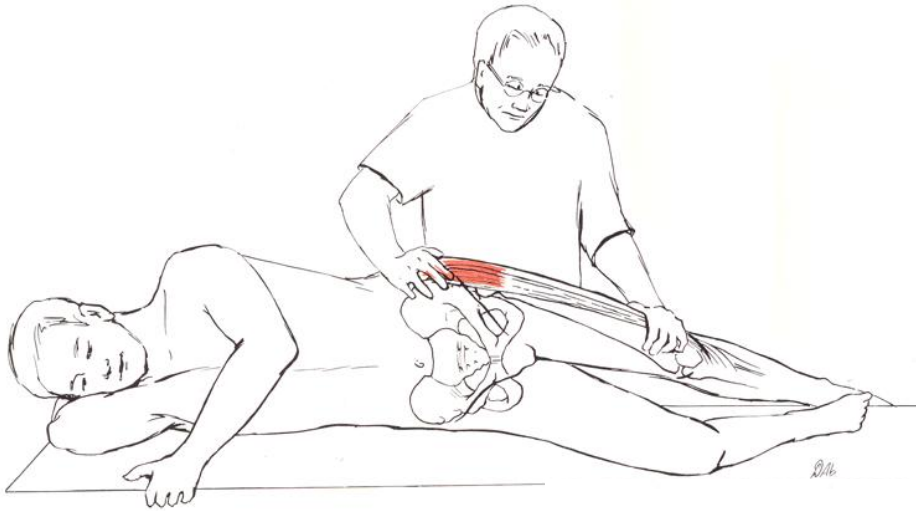
LS flexion, lat flexion to opposite side

Thoracolumbar and hip extension

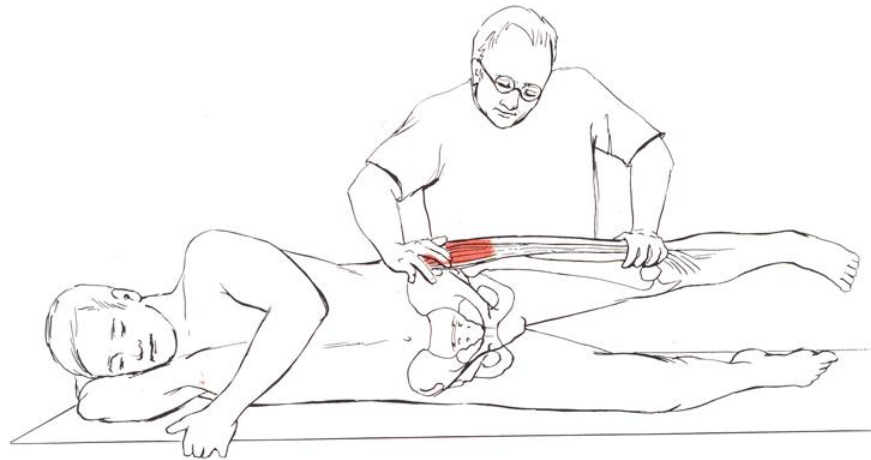




Ober's Test For ITB Contracture

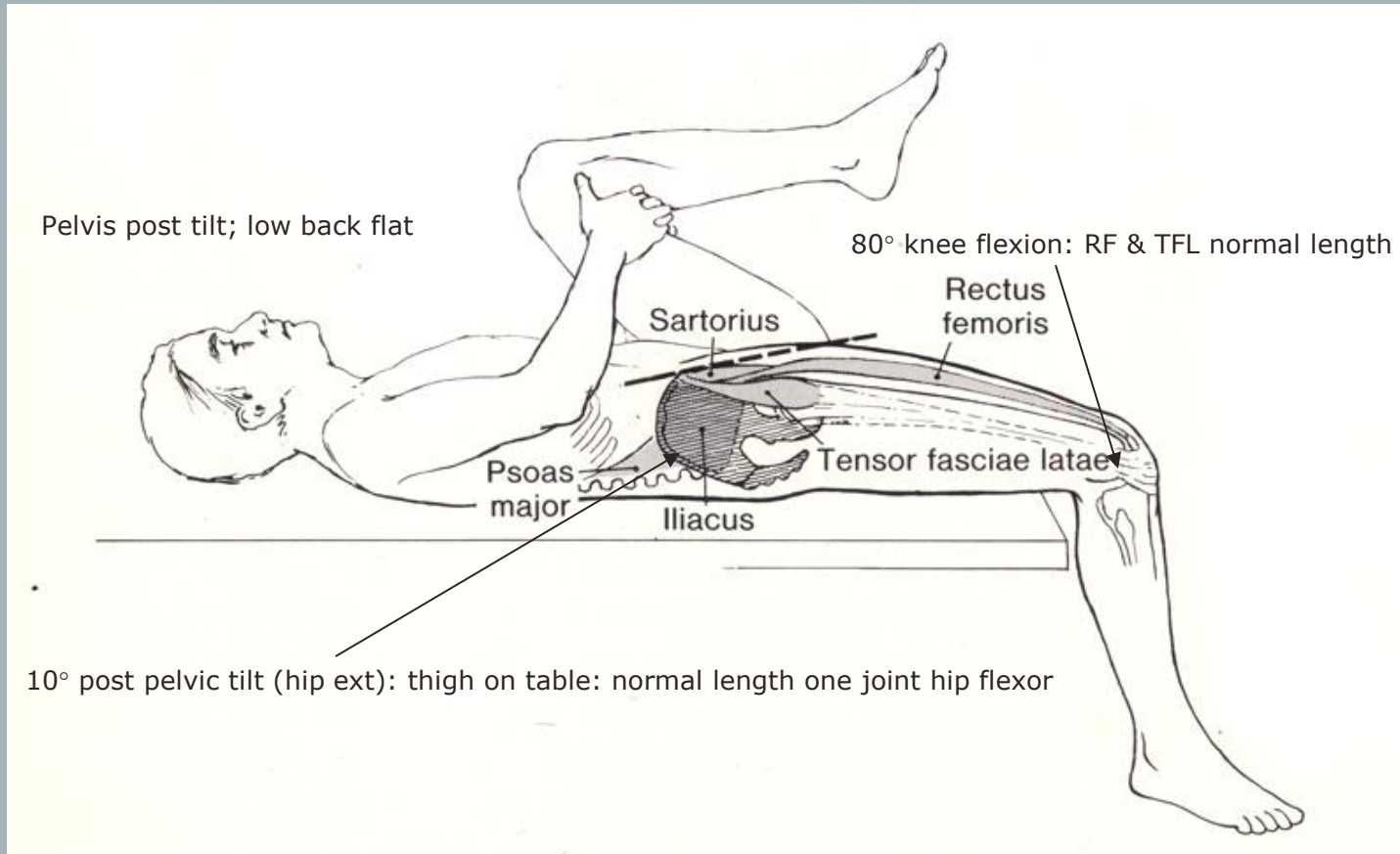


A



B

Normal Length Hip Flexors

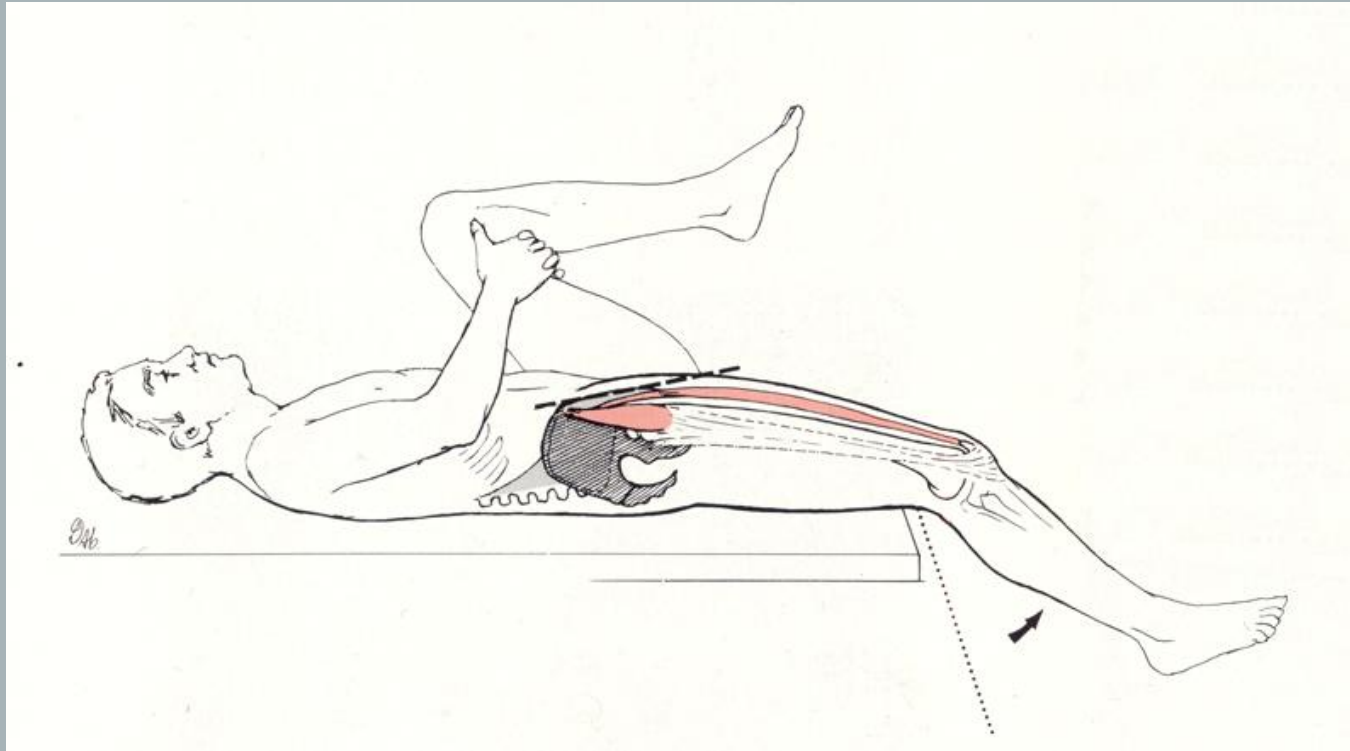


shortness

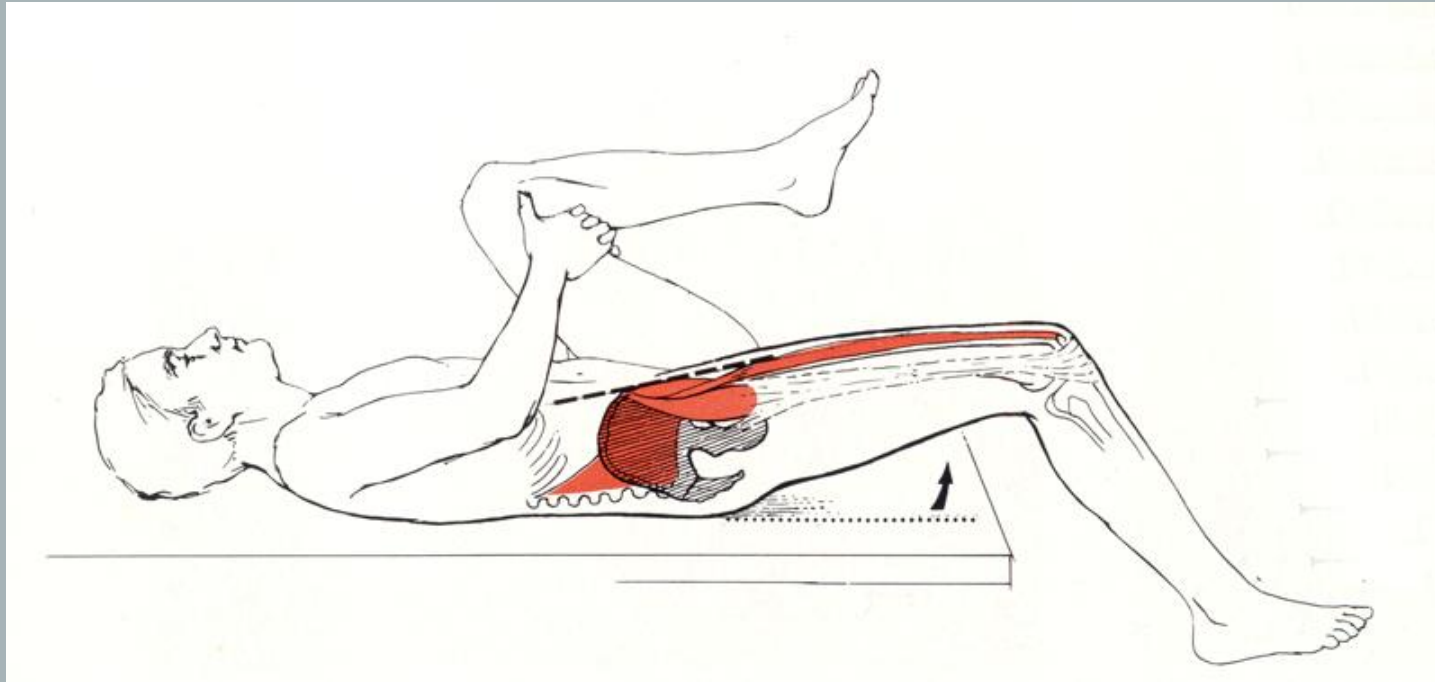
normal length

2-joint hip flexor

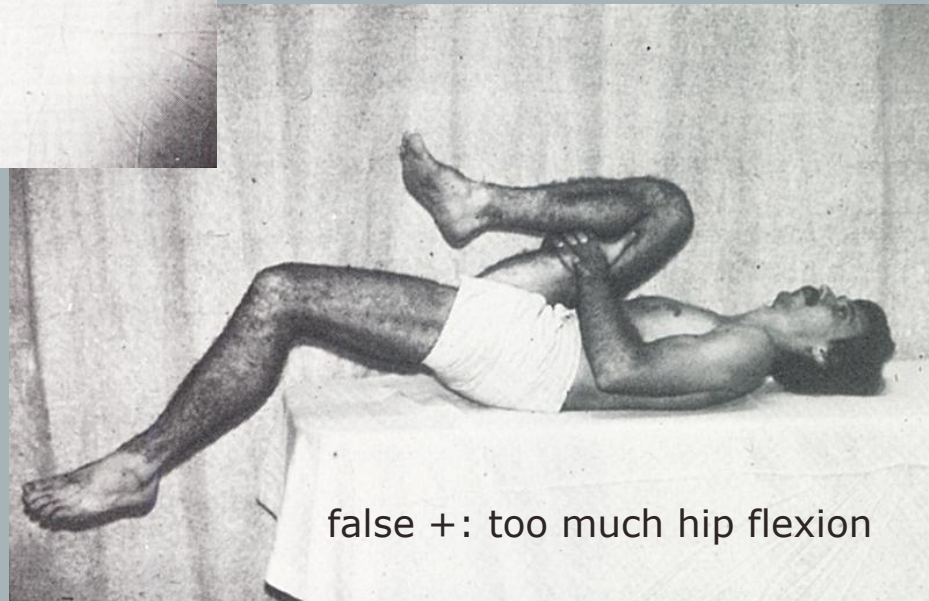
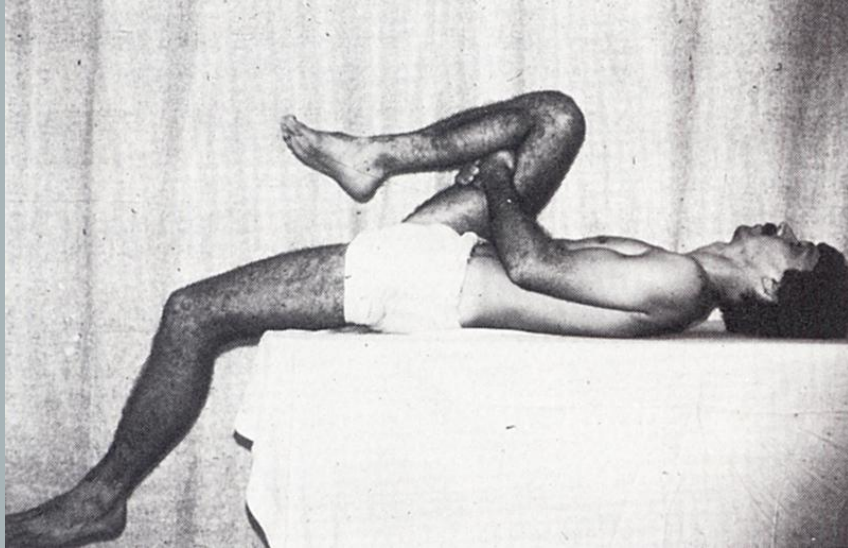
1-joint hip flexor



Short: 1-joint & 2-joint Hip Flexors



1-joint false +

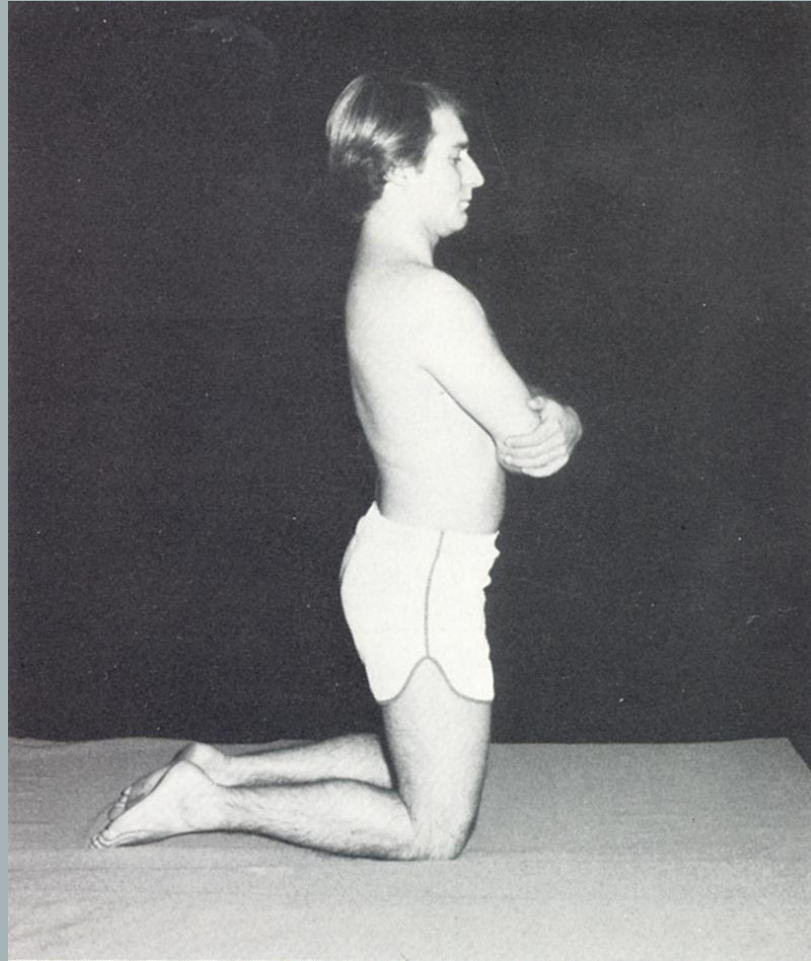
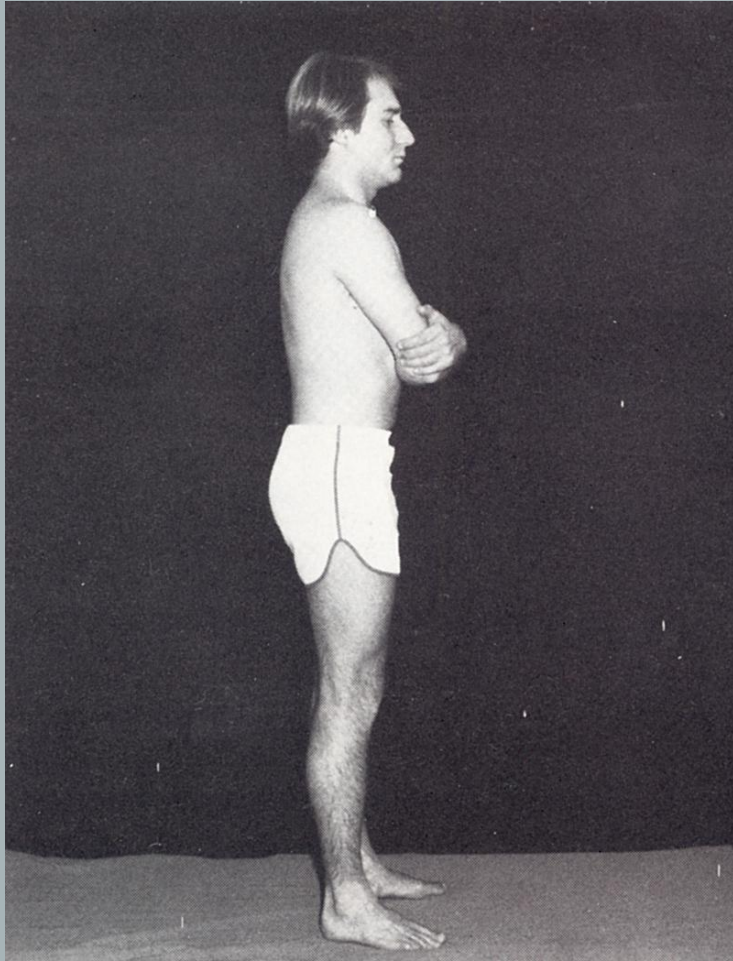


false +: too much hip flexion

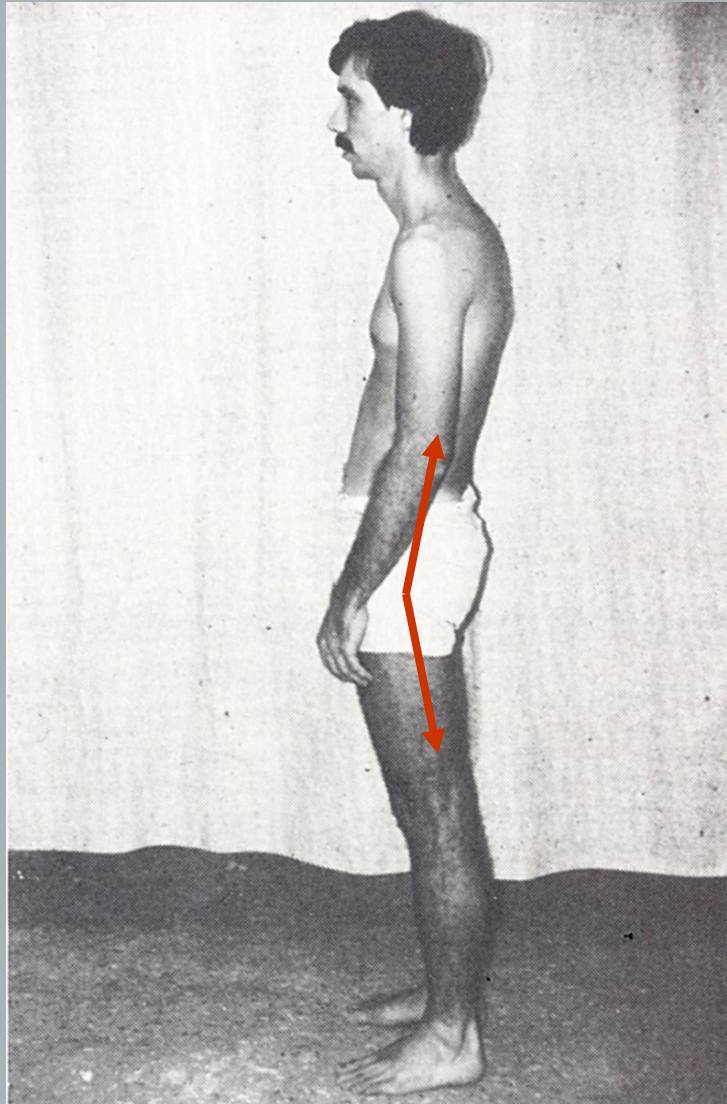


**No lordosis:
1-joint flexors not short**

Short RF & TFL



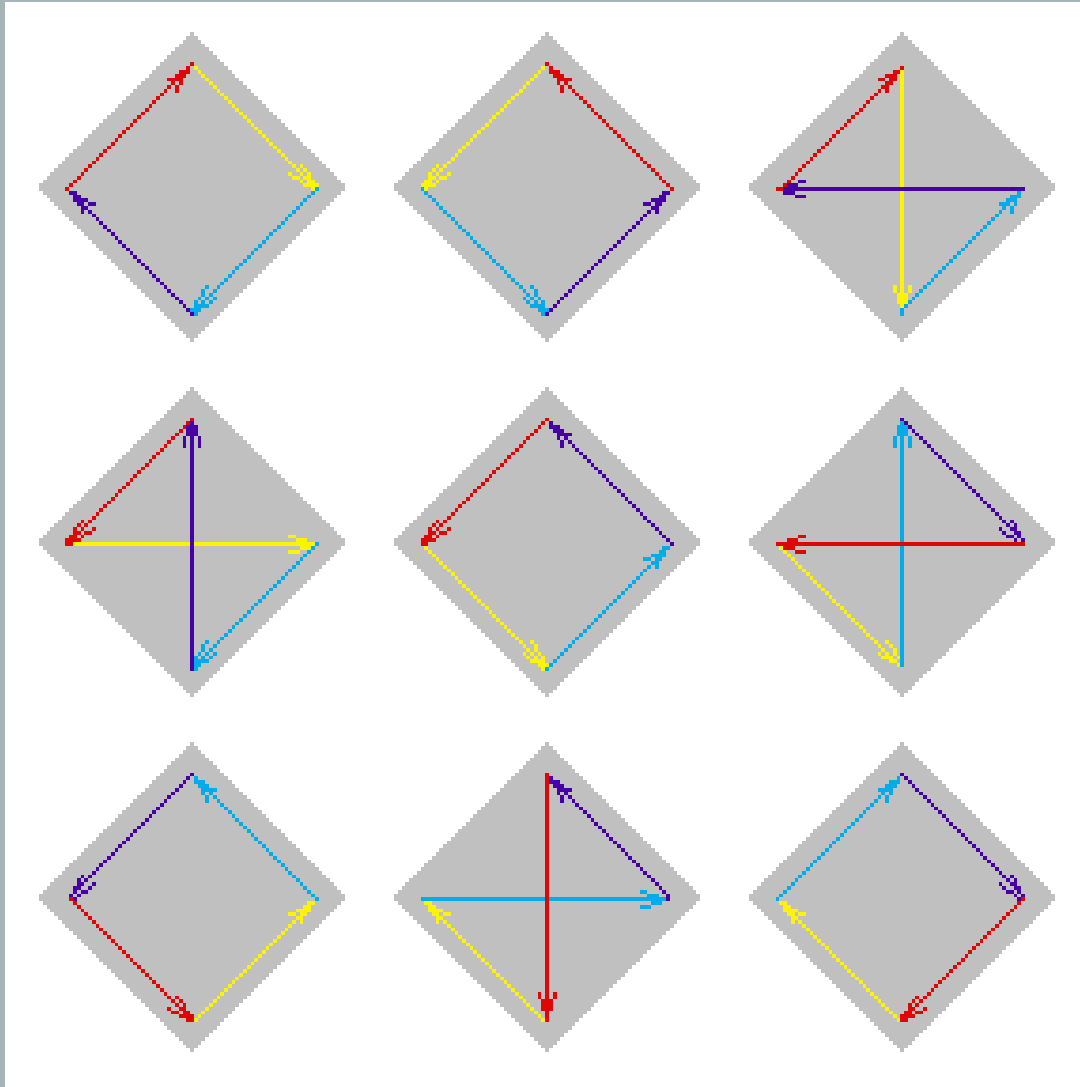
Elongated 1-joint hip flexors



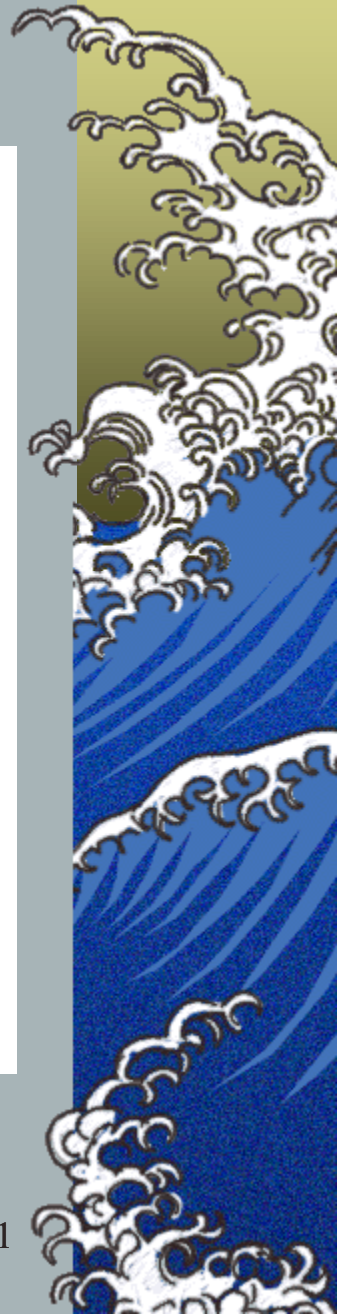
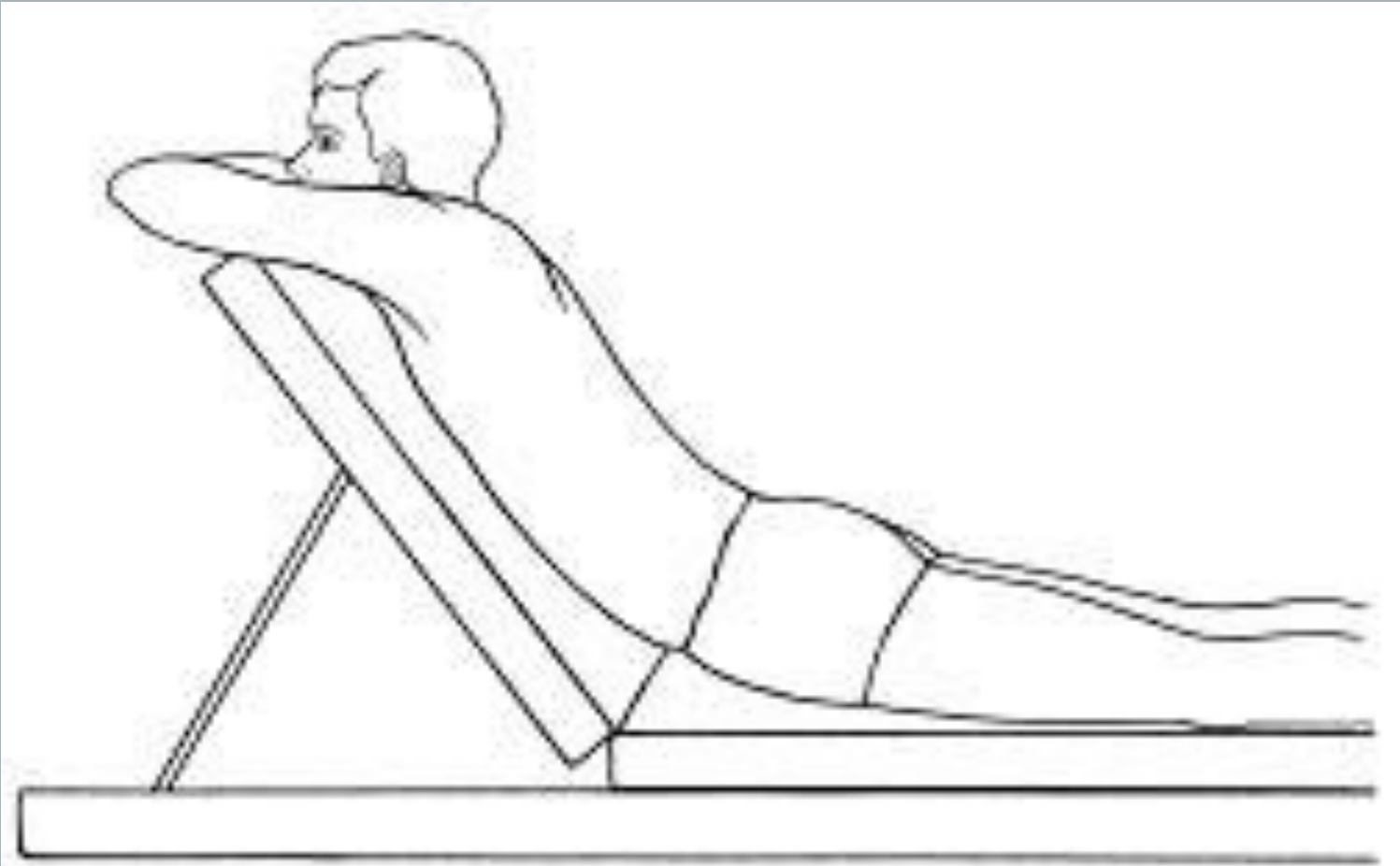
The Slump Test



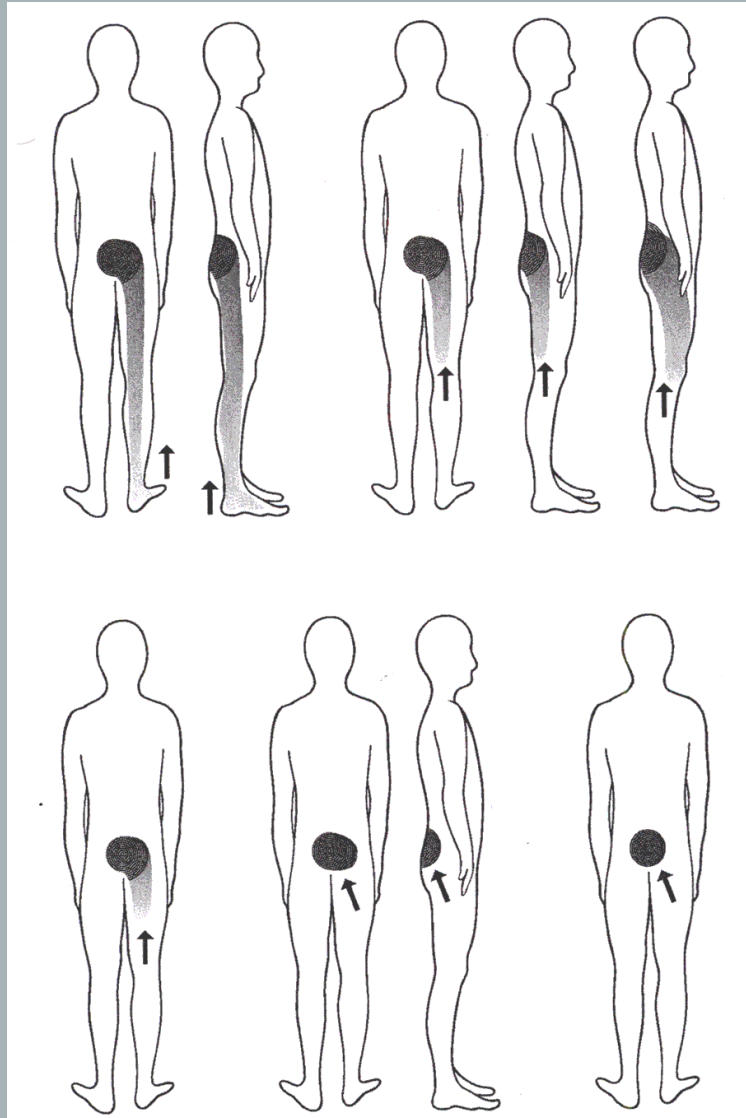
DERANGEMENT



Mr. Smith 1956



Centralization <> Peripheralization

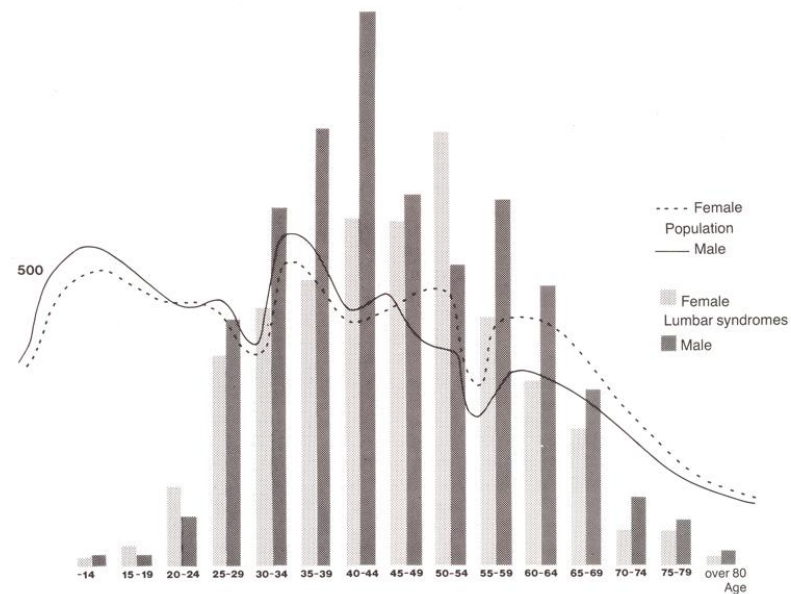


Centralization as a Predictor of Provocation Discography

Laslett, et al. The Spine Journal 5 (2205) 370-380

- ▲ Centralization & discogenic pain: Subgroups
 - ▲ Severe disability
 - ▲ Specificity 80%
 - ▲ Sensitivity 46%
 - ▲ + LR 3.2
 - ▲ Distress
 - ▲ Specificity 89%
 - ▲ Sensitivity 45%
 - ▲ + LR 4.1
 - ▲ Moderate, minimal or no disability
 - ▲ Specificity 100%
 - ▲ Sensitivity 37%

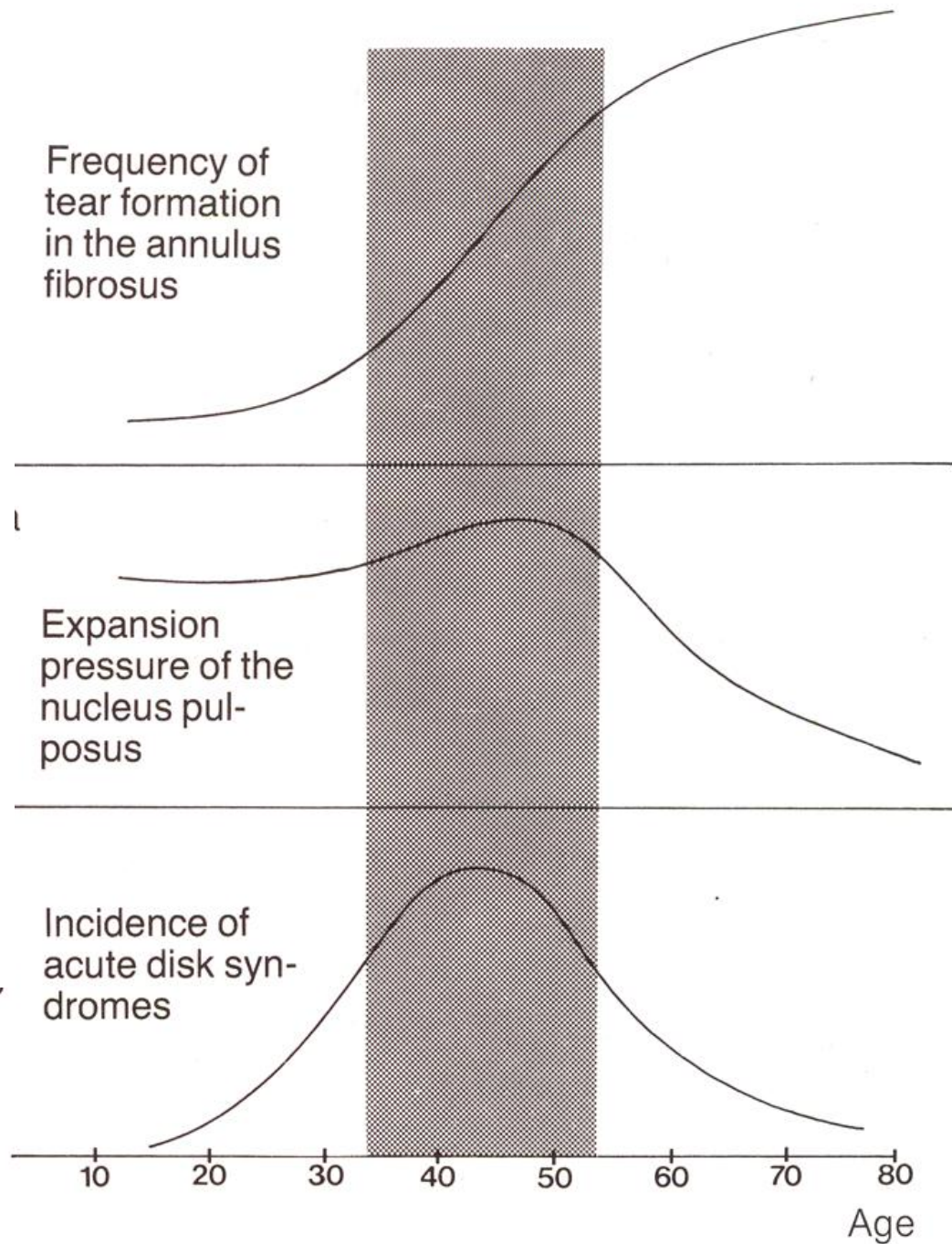




%
50
Frequency of
tear formation
in the annulus
fibrosus

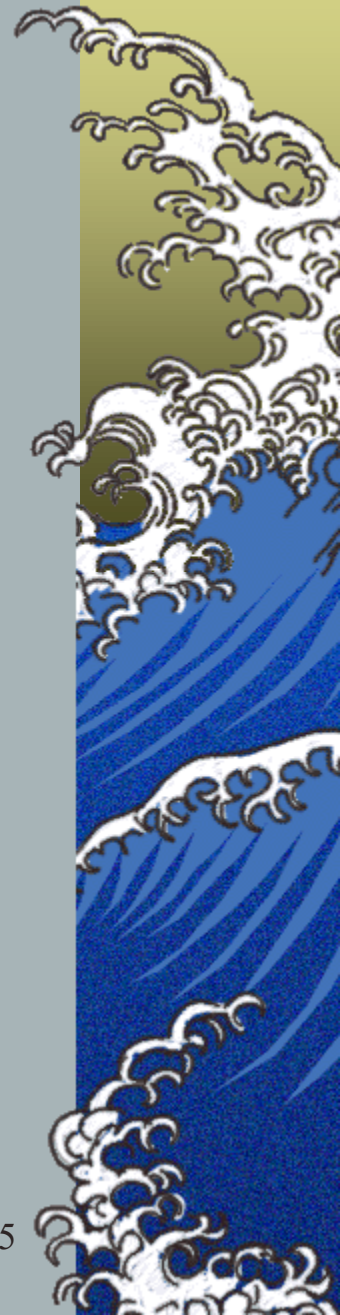
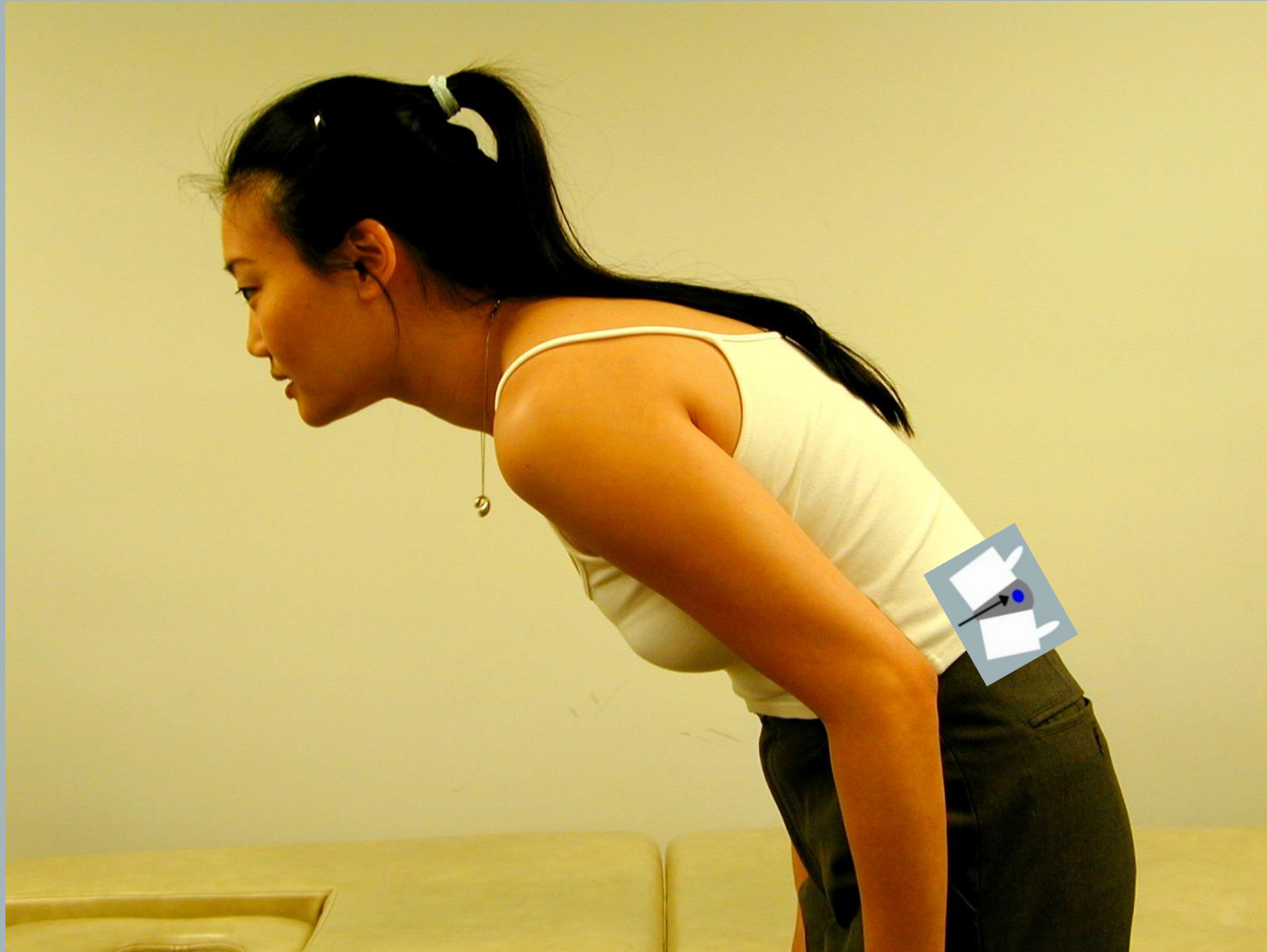
Expansion
pressure of the
nucleus pul-
posus

Incidence of
acute disk syn-
dromes



Lumbar Kyphotic Antalgia

OBVIOUS Posterior Derangement



Kyphotic Antalgia

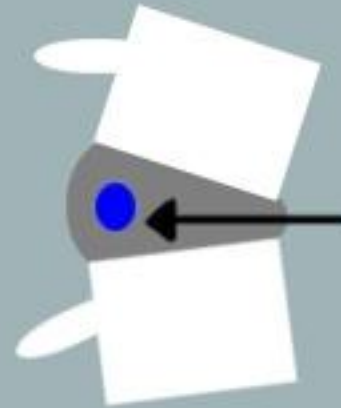
Posterior Derangement

Flexion:

- possible
- pain during motion
- end range pain

Sustained or dynamic flexion results in:

- peripheralization
- increased pain
- further loss of extension



Kyphotic Antalgia

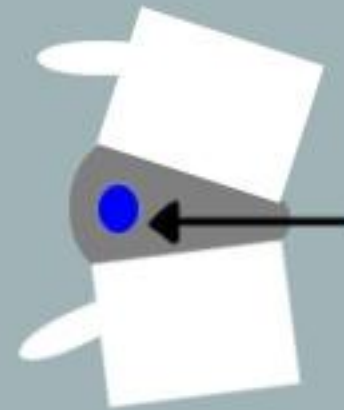
OBVIOUS posterior derangement

Extension:

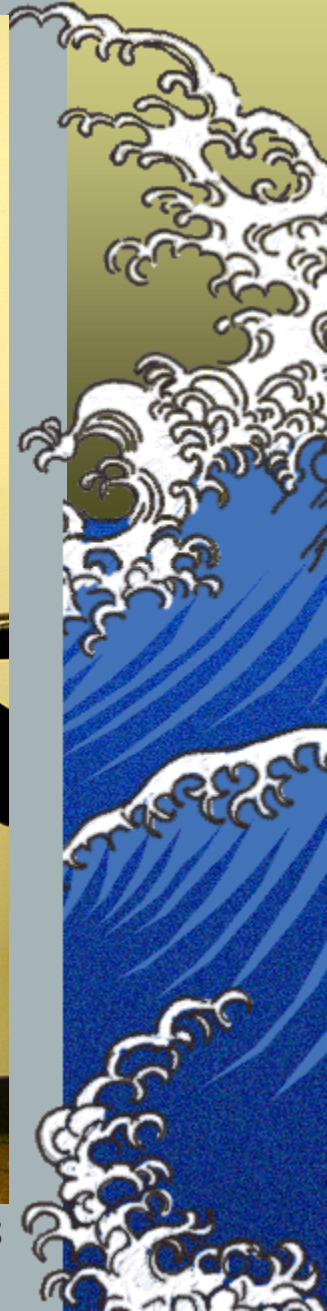
- obstructed
- no pain during motion
- end range pain

Sustained or dynamic extension results in:

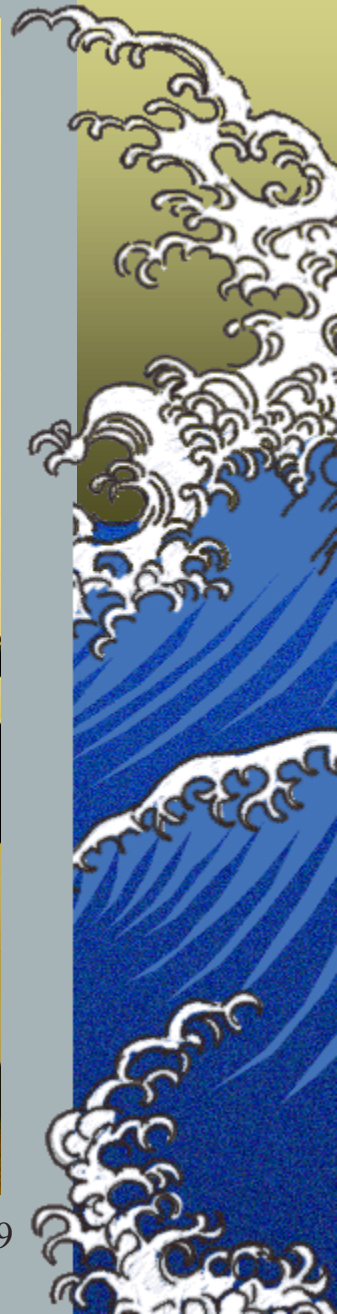
- centralization
- diminished pain
- recovery of extension
- less pain with flexion



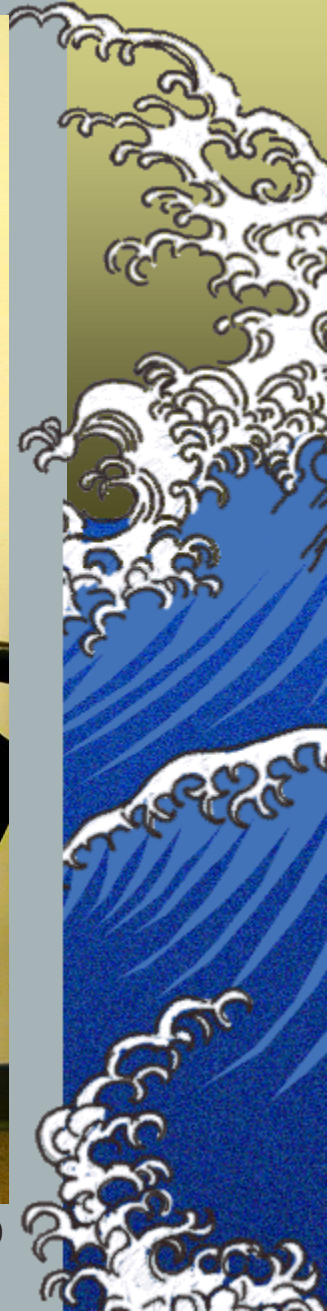
Prone on Plinth on Pillow



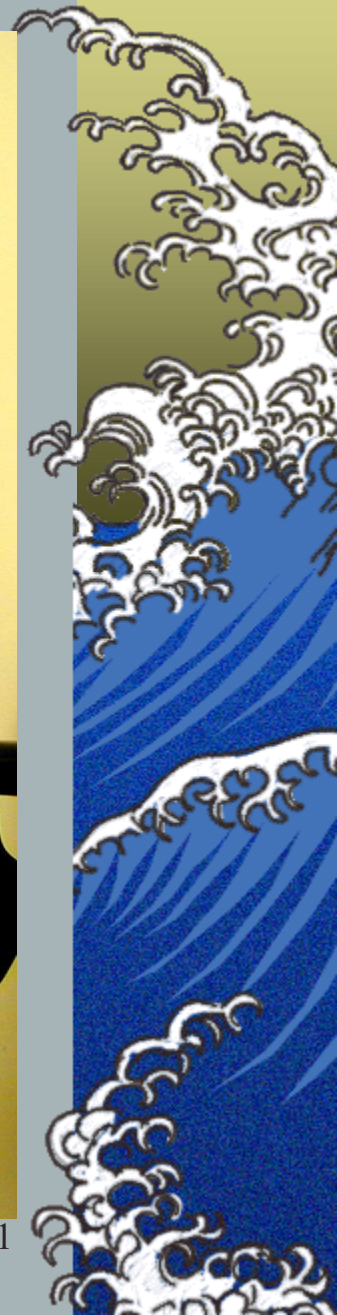
Prone Placement



On Elbows



“Active” Passive Prone Extension



Symptomatic Response

a closer listen

- ▶ Monitor for symptomatic responses
 - ▶ During motion (mid range)
 - ▶ Peripheralization
 - ▶ Centralization
 - ▶ After ER
 - ▶ AT End Range



Lumbar Posterior Derangement

prone extension patient overpressure strategies

- ▶ Eliminate hip extensors
 - ▶ Knock-knee & pigeon toe positioning
- ▶ Let pelvis sag to surface
- ▶ Straighten elbows
- ▶ Further, further, further, further
- ▶ Doing it backwards
 - ▶ Straighten elbows first
 - ▶ Let pelvis sag second



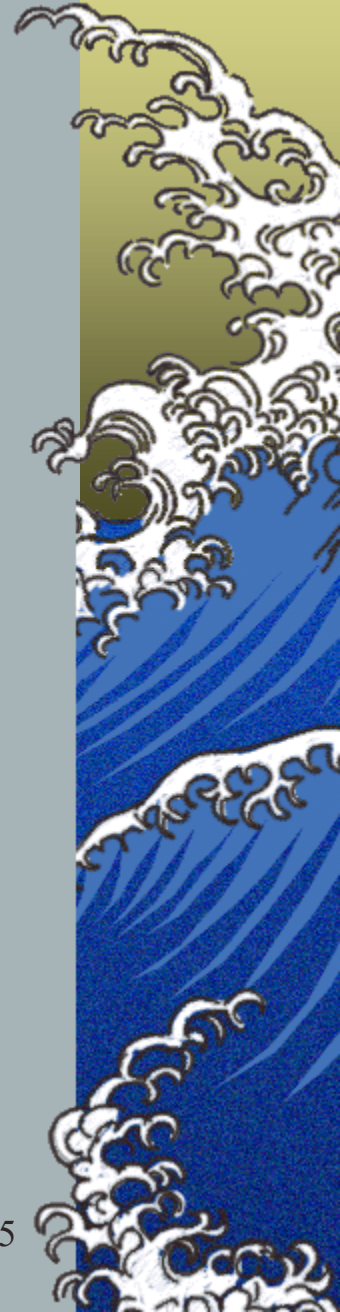
Lumbar Posterior Derangement

prone extension manual overpressure strategies

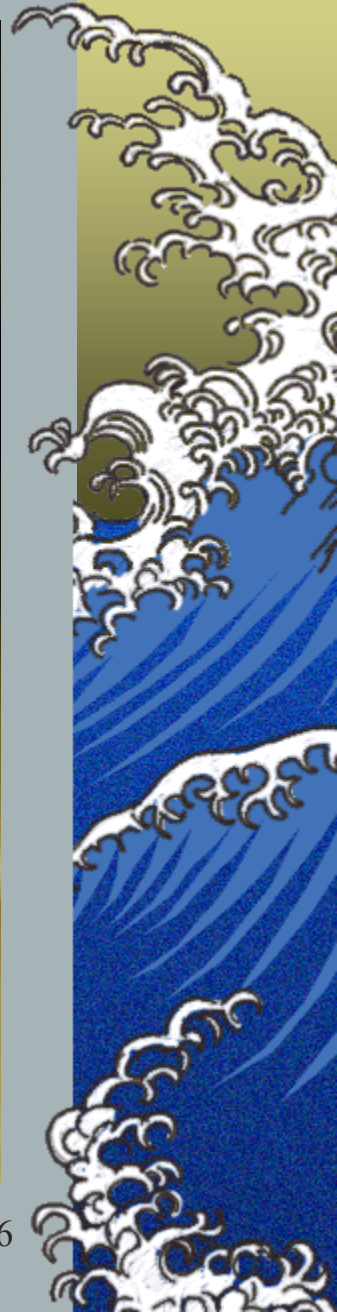
- ▶ Overpressure (taking slack out/mobilization)
 - ▶ Reduces derangement
 - ▶ Reveals dysfunction



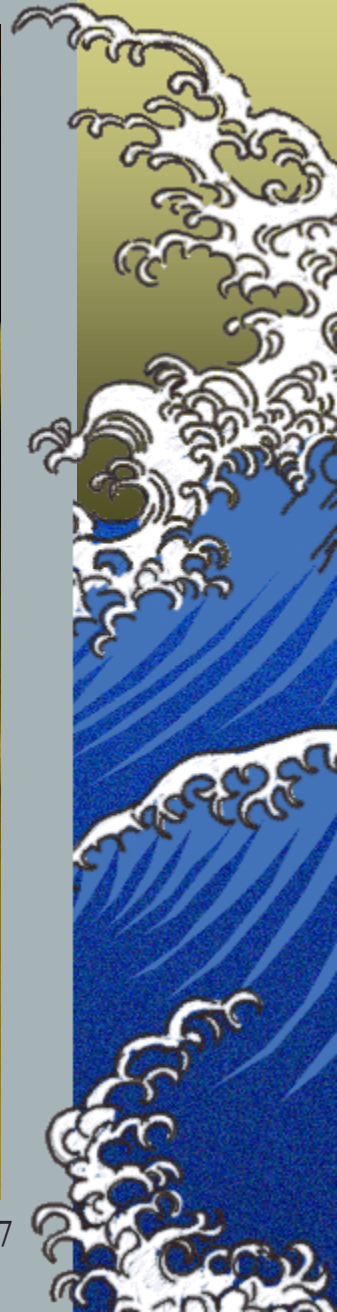
Sacral Base Contact



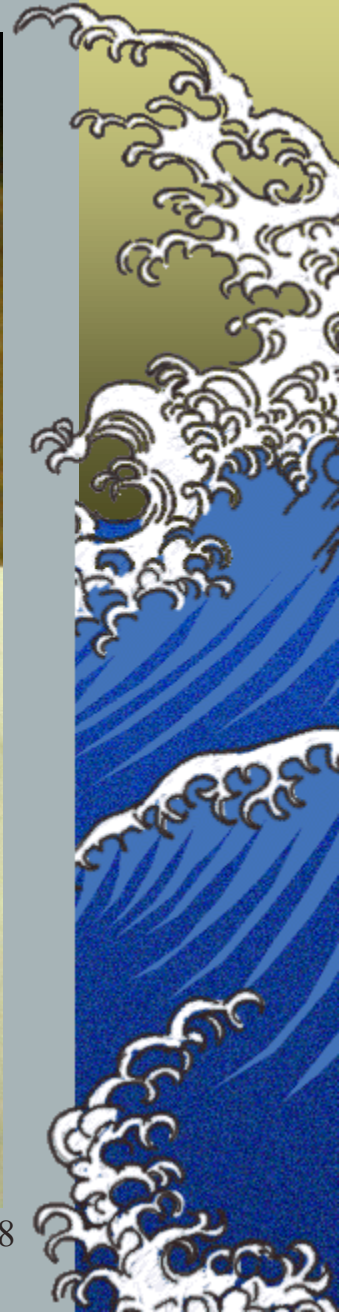
Bilateral Paraspinal Contact



Knife Edge Contact



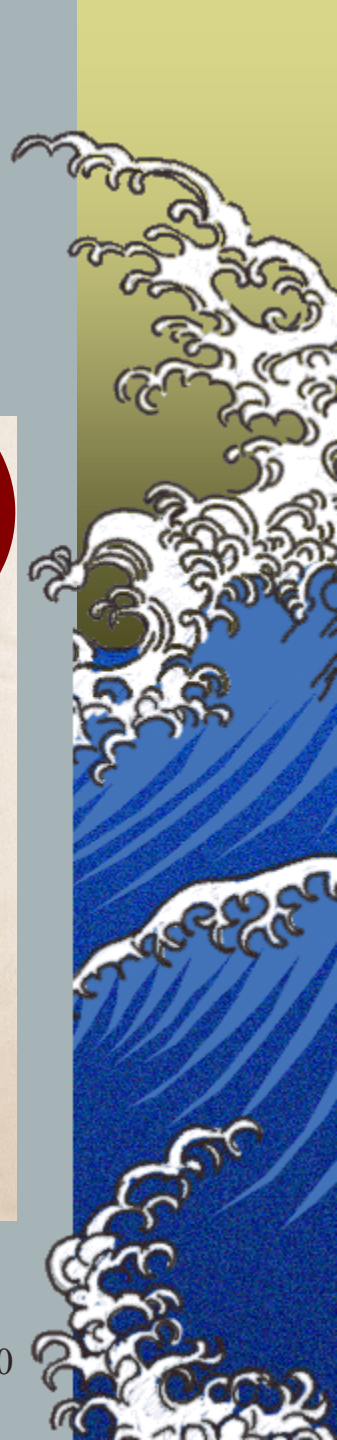
Contiguous SP Medial Mobilization



Lateral Shift Toward Peripheralization



Extension in Standing

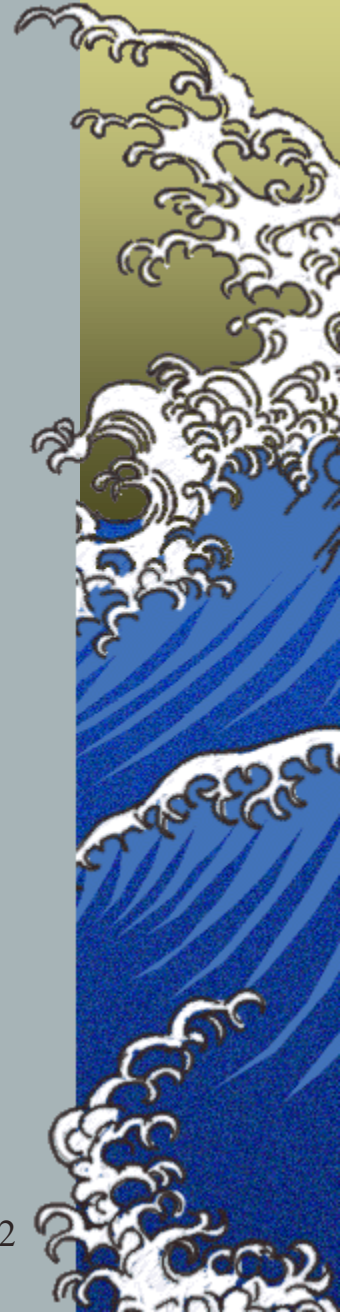


Posterior Derangement Expectations

- Worse in a.m.
- Better as day goes
- Worse at end of day
- Flexion
 - Worse sitting and bending
 - Pain during motion & altered mechanics
 - Peripheralization
- Extension
 - Better standing and walking
 - No pain during motion, painful obstruction
 - Centralization



Scoliotic Antalgia – Left Lateral Shift

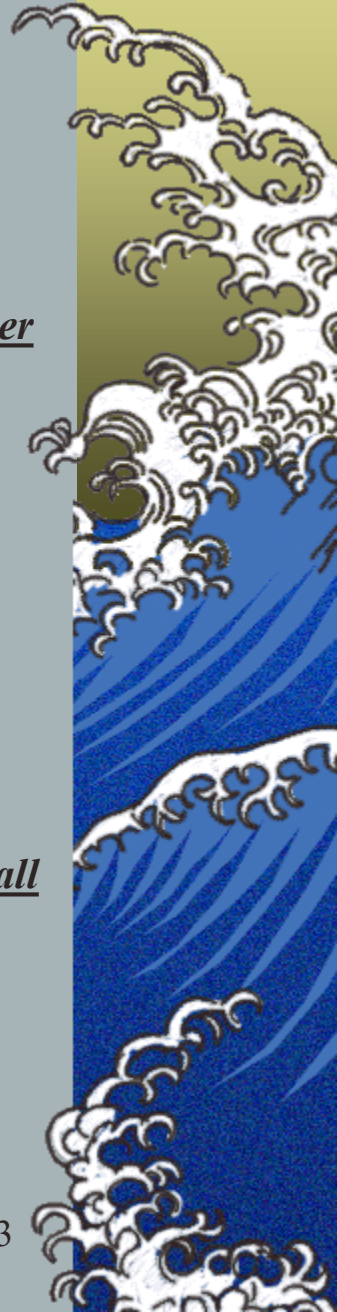


Right Side Gliding

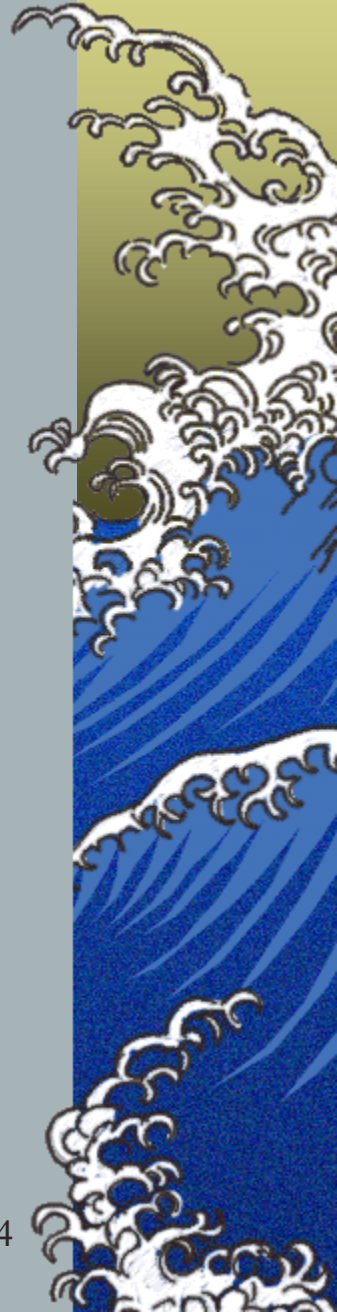
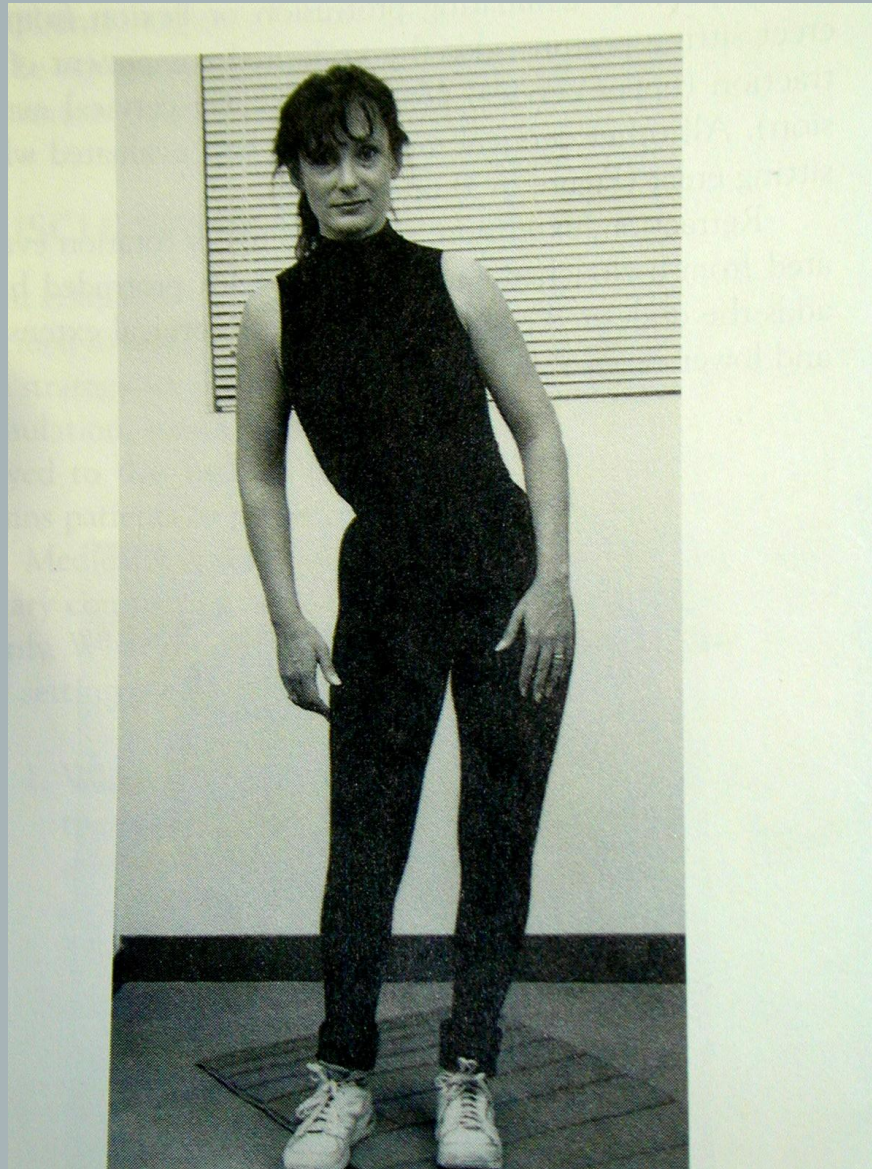


shoulder should be lower

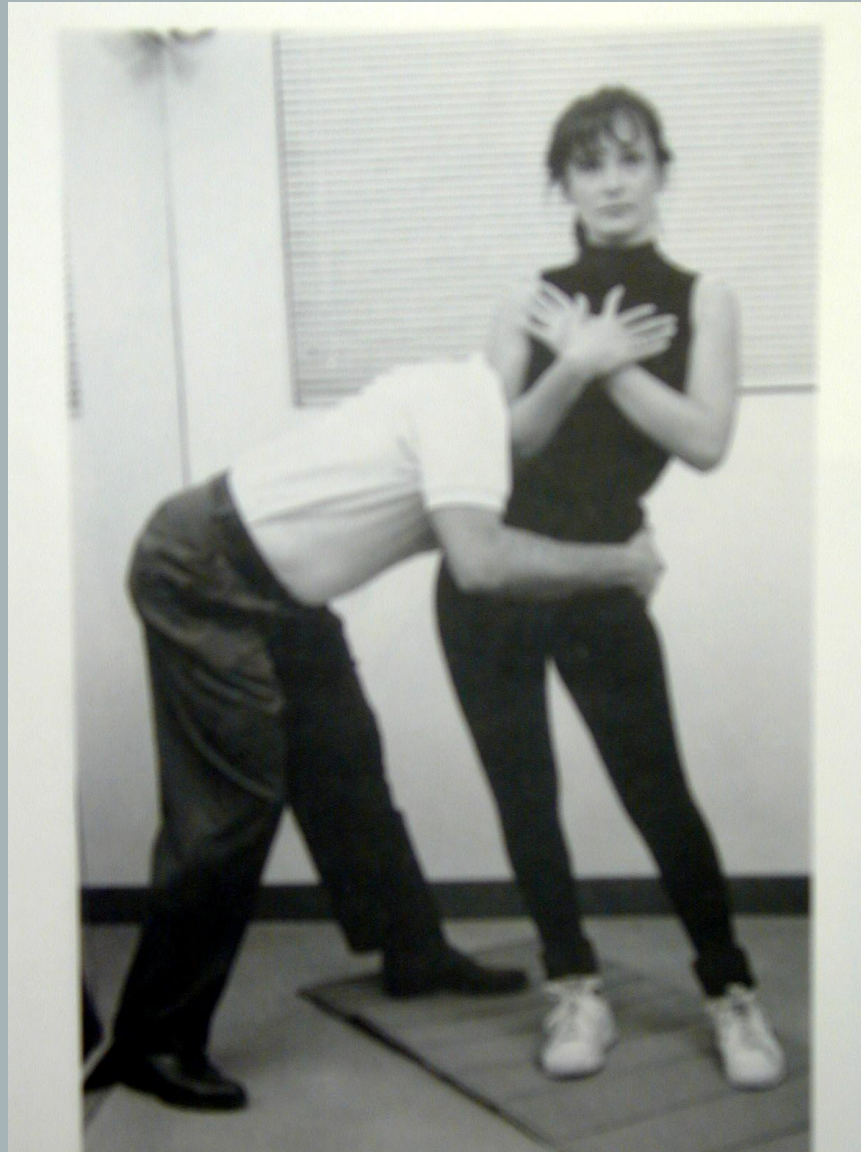
hip should not contact wall



Right Lateral Shift



Left Side Gliding



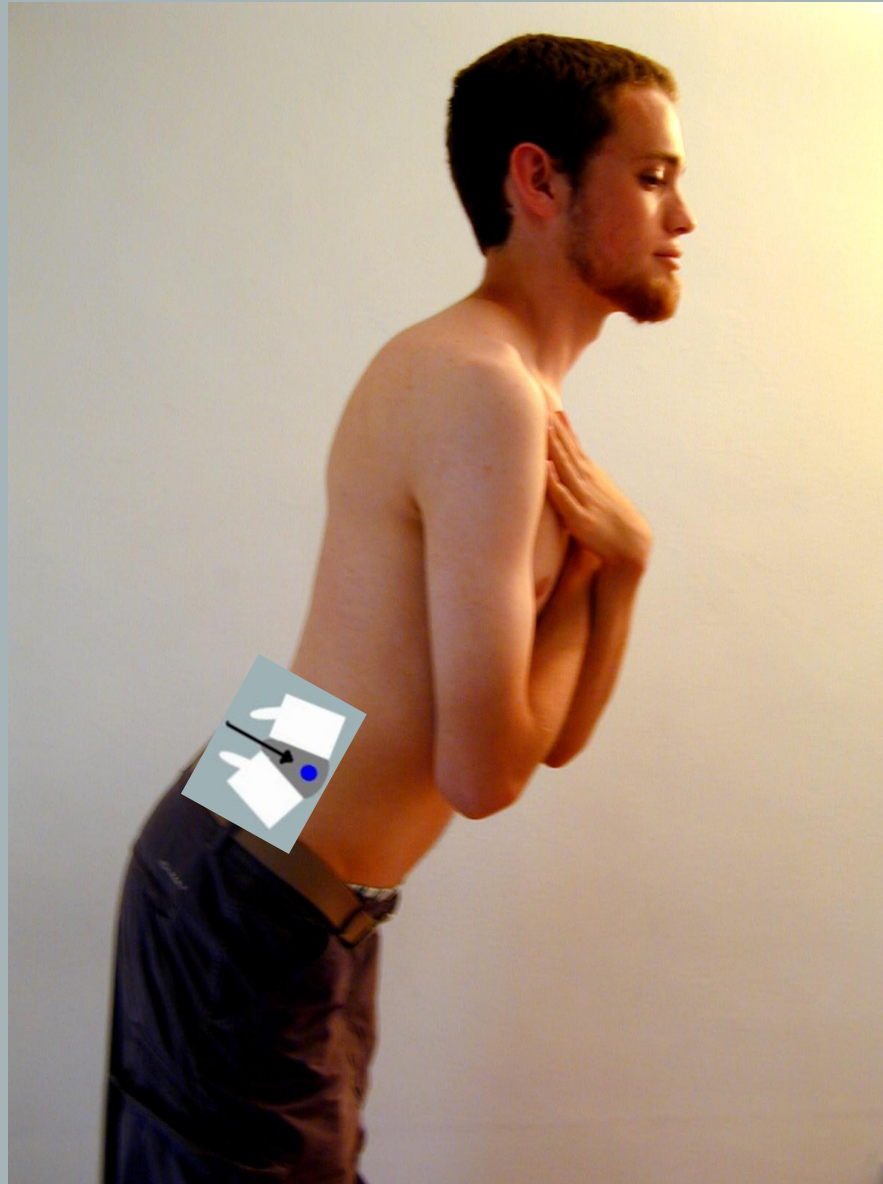
Extension Shifted Opposite Scoliosis



prone extension from right lateral shift position



Lumbar Lordotic Antalgia



Lordotic Antalgia

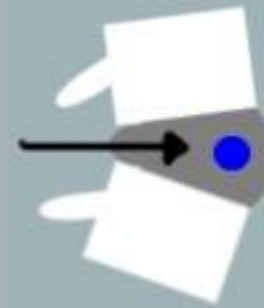
OBVIOUS anterior derangement

Extension:

- possible.
- pain during motion.
- end range pain

Sustained or dynamic extension results in:

- peripheralization
- increased pain.
- further loss of flexion.



Lordotic Antalgia

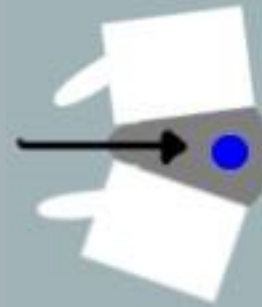
OBVIOUS anterior derangement

Flexion:

- obstructed.
- no pain during motion.
- end range pain.

Sustained or dynamic flexion results in:

- centralization
- decreased pain
- recovery of flexion
- less pain with extension.



LB Lordotic Antalgia

Intradiscal vs. Neural/Dural/Radicular

- ▶ Intradiscal (more common than neural pain)
 - ▶ Doesn't radiate past knee
 - ▶ Flexion centralizes, extension peripheralizes
- ▶ Neural/Dural/Radicular
 - ▶ Radiates past knee
 - ▶ Extension slackens root w/ temporary relief
 - ▶ Flexion peripheralizes



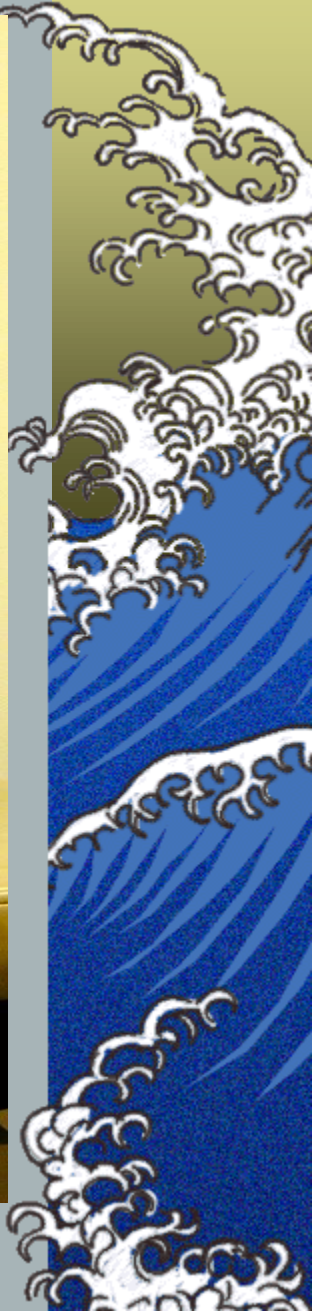
Anterior Derangement

Lumbar Mobs

- Monitor symptomatic response
- Supine knee to chest
- Sitting chest to knee
- Prostration prayer
- Standing in flexion
- Overpressure !



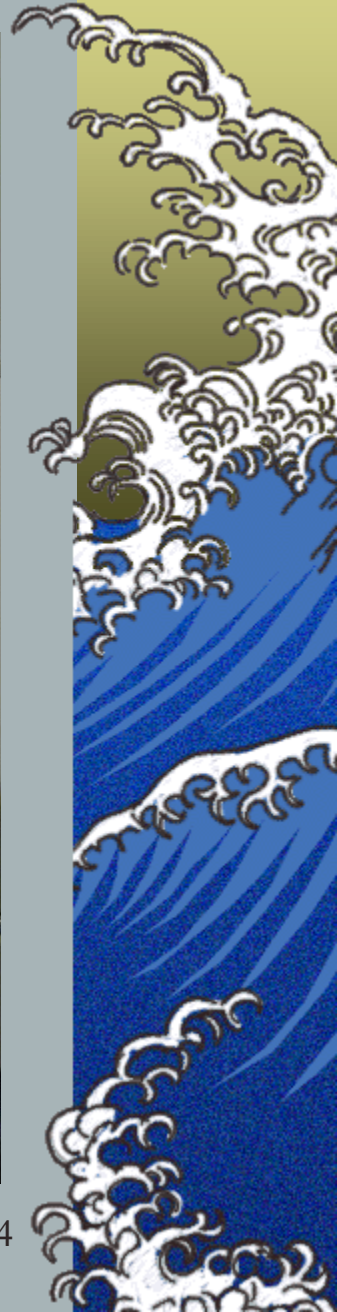
Knee to Chest



Sitting Chest to Knee



Prayer

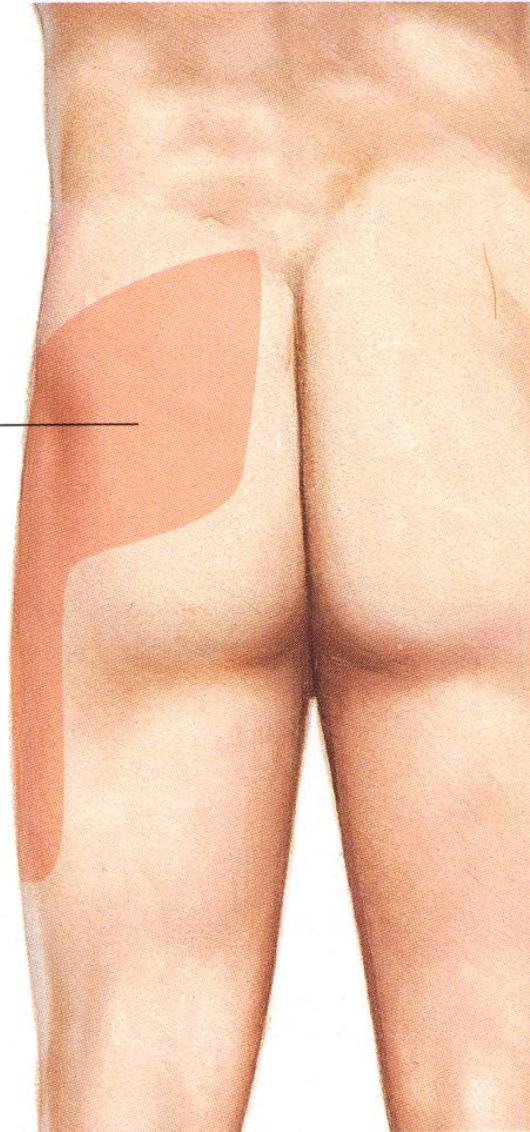


Flexion Standing



Sacroiliac Joint Pain Referral Patterns

Sacroiliac
joint pain
referral
pattern



Diagnosing Painful SI Joints

Laslett et al, Australian Journal of Physiotherapy 49: 89-97, 2003

▲ *Need 3:*

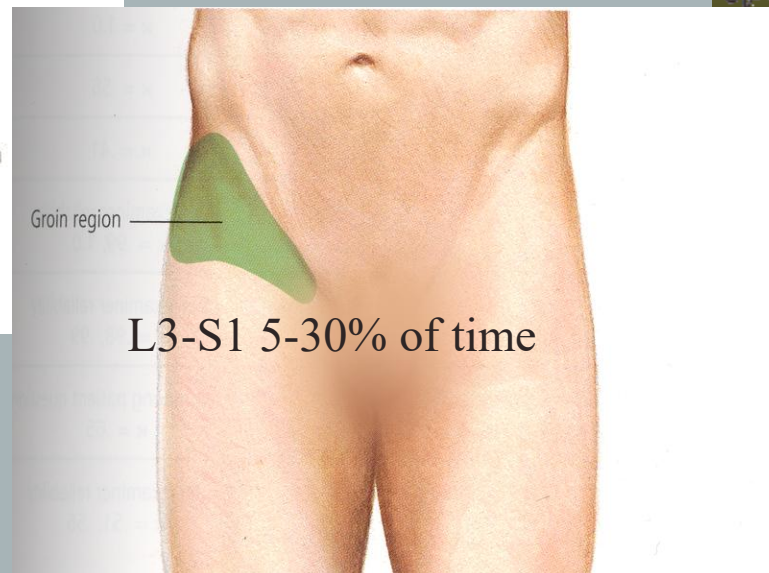
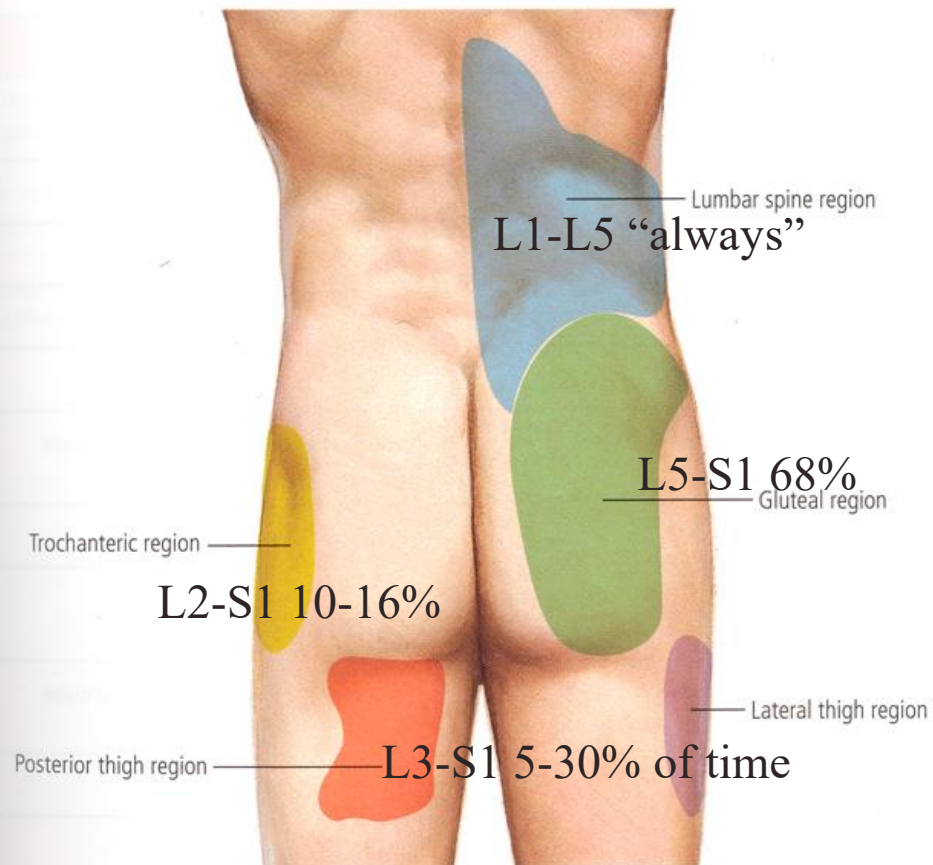
- ▲ Iliac distraction (1)
- ▲ Gaenslen tested bilaterally (1 max)
- ▲ Thigh thrust (1)
- ▲ Iliac compression (1)
- ▲ Sacral thrust (1)

w/ McK eval: Sensitivity 91%; Specificity 87%

w/o McK eval: Sensitivity 91%; Specificity 78%



Lumbar Zygapophyseal Joint Pain Referral Patterns



Lumbar Z-joints

Laslett M, et al Spine J. 2006 Jul-Aug;6(4):370-9.

- ★ Kemp's Test 100% sensitive
 - ★ If negative you are sure it is not a facet
 - ★ If positive you are not sure if it is a facet
- ★ Unilateral: does not centralize
- ★ Older than 50

