

**WE TEACH
SPINE
SAFE
PILATES**

SpineSafe Pilates

Overview of Common Spinal
Conditions Causing Sciatica
and Exercise Prescription.

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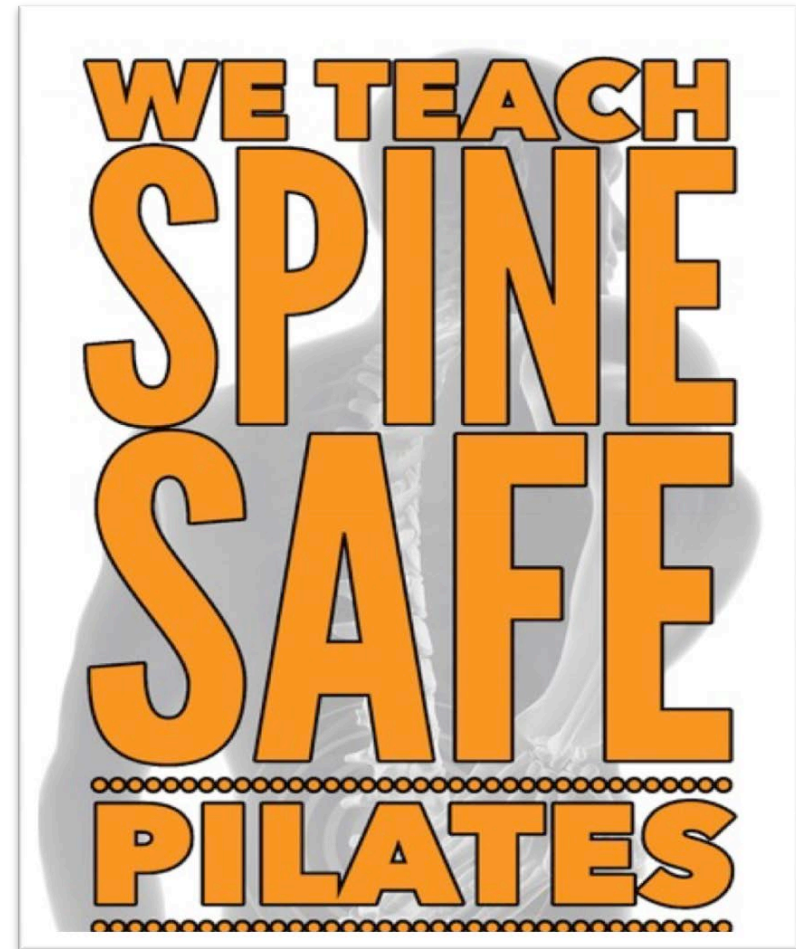
Recommended reading

<http://www.physiology.co.uk/james-tyrell-nestor/james@physiology.co.uk>

Christopher M Norris Back Stability edition two



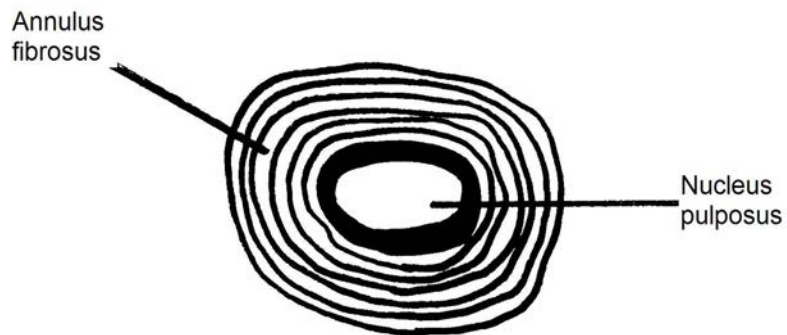
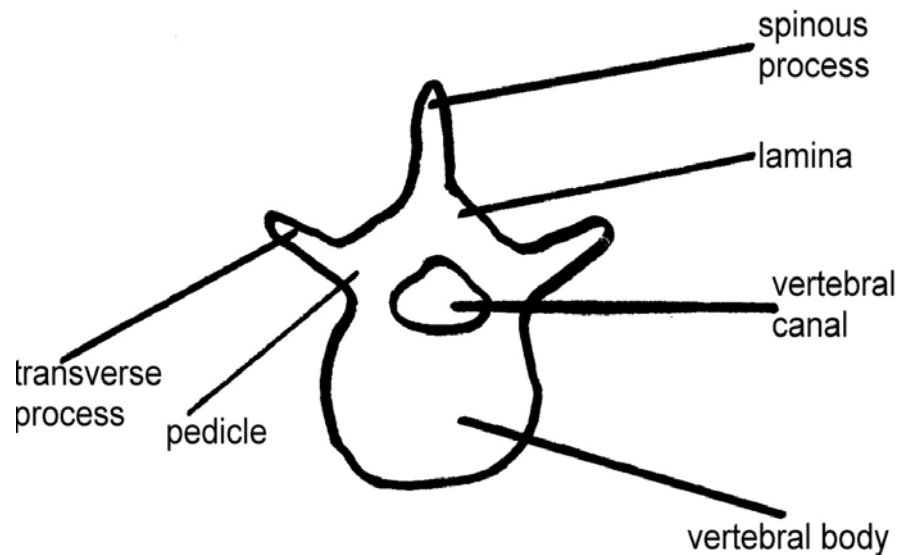
Welcome



Anatomy of the spine

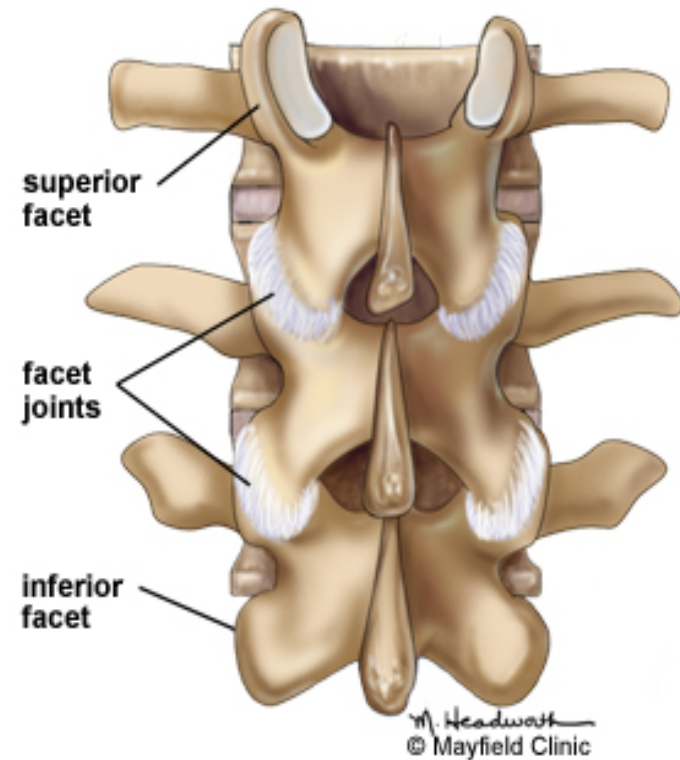
Vertebra and disc

Vertebra

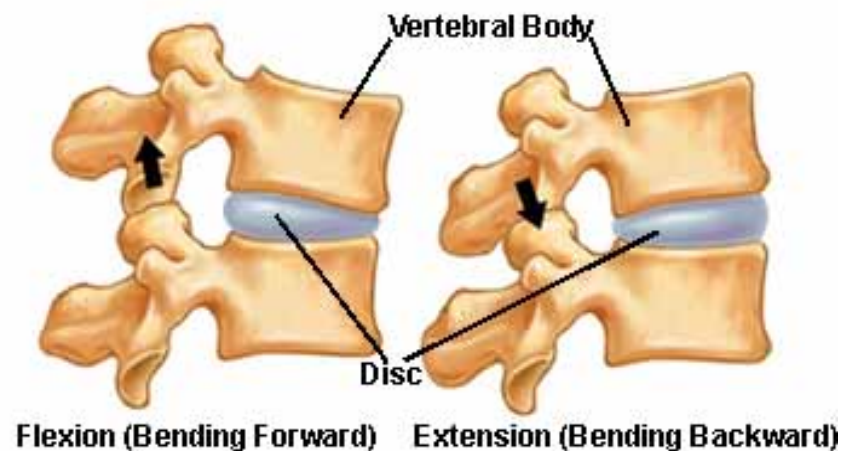


Facet joints

- Have 4 articular surfaces
- Form at the junction of pedicle and lamina
- Determine the type of movement in each vertebral region

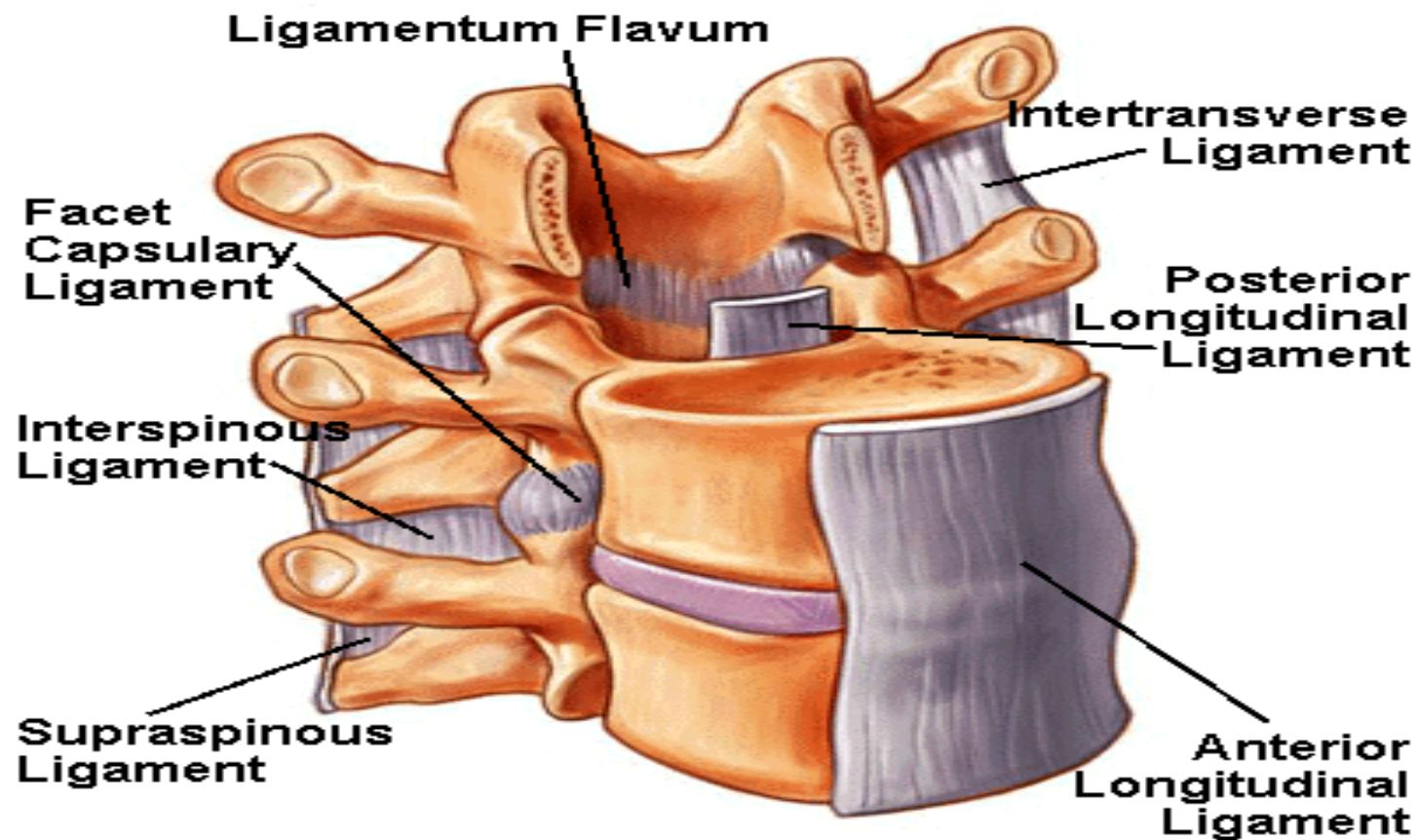


Facet Joints in Motion



Spinal Ligaments

- With thanks to SpineUniverse.com



POSTURE

- All postural variations are part of normal movement
- Posture only becomes “bad” when sustained over a period of time
- Is posture “bad” or just an adaptation?
- How much correction is appropriate?
- WHAT DO WE COVER ON COURSE?

Earlobe
Head of Humerus

3rd Lumbar Vertebra
ASIS to PSIS
Greater Trochanter

Pivot of the knee

Lateral Malleolus



Lateral (Side) Spinal Column



Posture Assessment from the side

Non-Specific Low Back Pain

Instability?

–Instability is “an excessive range of abnormal movement for which there is no protective muscular control”

(Maitland 1986)

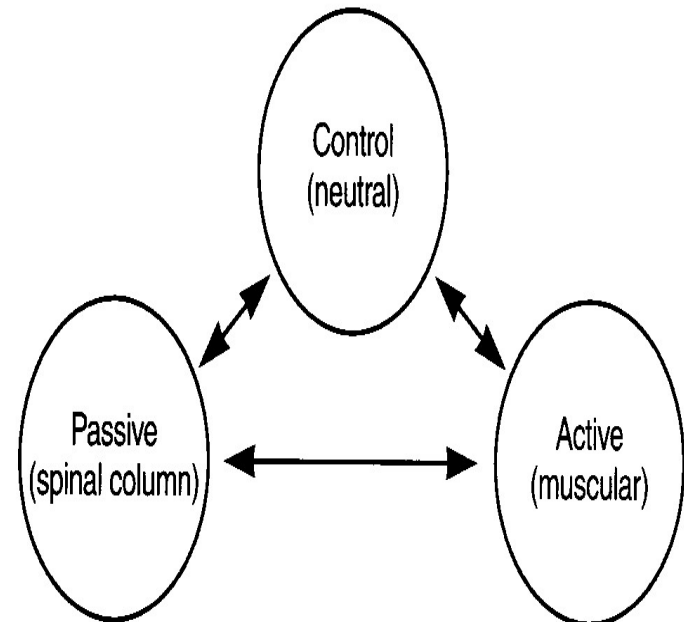
–Inter-related systems provide a spinal segment with stability

–**Passive** – inert tissues; ligaments, disc and bone

–**Active** - contractile tissues; muscles

–**Control** – neural tissues; co-ordinate sensory feedback

• Panjabi 1992



Theory of spinal stability

- All 3 systems must be working well
- Specific Pilates based exercises can improve spinal stability by increasing the contribution of the active and control systems
- Correcting stability enhances the active system
- Correcting functional movement enhances the control system

General time frame of common low back pain

Acute 0- 6 weeks (red tissue)

but may take up to

3 to six months

Red tissue has nourishment and
removal in tissues by

steady blood supply

Cause generally known

Anxiety

Responds well to medication

RICE

Chronic 6 months plus

white tissue such as disks,
ligaments, cartilage – little to
no blood supply

Cause often unknown

Depression

Does not respond to meds

MEAT

Myo-Fascial slings

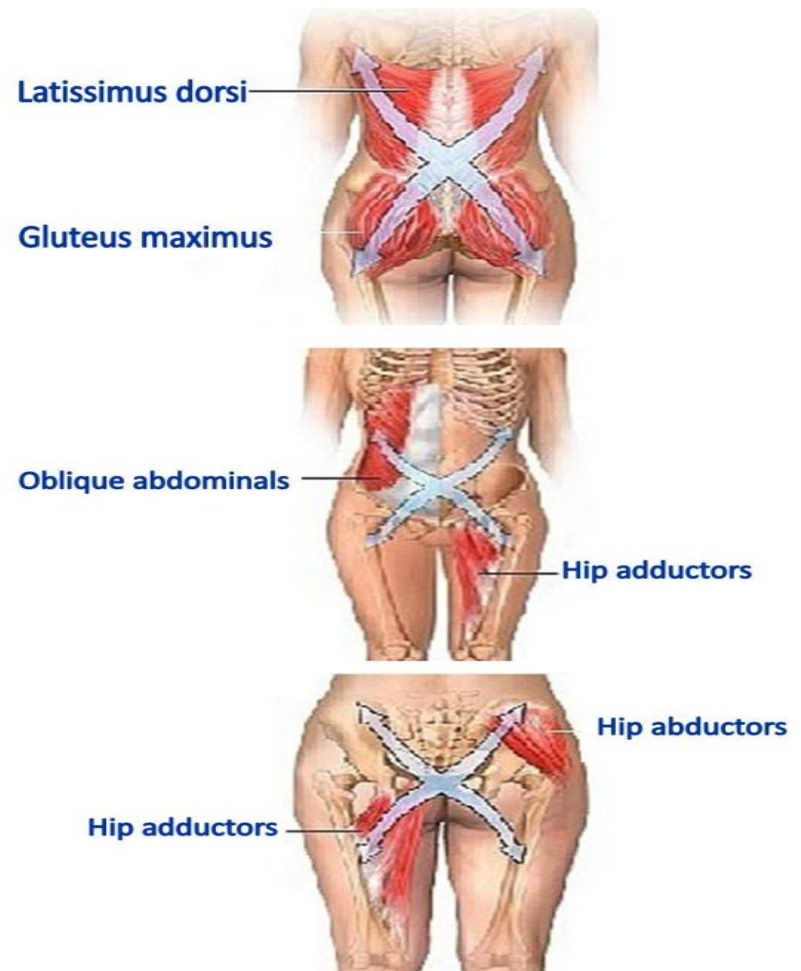
Primary: TA and IO via TLF and rectus sheath

Posterior oblique: lats one side and glut max on the other via the TLF

Anterior oblique: EO on one side and adductors and IO on the other via rectus sheath and abdominal fascia

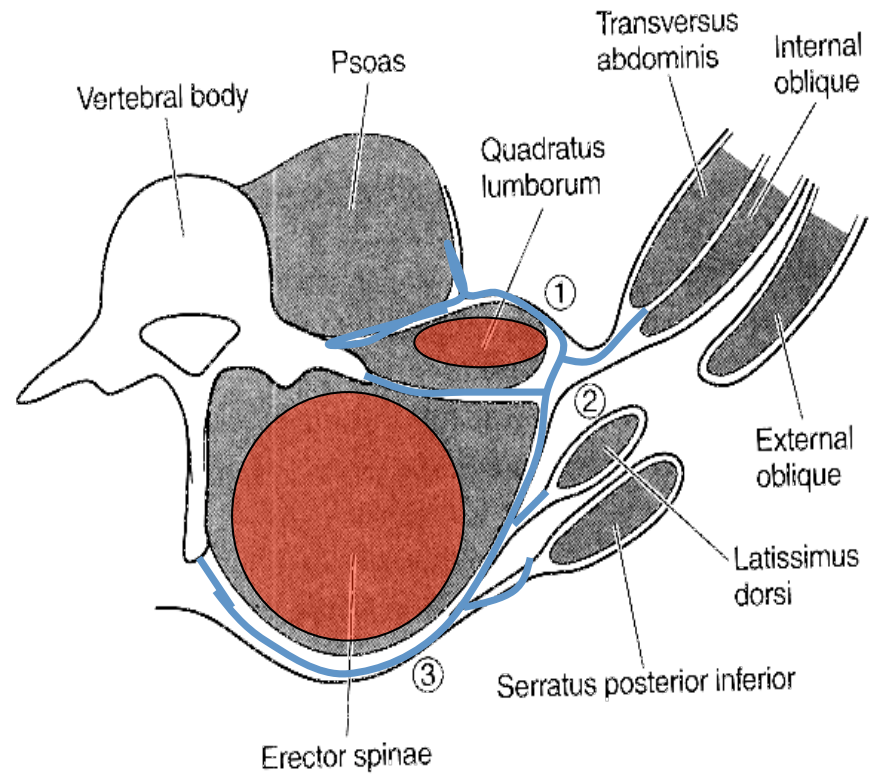
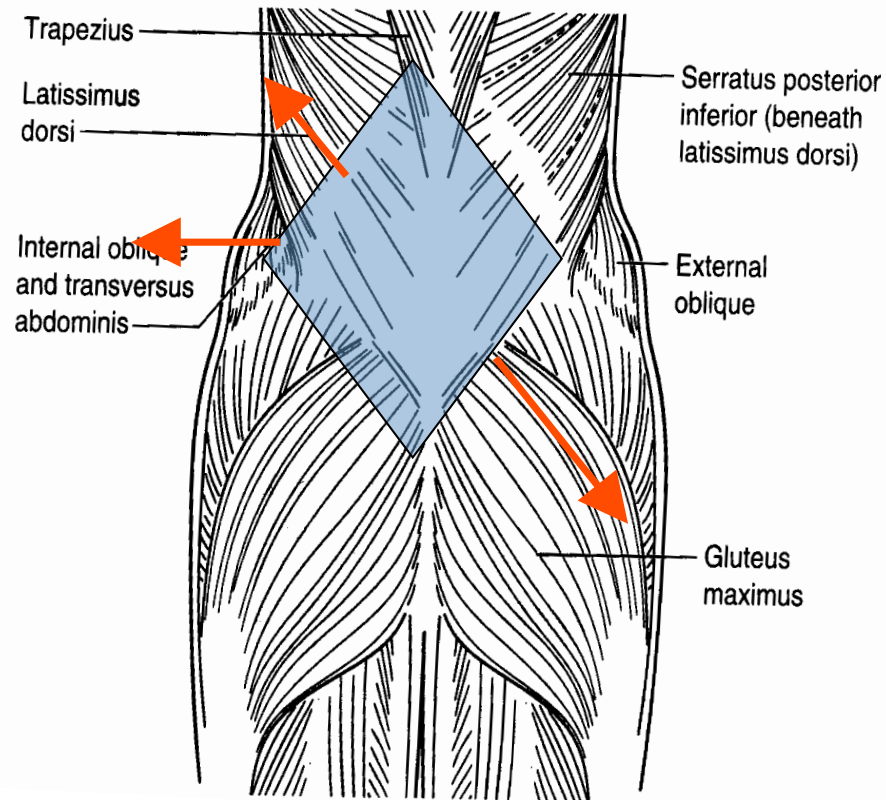
Longitudinal: ES and the biceps femoris via the TLF

Lateral: TFL and glut med on one side and adductors on the opposite side



Thoracolumbar fascia (TLF)

From behind



Cross section

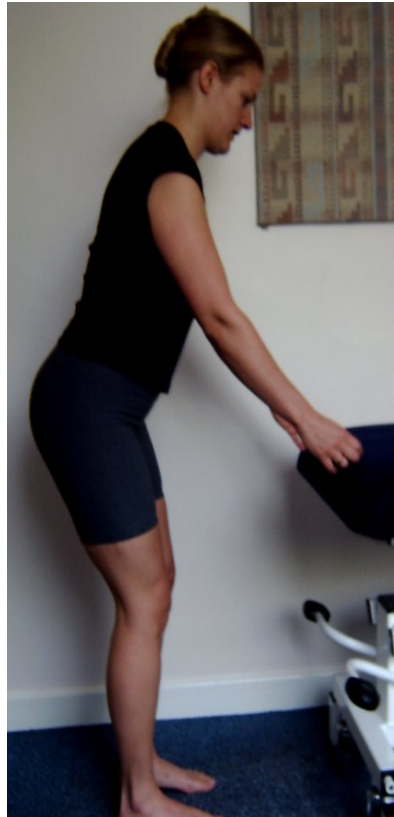
Segmental control

- Relationships & Rhythms
- lumbo-pelvic rhythm
- Movement pattern (initiation)
- Relative range (hip-pelvis-spine)
- Altered relative flexibility occurs when there is restricted hip joint range and/ excessive lumbar spine range
- Altered relative flexibility is common in clients suffering from low back pain. Why?

Assessment of Lumbo-Pelvic Rhythm

- 5 tests
 - Hip hinge
 - All fours
 - Single leg standing
 - Side lying leg lift
 - Swimming legs

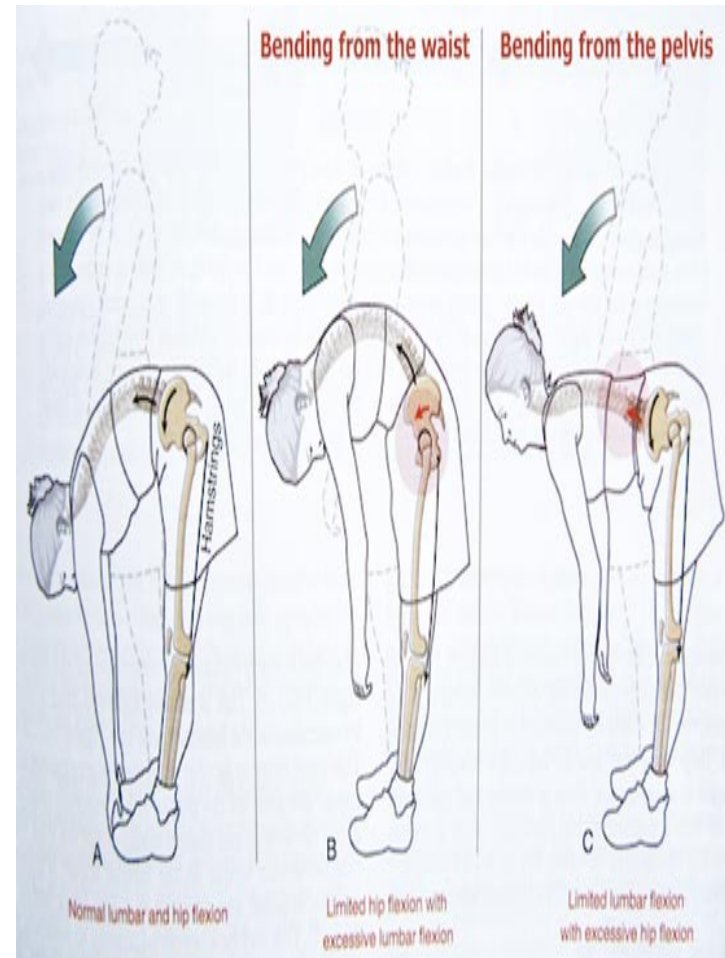
Hip hinge



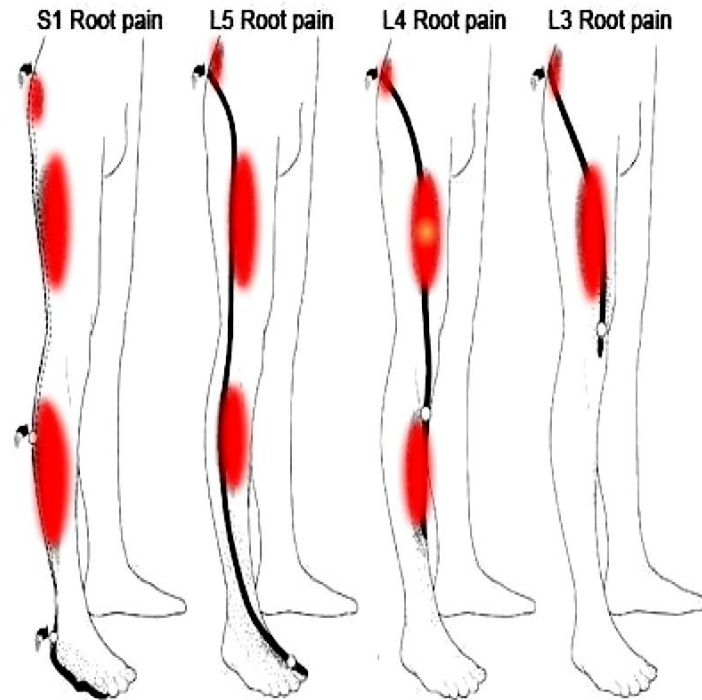
Correct



Incorrect



Sciatica

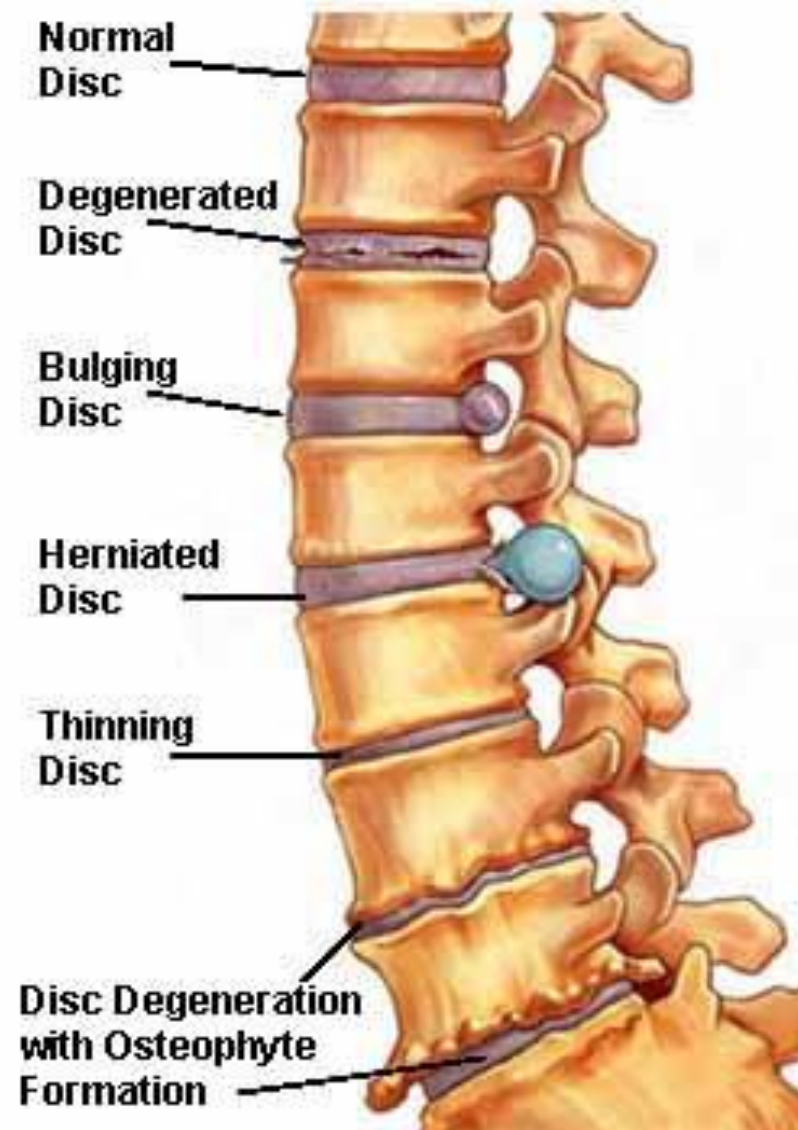


- Sciatica is **NOT** a diagnosis it is a symptom
- **Sciatica** is a set of symptoms including pain that may be caused by general compression and/or irritation of one of five nerve roots that give rise to the sciatic nerve, or by compression or irritation of the sciatic nerve itself.
- Pain
- Numbness
- Loss of use

Common Causes of Sciatica

- Spinal **disc bulge** – **prolapse** – **herniation**
- Spinal stenosis
- Degenerative disc disease – *Spondylosis* osteophyte spurs
- Piriformis syndrome

Examples of Disc Problems



Less common causes of Sciatica

- Spondylolysis - Spondylolisthesis (anteriorlisthesis)
- Retrolisthesis
- Trauma
- Spinal Tumours

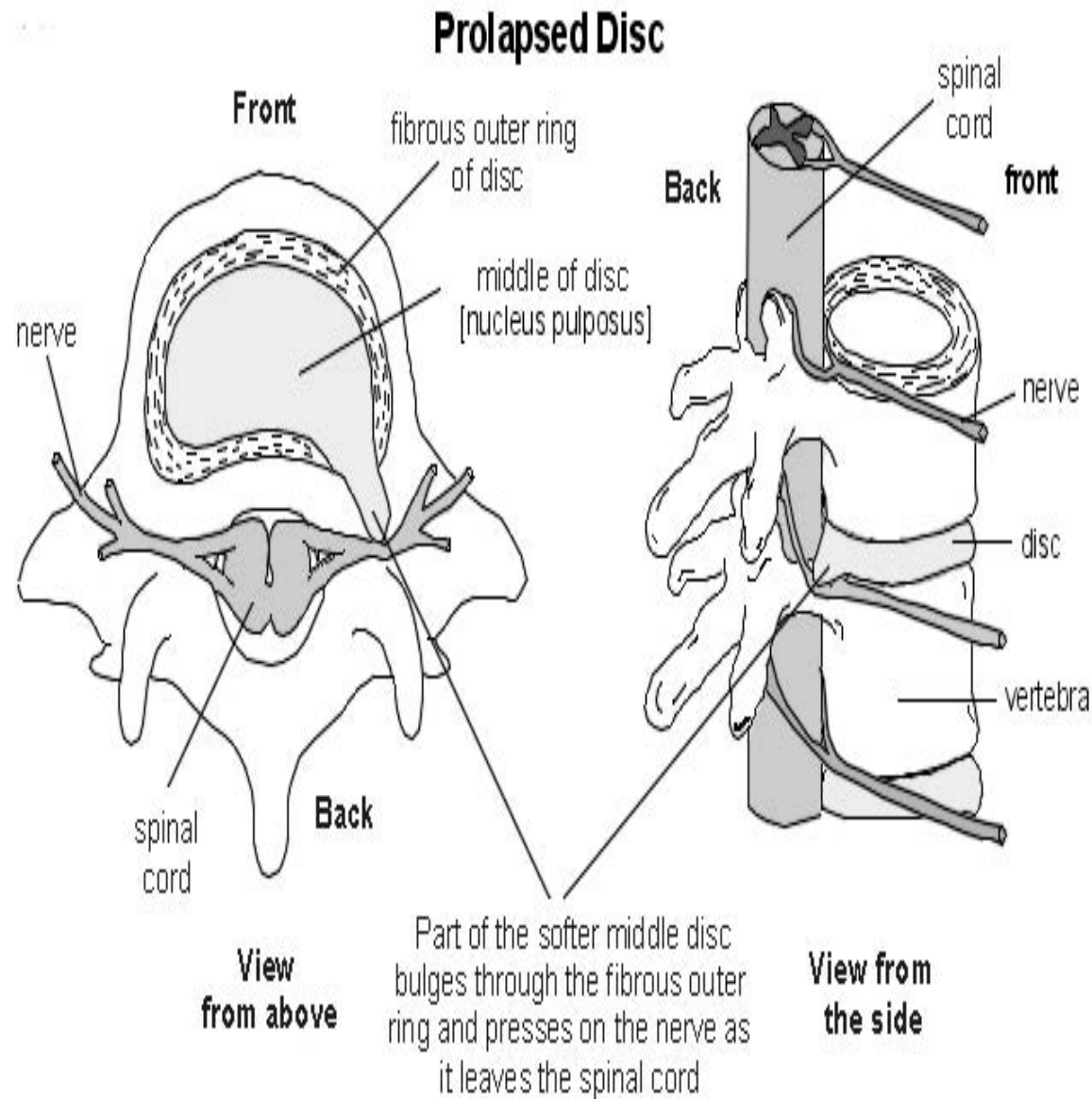
When a client has sciatic symptoms

ASK.....

- Have you had diagnosis ?
- Who by, what did they say?
- Please can I have written permission to chat to them
- What advice have you been given?
- What exercise have you been given?
- When don't you accept clients ?

- Pain WHERE ? NOW AND PREVIOUSLY
- Numbness HOW LOW – WHERE?
- Loss of use ANY?
- Bladder / bowel issues REFER OUT!

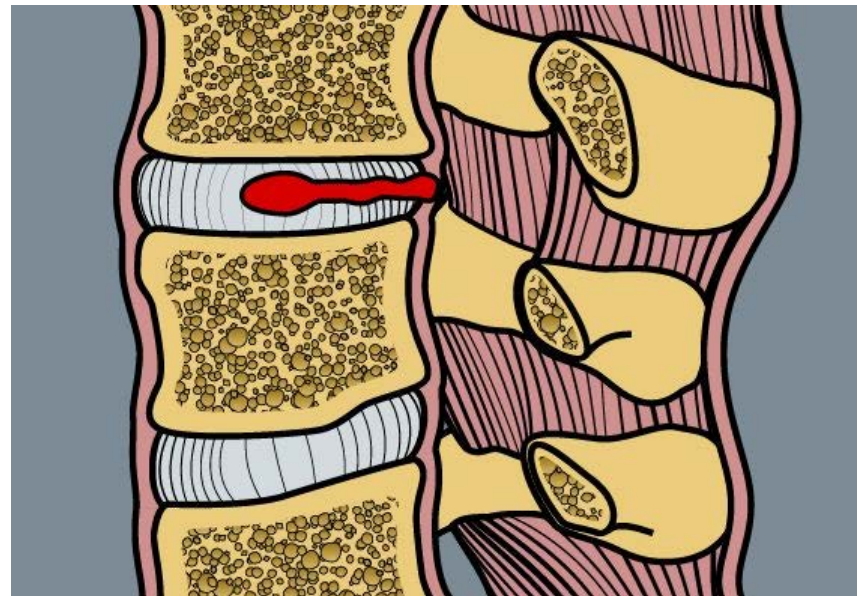
Prolapsed Disc



Part of the softer middle disc bulges through the fibrous outer ring and presses on the nerve as it leaves the spinal cord. The disc can bulge in different directions but most commonly it bulges posterior

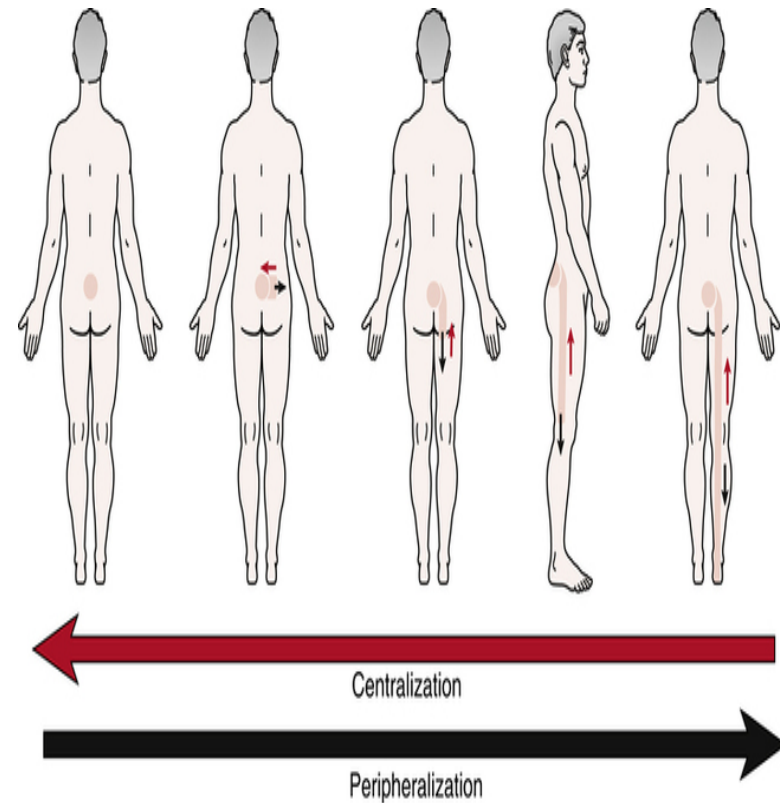
Disc prolapse

- Nucleus of disc migrates backwards towards nerve
- Pain increased by lumbar flexion and spinal loading
- SLR test used – medical professional
- Pain centralises (better) and peripheralizes (worse)
- Extension usually centralises pain

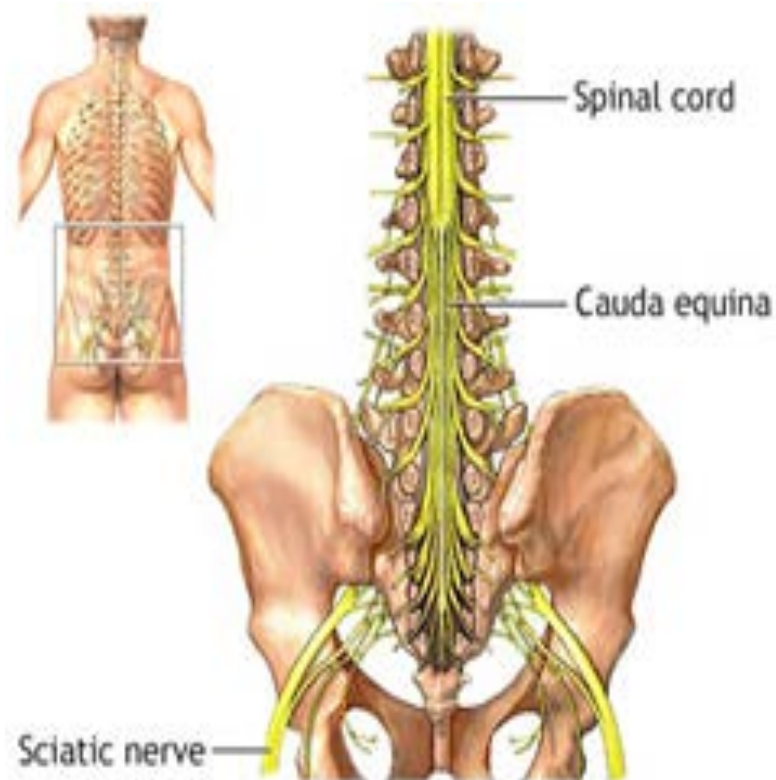


Peripheral to Centralization

- For sciatic pain (also known as radiculopathy) there's one goal for sciatica exercises and stretches: to get your pain to move up your leg and into your low back.
- The technical word for that is *centralization*, also known as *localization*. With sciatica, it is actually a good thing when you have pain *only* in your low back; it means that you've relieved the pressure on your sciatic nerve and related nerve roots.



Cauda Equina



- Must get clearance from health care provider before commencing exercise programme.
- If possible discussion with physio etc.

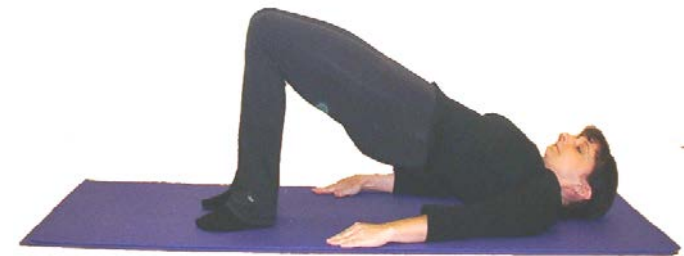
Disc Prolapse Do's

- Once given clearance by health care provider
 - Start with posture correction
 - Avoid flexion movements, especially under load
 - Encourage extension movements
 - If movement causes pain begin with stability work in whichever position is comfortable
 - Ensure correct functional movement to try to prevent recurrence

Sciatica from disc herniation

Basic exercises do's

- ✓ Controlled segmental Swan dive thoracic through to lumbar
 - ✓ Trunk stability such as all fours
 - ✓ Good lifting technique (monkey squat)
 - ✓ Functional exercise monkey squat – hip hinge
 - ✓ Shoulder bridge
 - ✓ Hip rolls with segmental control
 - ✓ Pelvic stability exercises (knee drops)
 - ✓ Swimming legs
 - ✓ All fours superman
- (as long as technique good)



Basic exercises don'ts

- + Avoid roll downs
- + Avoid trunk flexion such as full roll up, roll back
- + Rolling like a ball etc.
- + Avoid exercises with both legs in the air
- + Avoid the saw – spine stretch forwards
- + Avoid flexing foot on hamstring stretch as this may aggravate the condition

(unless advised by medical professional)

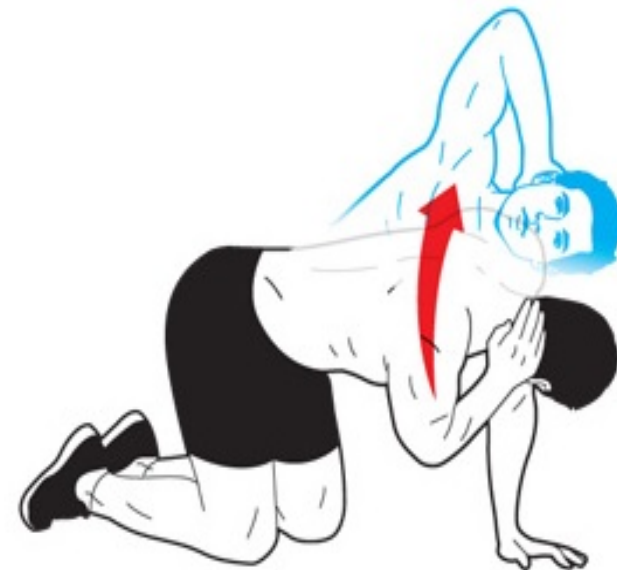
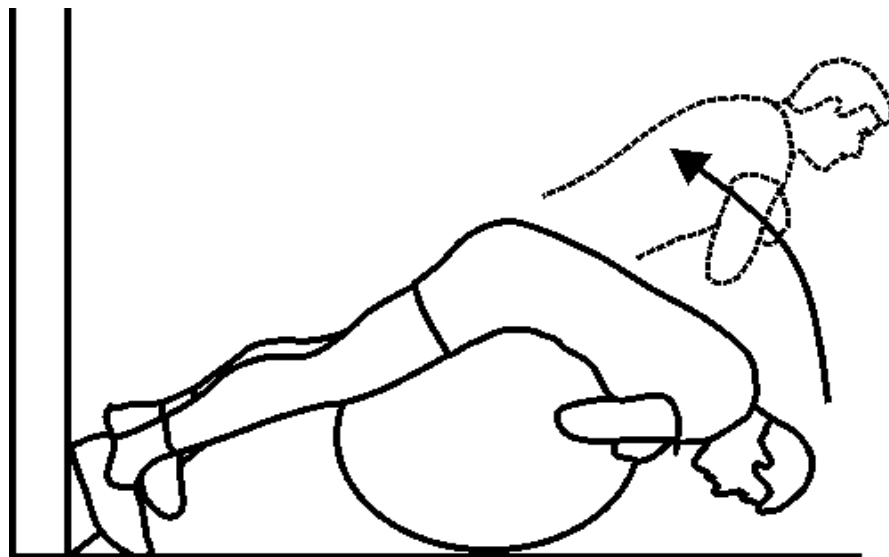
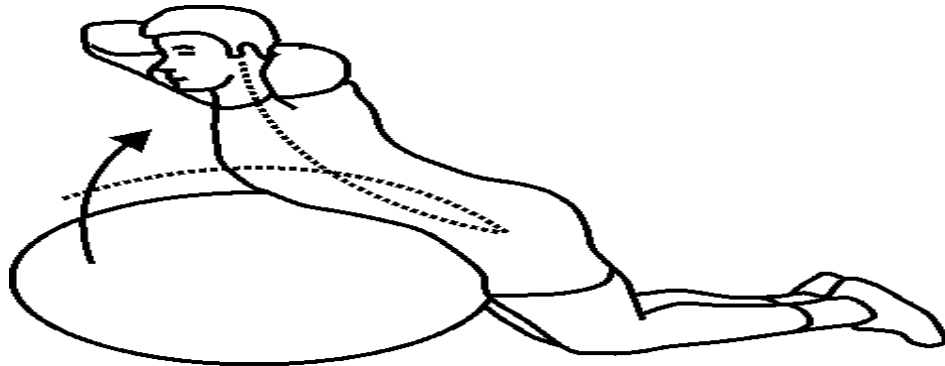


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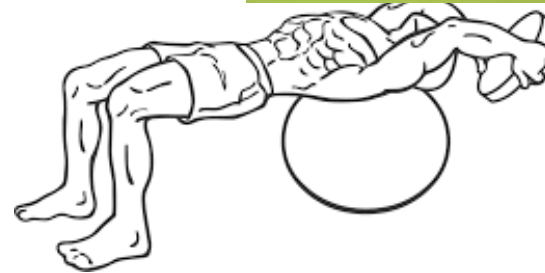
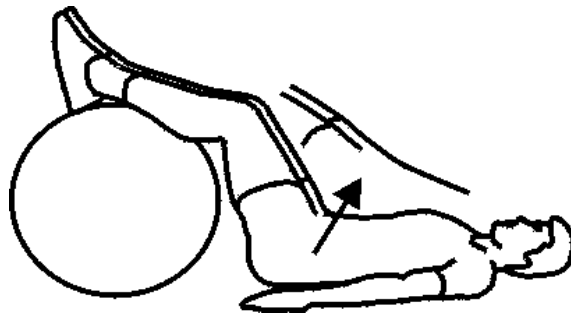
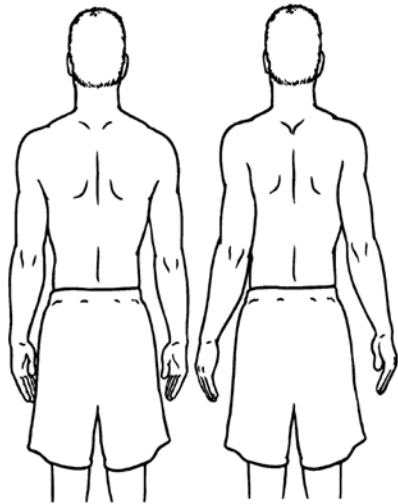
Prolapsed Disc

- See disc herniation above
- Rotation good in most cases but discs can bulge in various directions – always start hip rolls and spine twists with small range of movement and build up . Expect stiffness but only exercise in pain free range.
- Posture
- Lifting techniques
- Movement patterns
- **If in doubt refer out! Make relationships with health professionals such as physiotherapists Osteopaths etc.**

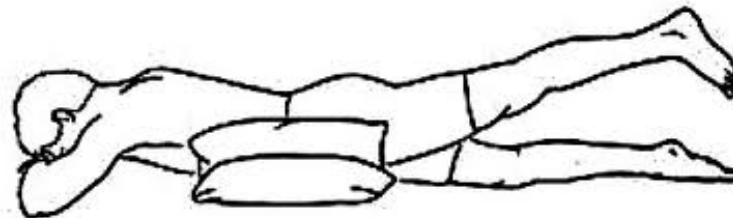
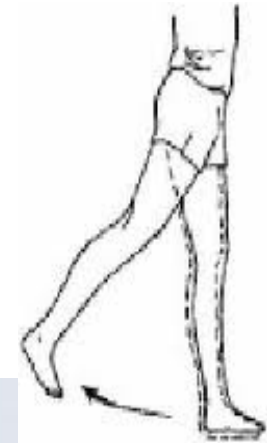
Other examples of extension from flexed position



Other ways ! *Examples*



And More !



Extension analysis Workshop

Looking for segmental control ↓



Looking for hinging → →



Common Causes Disc Degeneration (DDD)

- Trauma or injury to the spine.
- Herniated disc and may begin the degeneration process.
hereditary a
- Occupation of an individual (e.g. lifting heavy loads)
- Obesity
- Poor diet - not taking enough calcium
- Smoking cigarettes etc.,
- Bad posture
- Lack of exercise.



Degenerative Disc Disease

Cervical spine ...

- Chronic neck pain - radiating to the head, shoulders, arms and hands. Stiff neck, numbness, tingling, Weakness in the neck, arms, or shoulders along with headaches .

Thoracic spine...

- Pain when twisting, muscle spasms, slumped posture, possible bowel or bladder dysfunction.

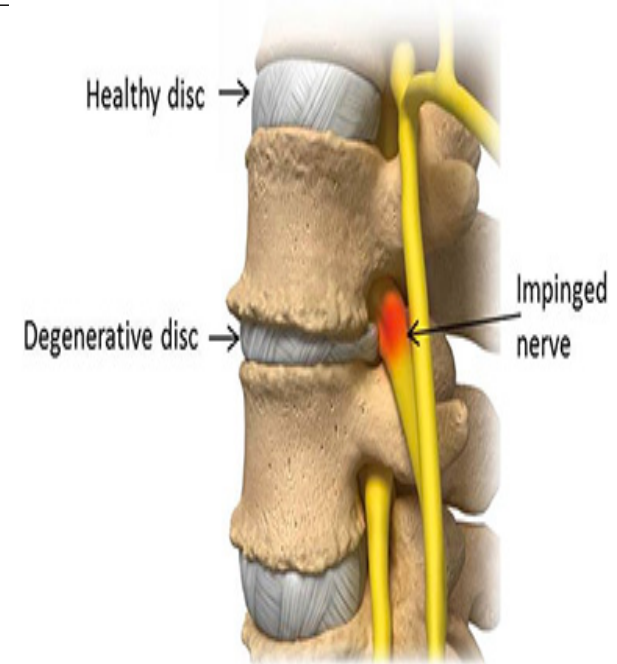
lumbar Spine...

- Pain/discomfort in lower back, stiffness in lower back
- burning sensation,
- tingling and numbness in the buttocks and lower back down to the legs.

- Pain may reduce when lying down

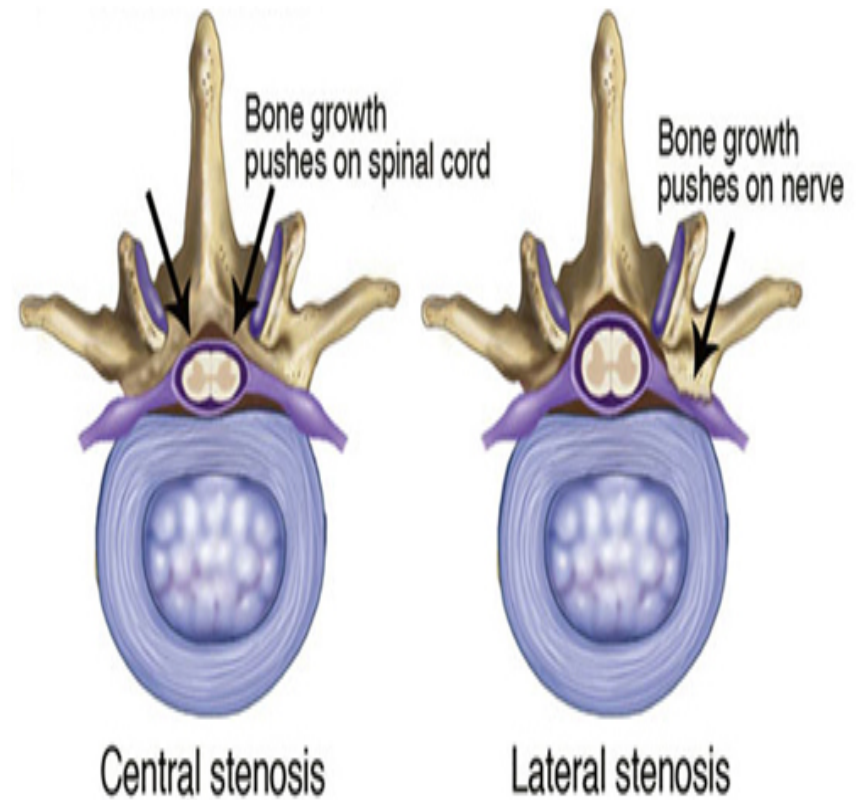
Disc Degeneration Do's

- Mild posterior and anterior pelvic tilts - Supine and all fours
- All fours opposite arm to leg build up from basic position
- Hip rolls – start with small ROM
- Single knee hugs
- Postural correction
- Segmental and global Stability
- Functional Exercise
- Movement patterns
- Flexibility to anterior trunk



Symptoms of Stenosis

- Pain in the back
- Pain in the buttock
- Numb / pins and needles down the leg
- Heavy tired feeling in the leg
- Weakness in the effected leg
- PAIN REDUCES ON SITTING
- Pain increases upon standing for periods of time.

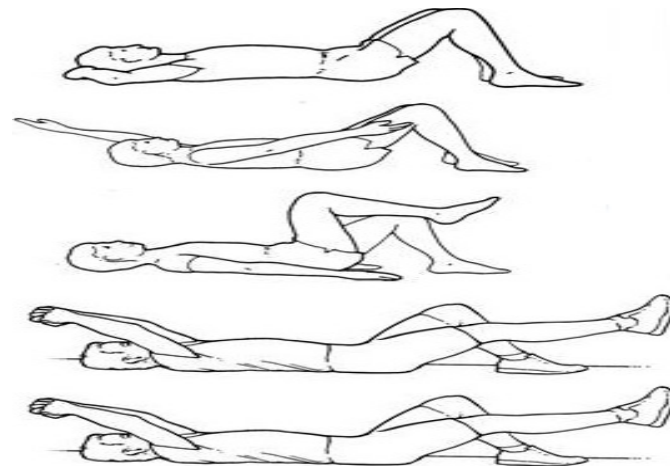
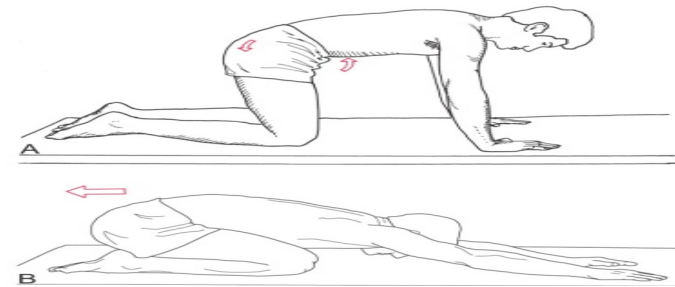
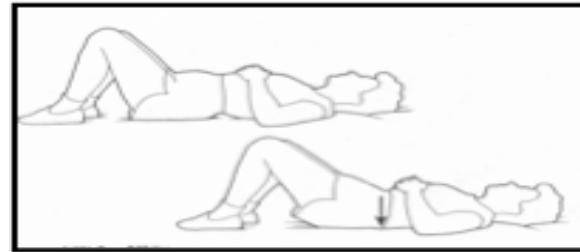


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Stenosis Do's

Recommended Pilates based exercise

- Partial shoulder bridge
- segmental control to rib cage
- Core and pelvic stability
- Cat stretch flexion to neutral
- Roll down
- **Functional movement patterns**



Stenosis Don'ts

Pilates based exercises to

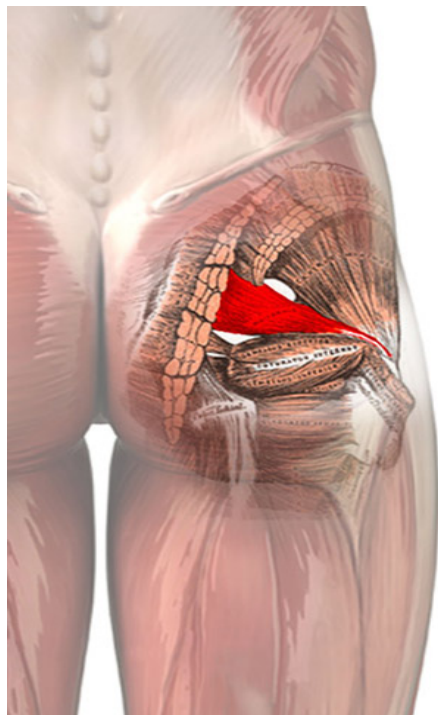
Avoid...

- Hyperextension
- Full range Hip roll
- Full range spine twist
- Full range side open door
- Full range shoulder bridge



Piriformis Syndrome

- Piriformis syndrome is also referred to as pseudo sciatica, wallet sciatica, and hip socket neuropathy.

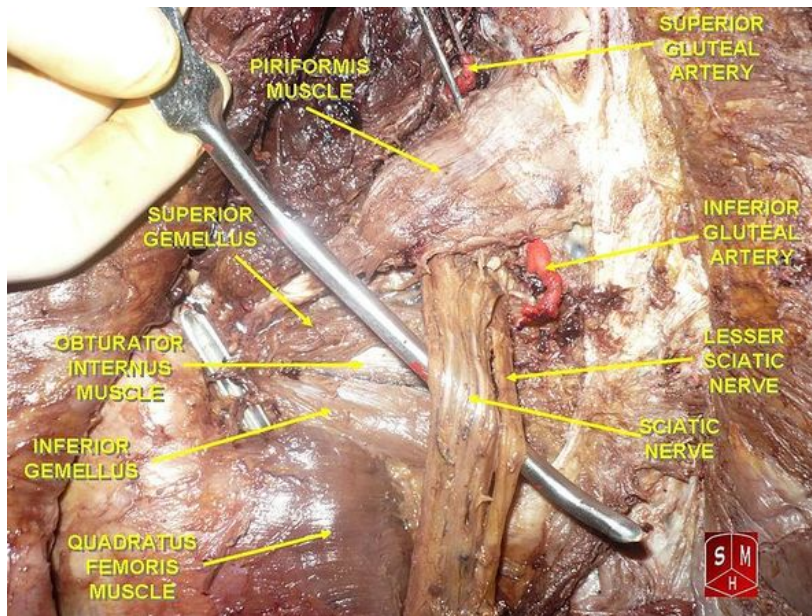


Piriformis muscle

- Externally rotates femur (thigh bone)
- Stabilizes the sacroiliac joint
- Abducts femur when hip is flexed (e.g. Tree Pose)

- **Piriformis syndrome** is a condition in which the **piriformis** muscle, located in the buttock region, spasms and causes buttock pain. The **piriformis** muscle can also irritate the nearby sciatic nerve due to spasm or tightness and cause pain, numbness and tingling along the back of the leg and into the foot (similar to sciatic pain).

Symptoms of Piriformis syndrome



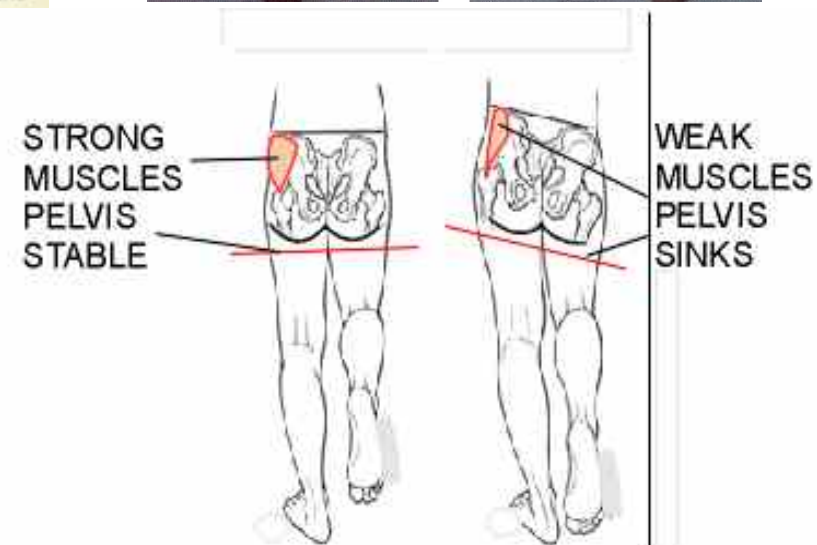
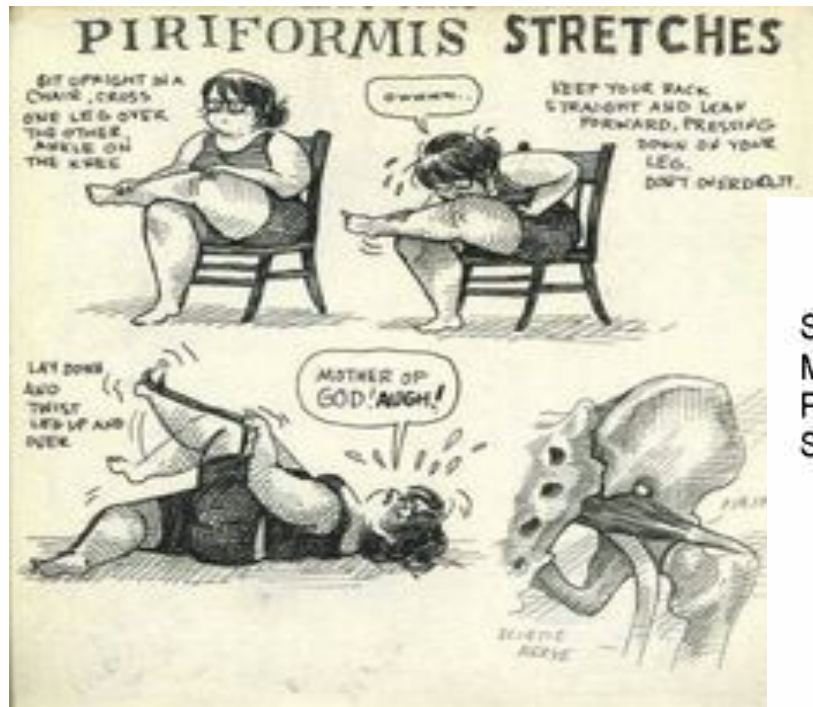
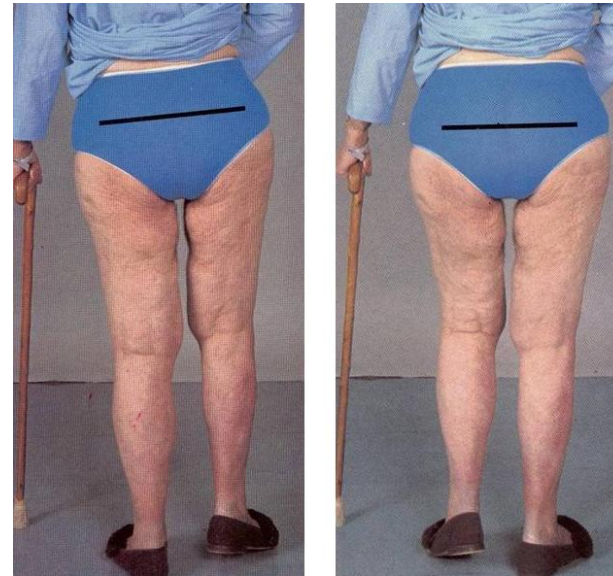
- Dull ache buttocks
- Pain down back thigh calf and foot
- Pain when walking up stairs or inclines
- Increased pain after sitting
- Reduced ROM at hip joint
- Can be accompanied by pelvic instability

Piriformis Syndrome

- ❑ Not a diagnosis, many causes
- ❑ describes symptoms occurring when the muscle is overactive
- ❑ Possible causes include
 - ❑ SIJ dysfunction
 - ❑ Disc prolapse
 - ❑ muscle imbalance, which may be a secondary response to...?

Why has the piriformis become 'tight'?

- Is stretching always the solution?



Piriformis Syndrome Do's

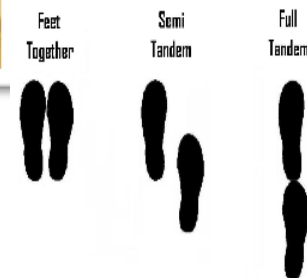
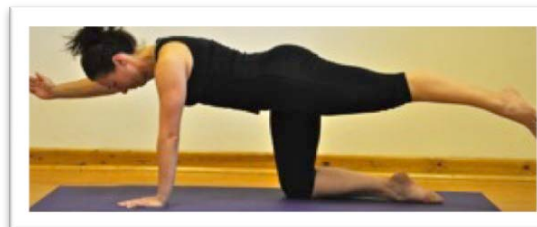
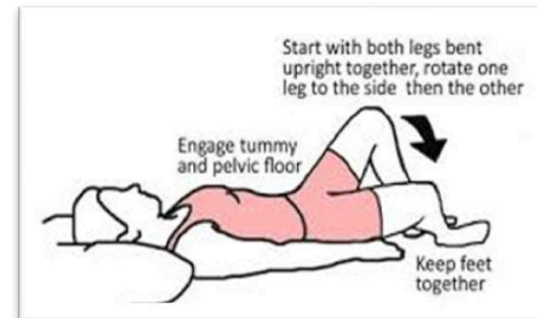
- Restore muscle balance
- Restore pelvic & hip stability
- Sling work



Basic exercise Do's

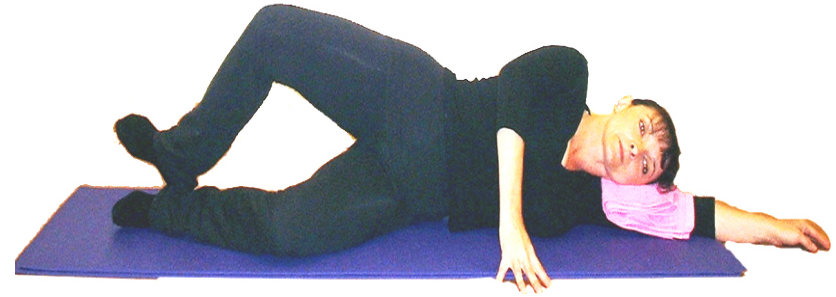
Piriformis Syndrome

- ✓ Core stability all fours opp arm to leg
- ✓ Build up function of pelvic stabilisers e.g. foot pedals
- ✓ Hip Hinge
- ✓ Squats
- ✓ Split Lunge
- ✓ Glut bracing
- ✓ Piriformis stretches and spikey balls ???



Basic Exercise Don'ts's

- + Avoid the clam
- + Avoid prone squeezes
- + Swimming legs
- + *See pictures opposite*



Spondylolithesis

- **Symptoms**

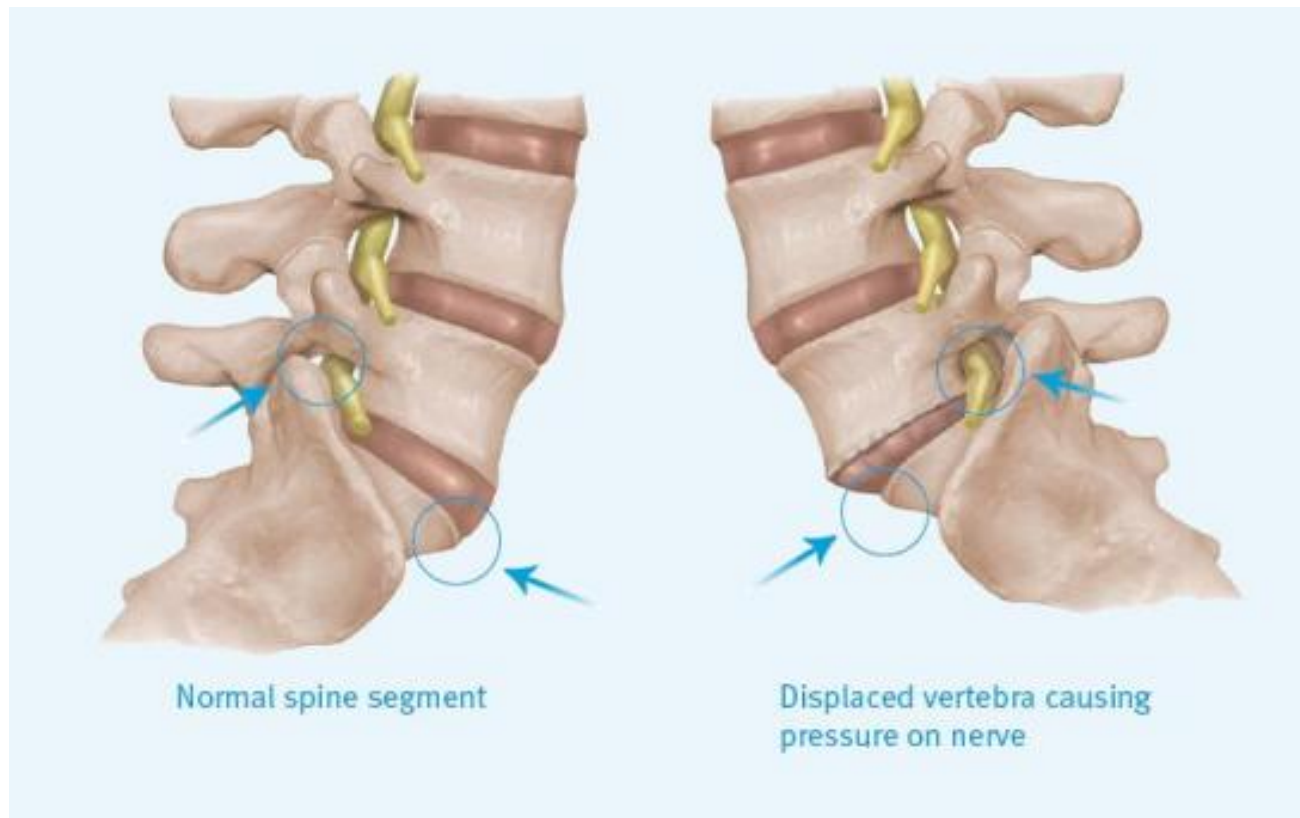
- Aching pain in the lower back, worse after exercise
- May cause sciatic symptoms if the slip is extreme

- **Treatment**

- Possible change of sport
- Physiotherapy including spinal flexion exercises, stability exercises, posture correction exercises
- Avoidance of extension
- Surgery for extreme cases

Spondylolisthesis 1- 4 grade

the anterior displacement of a vertebra or the vertebral column in relation to the vertebrae below

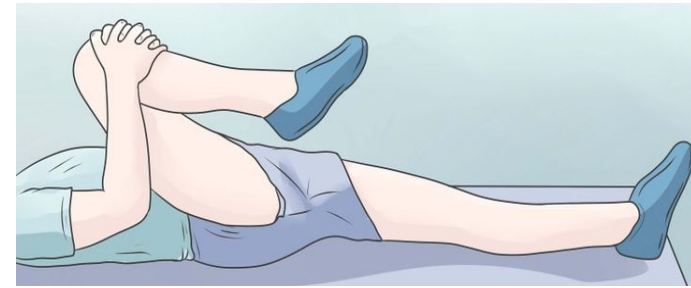


Spondylolisthesis Do's

- **Extension** of the spine will exacerbate Spondylolisthesis, as the vertebrae will be pushed more forward, causing compression on the sciatic nerve
- As **flexion** of the spine will often alleviate the symptoms of Spondylolisthesis, part of a normal treatment regiment should include moderate flexion exercises to take the pressure off the back of the vertebrae.
- Maintain mobility – avoid excessive extension exercise in the lumbar spine - reduce range of movement on hip rolls avoid excessive spine twist mid ROM is normally ok as it affect more thoracic area

Spondylolithesis

- Stretch hip flexors
- Movement in and out of stretch
- Use of breath
- Avoid hyperextension of spine during stretch
- Encourage use of glut max
- Passive hip flexor release
- Mild lumbar spine release



Spondylolisthesis cont.

- **Trunk stability** is important to strengthen supporting muscles
- **Good technique in lumbar spine** when squatting is important
- **Functional Exercise**
- Gluteal strengthening
- None fixed standing rotation



Spondylolisthesis Don'ts's

- Avoid hyperextension
- Develop stability –
core and pelvis
- Mobility focus on
mild flexion

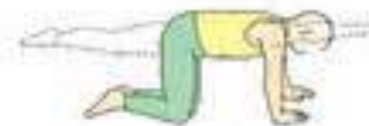
Spondylosis/Spondyloisthesis Exercises



Pelvic tilt



Dead bug



Quadruped arm/leg raises



Partial curl



Piriformis stretch



Double knee to chest

Lets look at this....



- Who should and which part?
- Who shouldn't and which part?

Extension \ Flexion of the spine is contraindicated.....

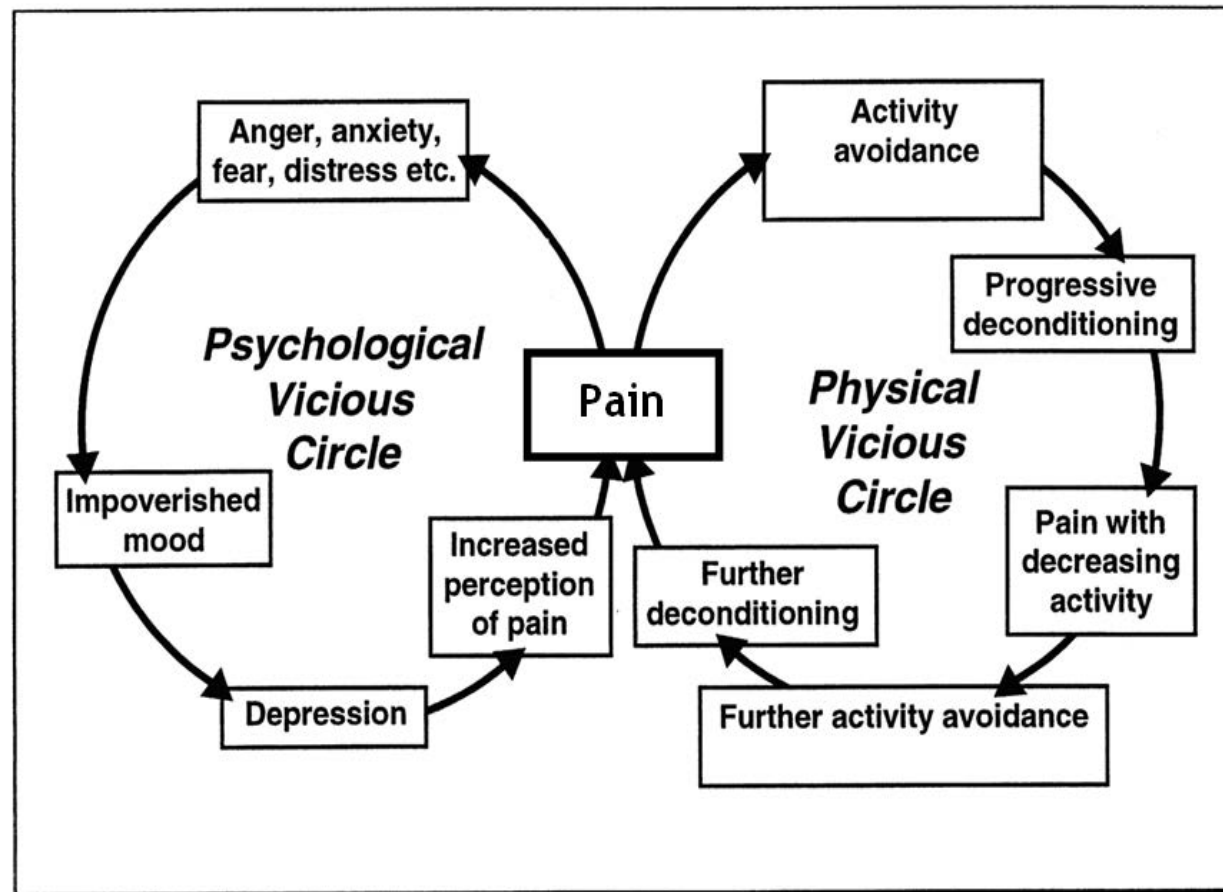
- Extreme pain
- Any bladder or bowel weakness
- Motor weakness

Must get medical clearance to exercise

- When extension peripheralises or increases pain avoid excessive extension
- When Flexion exercises peripheralise or increase pain avoid excessive flexion exercises
- When rotation exercises thoracic or lumbar spine peripheralises or increases pain reduce ROM or omit

Pain is in the brain

- Red flags
- Yellow flags

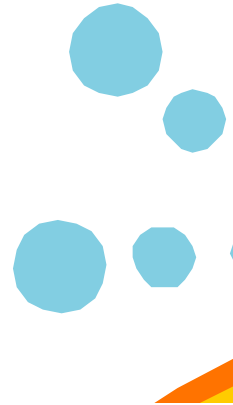


Medication

- Your client
- Medication
- Your class

REMEMBER

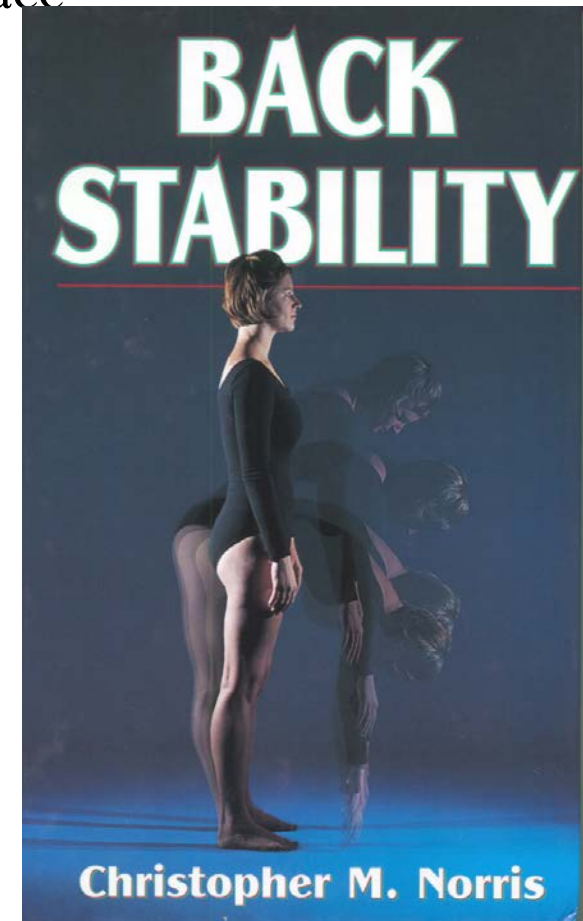
- If in doubt – refer out!!!!



Summary

- This workshop has only just skimmed the surface
- Many Thanks for attending!!!

Amazon.co.uk
Chris Norris



Who should not and why?



What to look for...



WHAT ELSE IS COVERED ON THE COURSE?



What's wrong and why?



Good Things Gone Bad *examples*

