



IV) Sparing the Spine & Load Sharing



A) Why is sitting a pain in the butt?



Patients want to know “what is causing my pain?”

- Pain is due to overload of tissues
- **Acute injury** like a sprained ankle is due to a sudden, forceful overload
- The same is true in the back.



Or, is it?



What type of strain causes injury?

- Too much or too little of anything!

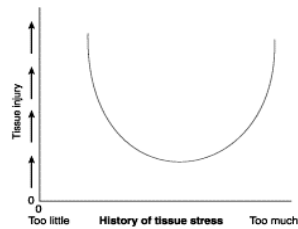
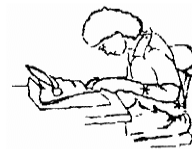


Figure 1: Relationship of injury to history of spinal load (after McGill, 1999).

- Most **spinal pain and athletic injuries** are usually from gradual, less forceful overload that is repeated over & over again. Not an injury!!!!!!!!!!!!!! Remember, Travell's quote.



- “After prolonged strain ligaments, capsules, and IV discs of the lumbar spine may creep, and they may be liable to injury if sudden forces are unexpectedly applied during the vulnerable recovery phase.”

Bogduk N, Twomey L. *Clinical Anatomy of the Lumbar Spine*. Churchill Livingstone

Back Injury

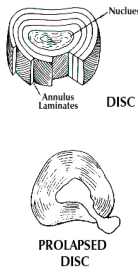
- ...is usually a result of “a history of excessive loading which gradually, but progressively, reduces the tissue failure tolerance.”

McGill SM. *ACSM Resource Manual - 3rd Ed. 1998*. Williams & Wilkins, Baltimore

DISC

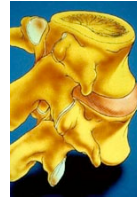
- “Herniation is more consistently produced under many cycles of combined compression, flexion and torsional loading and tends to occur in younger specimens with no visible gross signs of “degeneration”.”

McGill SM. Resource Manual - 3rd Edition.
Williams & Wilkins, Baltimore, 1998.

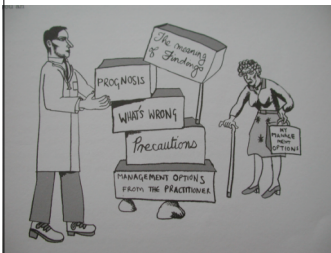


FACETS

- “fail under shear loading and torsional loading and hyperextension.”



What Do Patients Want To Know?



- Turner JA. Educational and behavioral interventions for back pain in primary care. Spine 1996.

1. Exam results – what we found?
2. Natural history - Prognosis
3. What is causing the pain
4. **Precautions**
5. Management options - practitioner
6. Self-management options

Precautions

- Do patients get consistent or inconsistent advice about ADL's & their back?



Precautions



- Prolonged sitting



- Early morning flexion

Precautions



- Lifting w/ end range flexion



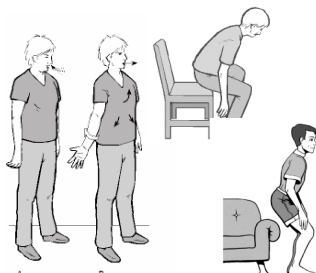
- Loaded exercise w/ end range flexion

Precautions

***"the first treatment is to teach the patient to avoid what harms him." **

Karel Lewit

- Examples:



Why does my back hurt - I do 100 sit-ups every morning?



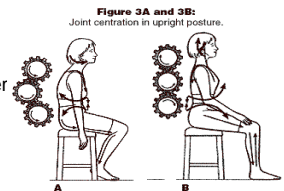
When is flexion the biggest danger?

- Stover Snook 1998



Postural Experiment: Is Upright Posture Really Important?

- Respiration
 - Slump & breathe in
 - Perch & sit up & breathe in
 - When is lung capacity greater
- Mobility
 - Slump & extend your neck
 - Perch & sit up & extend your neck
 - When is mobility greater?

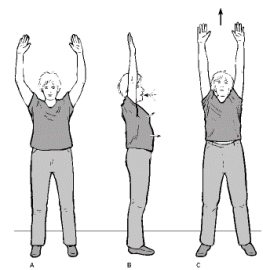


Sparing Exercises

- McGill's standing overhead arm reach
- Brügger
- Hip Hinge

1. McGill's Overhead Arm Reach – p303

- Raise arms overhead
- Breathe in
- Raise higher like climbing a ladder, while holding breath in

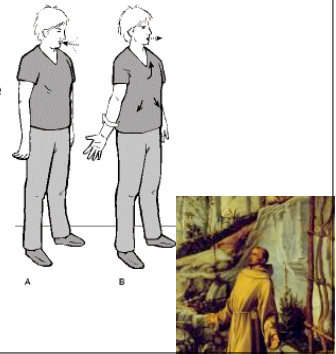


McGill's Overhead Arm Reach

- Why (rationale)
 - Break repetitive strain cycle from prolonged sitting
 - Improve posture
- When (indications)
 - Prolonged sitting
 - Poor posture
- What (skill)
 - How (integration)
 - Explain to pt why it is being Rx'd (to spare the spine, nourish the tissues)
 - Give hand-out
 - Document home exercise Rx in Patient Profile

2. Brügger's Relief Position – p302

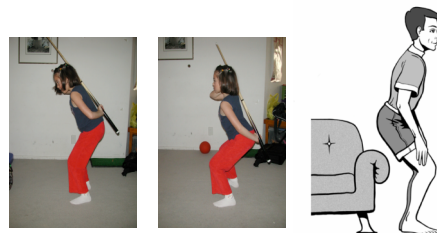
- Drop your arms
- Turn hands out (supinate)
- Spread fingers (abduct)
- Blow breath out as if you are making a candle flicker
- Perform 1-2X for every 20 minutes of sitting throughout the day



Brügger

- Why (rationale)
 - Break repetitive strain cycle from prolonged sitting
 - Improve posture
- When (indications)
 - Prolonged sitting
 - Poor posture
- What (skill)
 - How (integration)
 - Explain to pt why it is being Rx'd (to spare the spine, nourish the tissues)
 - Give hand-out
 - Document home exercise Rx in Patient Profile

3. The Hip Hinge – p304



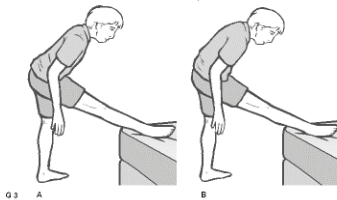
Hip Hinge

- Teach patient to spare their spine
- Use legs to get up & down from chair, bed, etc.
- Maintain upright spine position (neutral lordosis)



Spare the tissues

- First, spare the tissues – use spine sparing strategies
- Don't stay in one position too long
- Avoid slumping



B) Load Sharing

- Poor mobility in lower quarter kinetic chain leads to instability in the lumbo-pelvic region
- Check lunge & squat for peripheral tightness that overstresses lumbar spine



Can this be good?



Flexibility

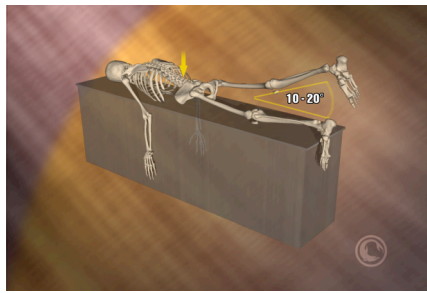
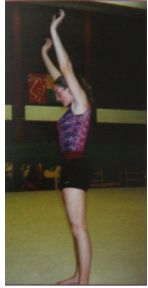
- What are the key tight muscles that interfere w/ movement?
- According to Janda what is their function?

Flexibility Exercises

- Posterior Hip Capsule Mobilization
- Anterior Hip Capsule Mobilization
- T4-8 Extension Mobilization

Functional Flexibility

- What is it?
- If muscle is tight will it substitute & alter movement patterns?
- After an injury tissues heal, but muscles learn, they readily develop habits of _____ that outlast the injury
- Is compensation normal?
- What can we do about it?



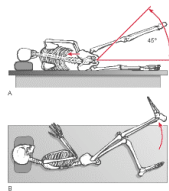
Dysfunction due to tight hip flexors

- Feel back not abds or glutes due to LCS – (psoas tight/gl weak; er sp tight/abs weak)



Relative Flexibility & Incoordination **P822-823**

- What is the ideal movement pattern?
- What is the “weak link”?
- What is the compensation?



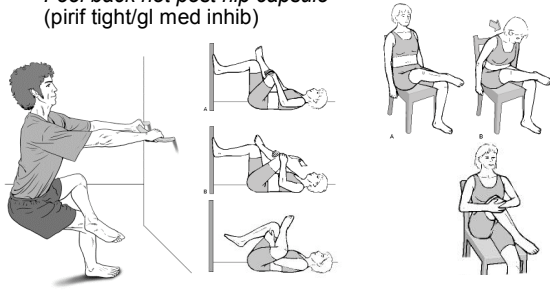
Stretching Basics

- Mild discomfort is alright
- Perform slowly, with good form
- Breathe normally
- **Frequency:** Twice/day

Piriformis/Posterior Hip Capsule Stretch

Dysfunction

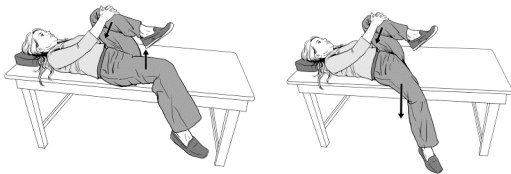
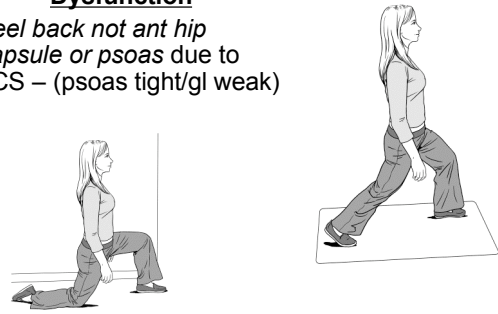
- *Feel back not post hip capsule – (pirif tight/gl med inhib)*



Psoas stretches/anterior hip capsule mobilization

Dysfunction

- *Feel back not ant hip capsule or psoas due to LCS – (psoas tight/gl weak)*



Postural (T4-8) Exercises on the Foam Roll



Vertical Foam Roll

- Start on your back
- Hands at your sides & palms up
- Breathe in & out from your abdomen



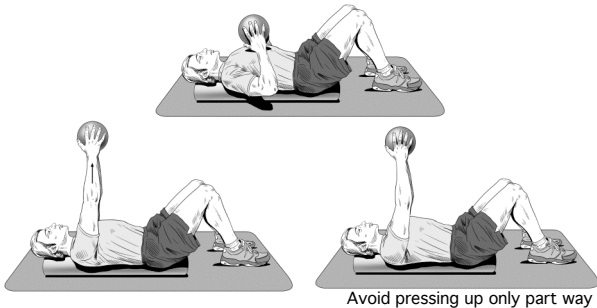
Vertical Foam Roll

- Raise your arms overhead
- Be sure the back of your hands are on the floor
- If not lower your arms
- Hold for 1-2 breaths



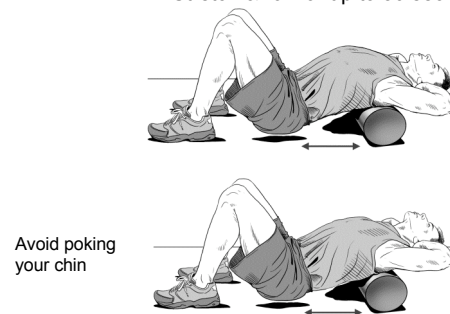
Chest Presses

- Hold a medicine ball in your hands
- Press the ball all the way up to the ceiling
- Perform 8-10 repetitions



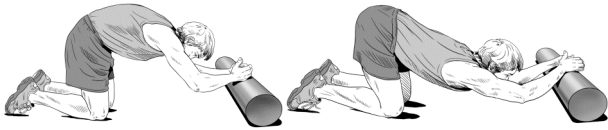
Horizontal Foam Roll

- Extend your back over the foam roll
- Keep your chin tucked in
- Stretch & roll for up to 30 sec.



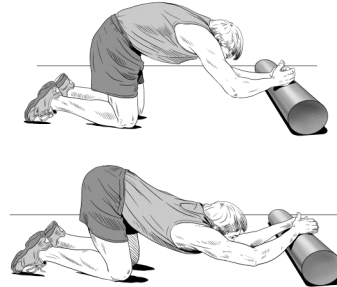
Upper Back Cat

- Place your wrists on the foam roll
- Round your back up
- Let your chest drop down
- Perform 8-10 repetitions



The Most Common Mistake to Avoid

- Shrugging your shoulders



Sphinx – T4

- Yoga to mobilize **T4-8**



Mid-Back Rotation Start Position



Final Position



Sphinx – T4

- Yoga to mobilize **T4-8**

