

# When the Bones in the Back are out of Whack

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# Educational Objectives

- 1 As a result of this activity the learner will be able to diagnose and manage common spine disorders managed in primary care.
- 2. As a result of this activity the learner will be able to identify imaging findings for common spine disorders managed in primary care, including common x-ray and MRI findings.
- 3. As a result of this activity the learner will be able to identify at least 3 referral red flags to orthopedic specialists for common spine disorders managed in primary care.

# Relationships with commercial interest

- I have no conflicts of interest or relationships to disclose.

# History Taking

1. Detailed History of Pain
2. Past Medical History including drug allergies or sensitivities, present medications, gastrointestinal intolerances
3. Social History
4. Family, Occupational and Functional History
5. Review of System
6. Pain diagrams
7. Pain scale

# Physical Examination

- Observation including Gait
- Inspection
- Palpation
  - Soft tissue
  - Bony
- Range of motion
- Neurological Examination
- Special tests
- Examination of related areas

# Low back pain



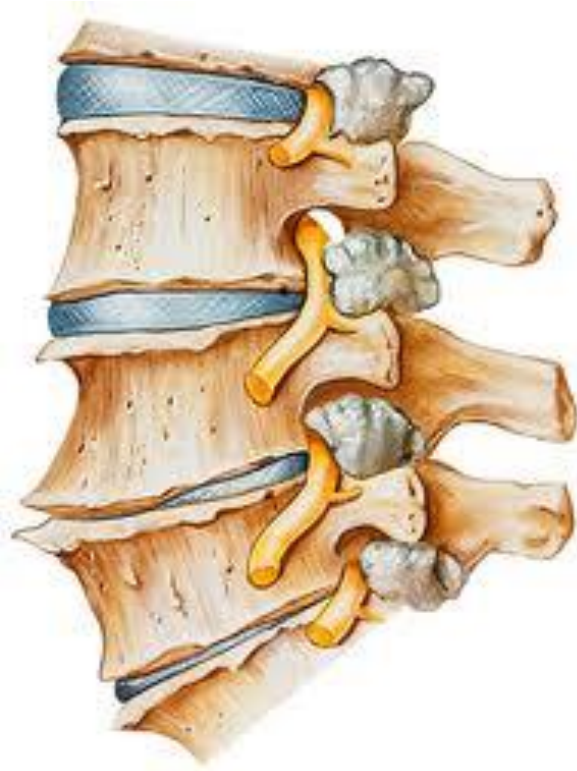
PlacidWay.com

# Lumbar Sprain and Strain

- More common in 20-40 year olds, in athletes and workers involved in heavy labor
- Pain is secondary to injuries to muscles, tendons, and ligaments
- Increased with bending and twisting
- Neuro examination is normal
- Bed rest not recommended



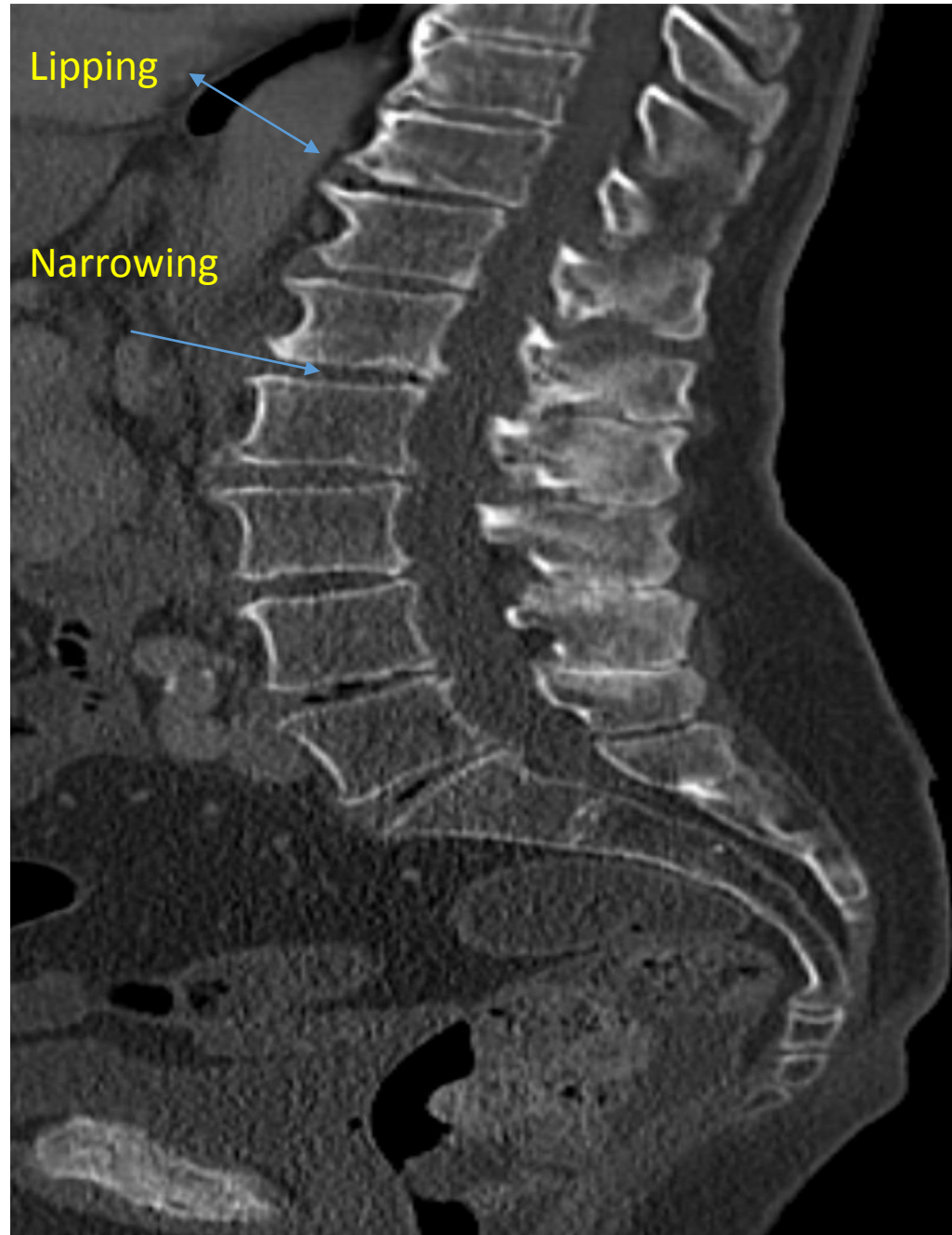
# Lumbar Degenerative Disease



- Occurs with aging and begins in the 30's
- When it becomes symptomatic, it is a centered pain and increases with movements
- Stiffness in the morning is a common complaint
- ROM is limited
- Hypertrophic changes and spurs in the bones can compromise nerve roots and cause radiculopathy

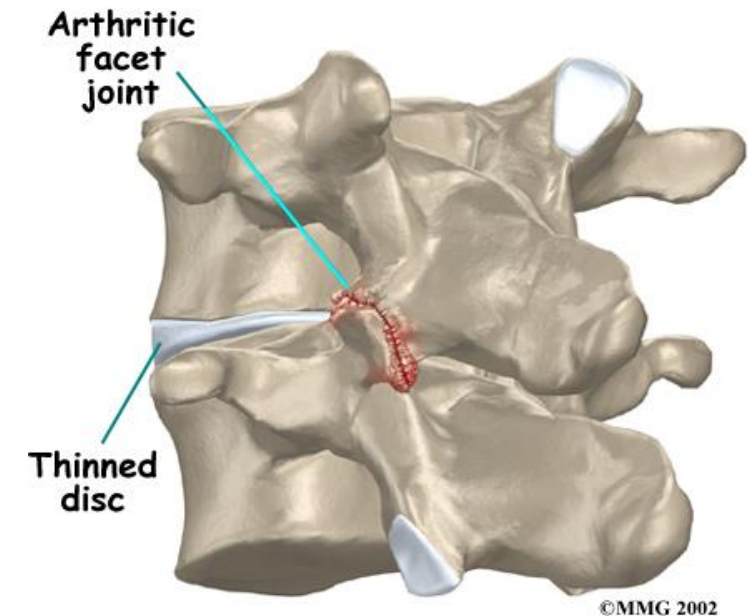


As seen on CT scan



# Lumbar Facet Arthropathy

- Degenerative Arthritis of Facet joints
- Pain can be localized, sometimes extends to the limb that can mimic radicular pain
- Pain increased with activities and relieved with rest
- ROM especially extension is limited, and prone position aggravates pain
- If nerves are getting affected, then radicular symptoms in buttocks, legs and feet are reported



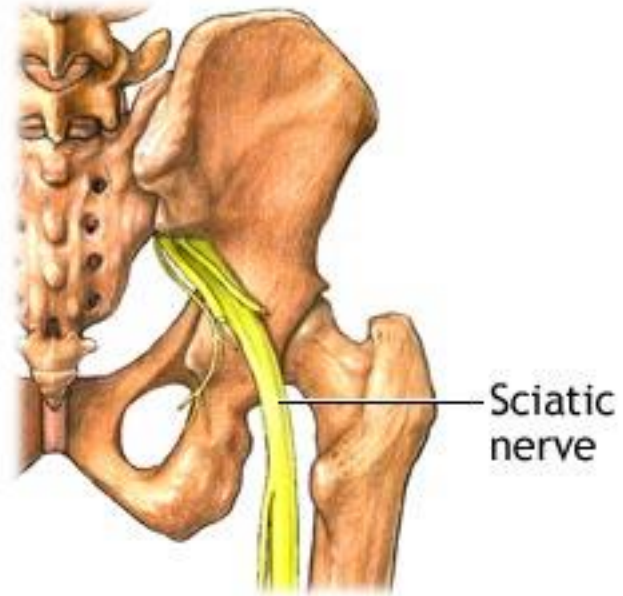
Lying on the stomach



# Lumbar Disc Syndrome Radiculopathy / Sciatica

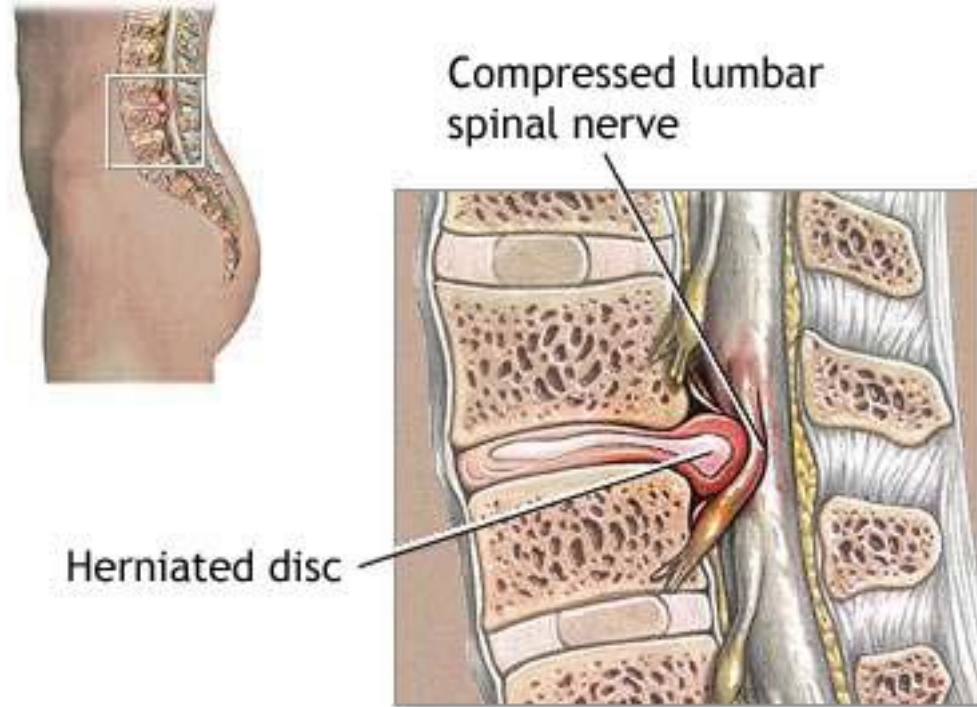
- Common cause of acute, chronic or recurrent lower back pain
- Common in early 40's
- Usually one sided, rarely can be both sided
- 5-10% of patients with radiculopathy have no pain in the lower back
- Most common site is L5-S1

# Sciatica



Pain from sciatica radiates from the buttock down the leg and can travel as far as the feet and toes

# Disc Herniation



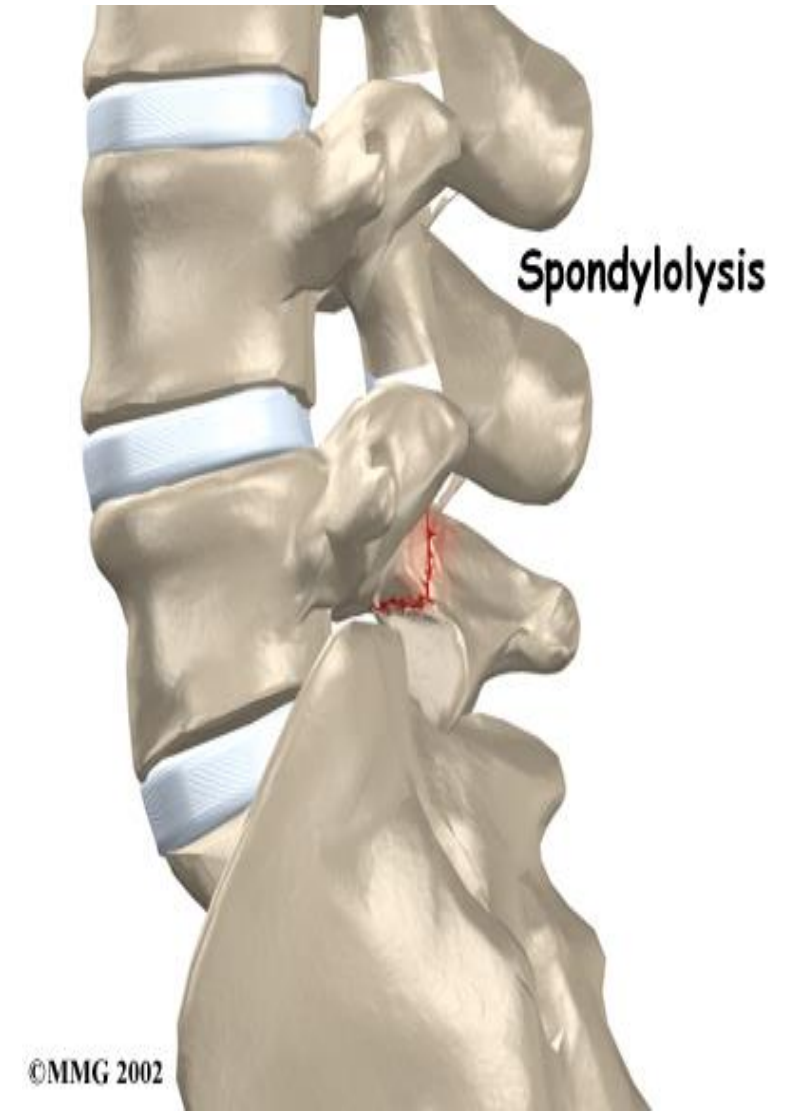
# Disc herniation on MRI





# Lumbar Spondylolysis

- Bony defect in Pars Inter Articularis
- Pars Inter Articularis = bony ring of spinal column







# Spondylolisthesis

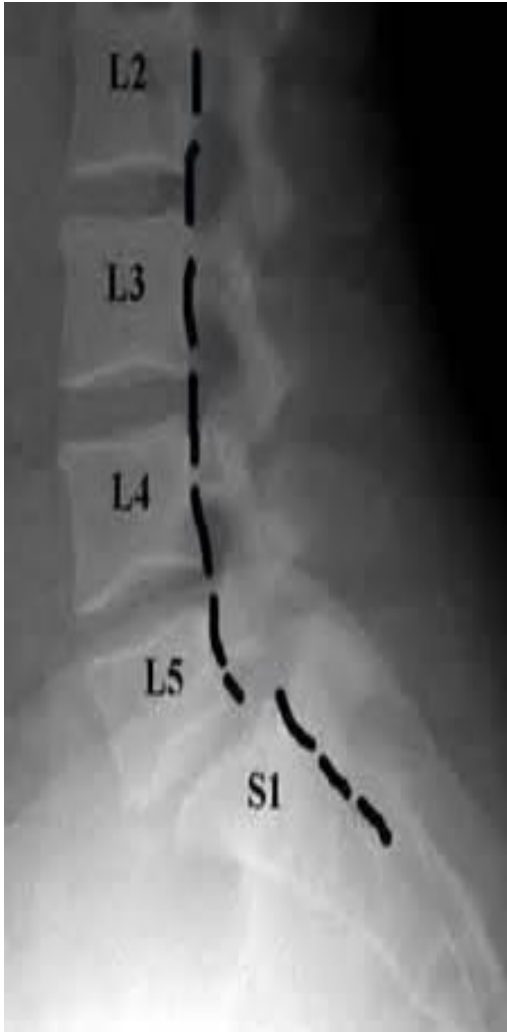
- Spondylolisthesis is the slipping of the vertebral body over the other.
- Two to four times more common in males
- Pain and dysfunction are related to the grading



# Spondylolisthesis On x-ray



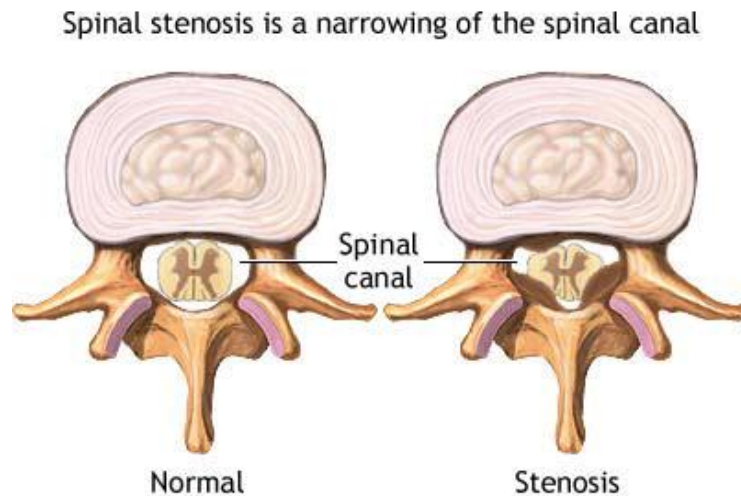
# Spondylolisthesis



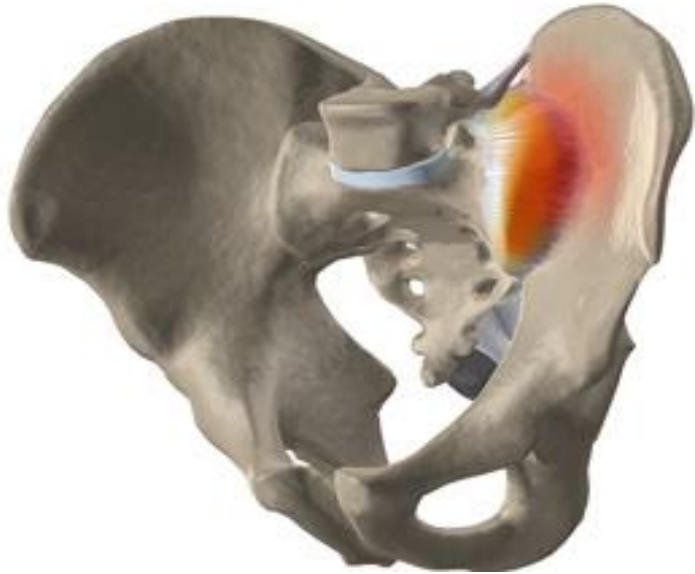
- L5-S1=L5 radiculopathy
- May have unilateral or bilateral leg pain

# Lumbar Spinal Stenosis

- Involves central canal at one level or multiple levels, or the root canal or lateral recess
- Congenital, developmental or acquired
- Degenerative joint disease is the most common cause after middle age
- Symptoms like pain, numbness and weakness are more pronounced with standing and walking, and relieved with sitting and lying down
- Lumbar flexion relieves pain and extension increases the pain



# Sacroiliac Joint Syndrome

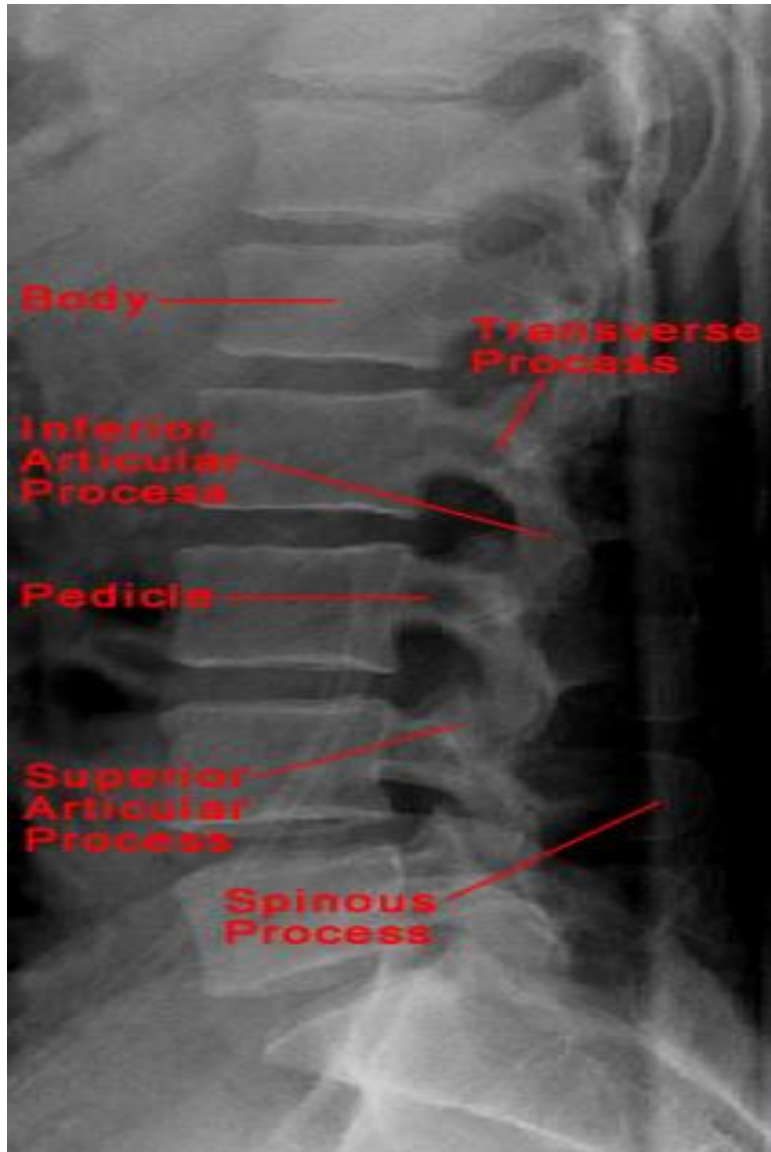


- SI joint syndrome can be a possible source of back pain
- Most common cause of problems with SI joint is an injury like a direct fall on the buttocks, MVA or blow to the side of the pelvis
- May be secondary to sacral, pelvis and lumbar abnormalities
- Can be a difficult problem to manage

## Quick Case: Acute Low back pain

- \*\*Less than 4-6 weeks (no leg pain)
- **EXAM**
- Poor lumbar mechanics
- May have positive straight leg raise
- Reflexes symmetrical
- **XRay**—Normal vs mild/mod disc space collapse
- \*\**Adolescents should get oblique films* r/o Stress fracture/pars defect

# Acute low back pain



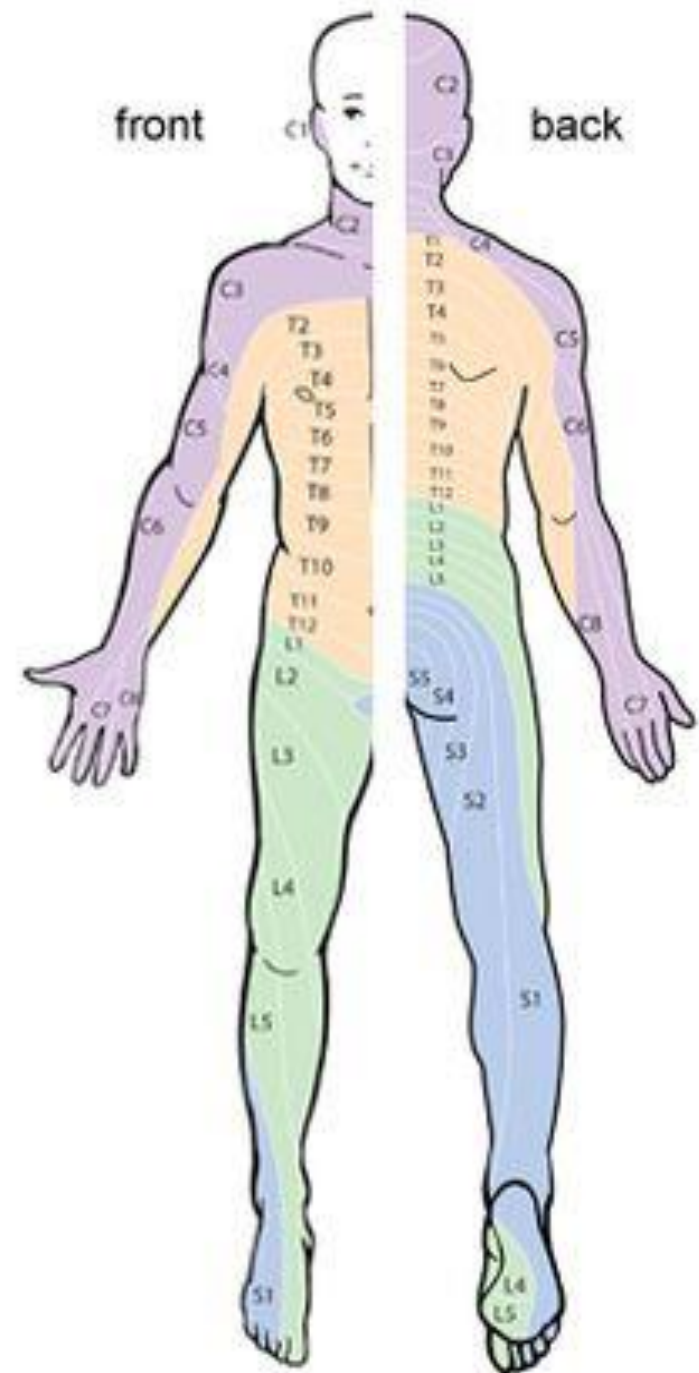
- Collapse





# Acute low back pain *with leg pain*

- Less than 4-6 weeks symptoms
- Description leg pain unique:
  - L4 -- Anterior thigh pain
  - L5 -- Posterior thigh pain, calf, big toe
  - S1 – Lateral foot, small toe



# LBP with leg pain

- **Exam**

- Absent knee (L4), or Ankle (S1) reflex
- Positive SLR (Pt commonly supine, reproduce leg pain)
- Don't MISS true foot drop (L5 root)

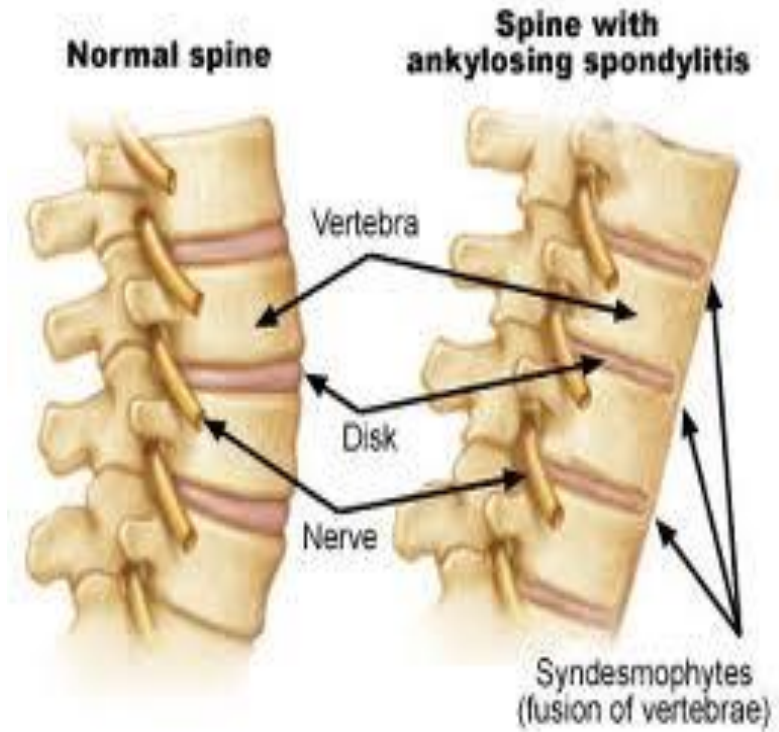
- **Xray**– Normal vs Disc space collapse

\*\*May see Spondylolisthesis

# Ankylosing Spondylitis (AS)

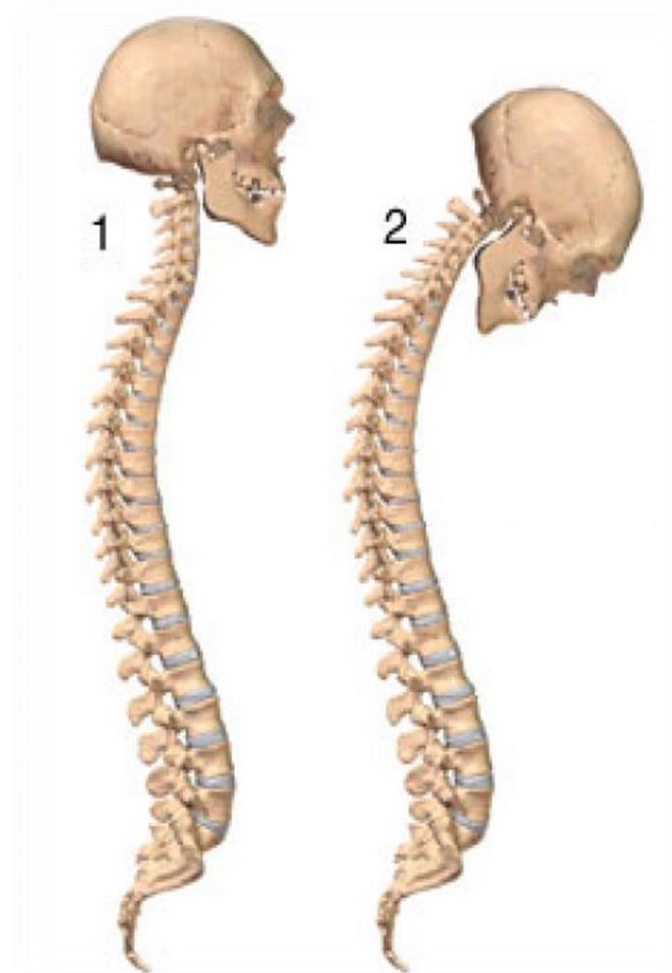
- Ankylosing means stiffness, spondylitis means inflammation
- Systemic disease / Progressive arthritis
- Affects ligaments and joints of spine and SI
- May cause vertebrae to fuse together and cause kyphosis
- Affects younger adults, ratio of male to female is 3:1
- Origin is unknown but genetics plays a role
- Diagnosis is difficult in early stages of AS

# Ankylosing Spondylitis

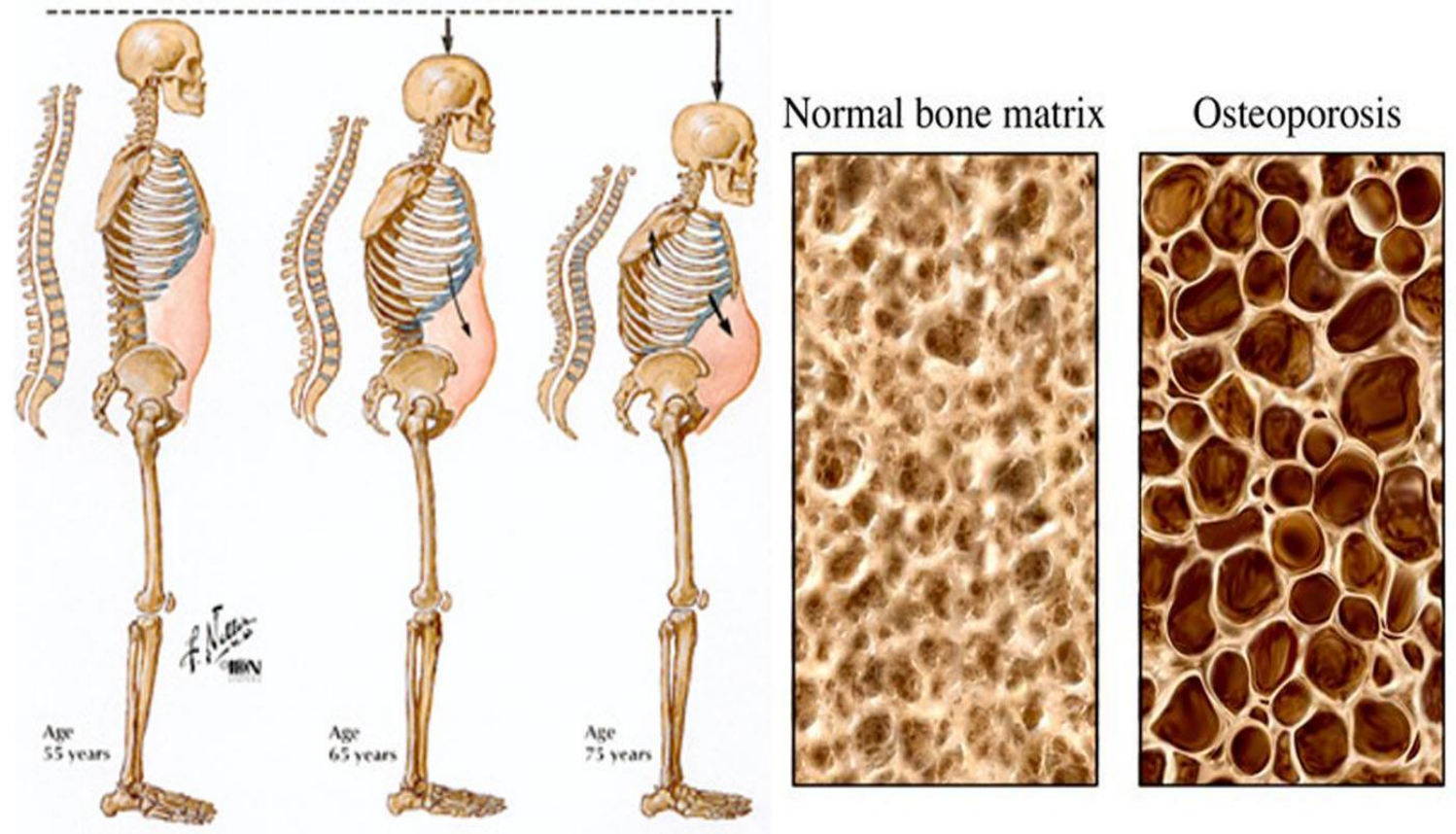


Bamboo spine typical on x-ray

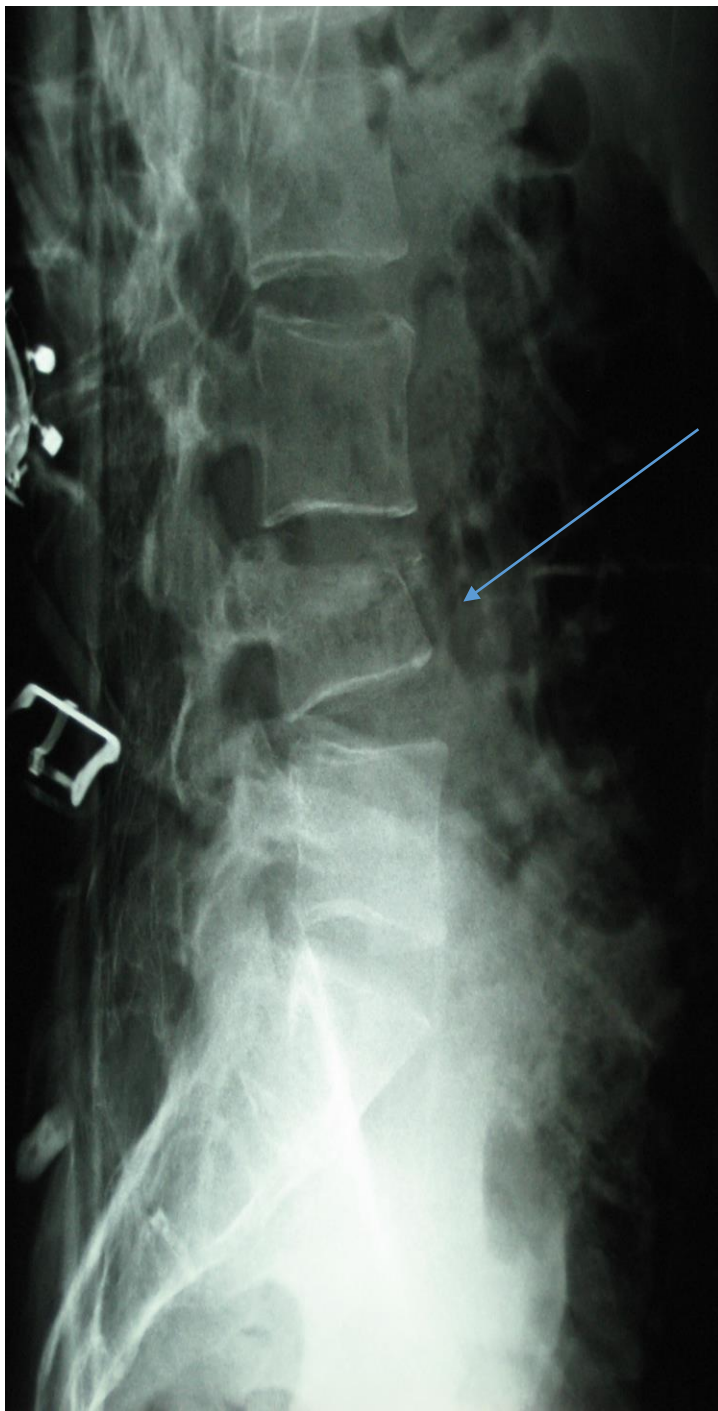
Blood test for HLA-B27 gene confirms the diagnosis



# Osteoporosis



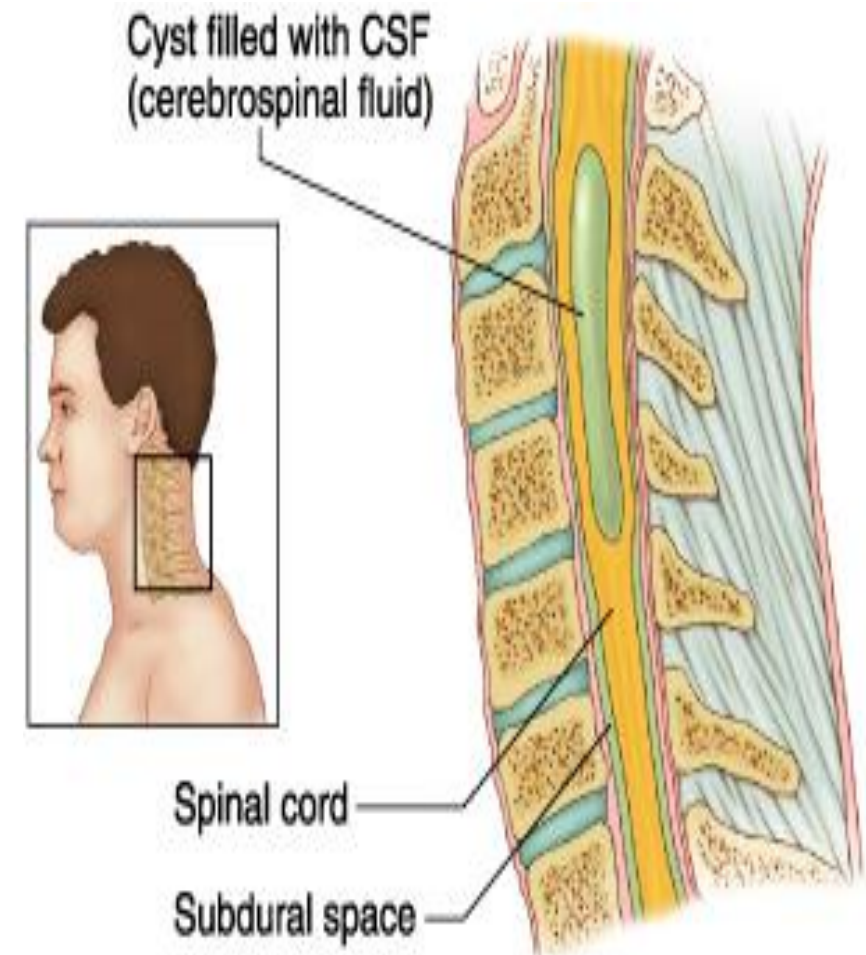
- Bone thinning disease
- Spinal fractures are most common
- Loss of bone mass begins around age 30 but may become symptomatic after menopause





# Syringomyelia (SM)

- Chronic disorder
- Cerebral Spinal Fluid (CSF) is normally outside the spinal cord. It enters inside the spinal cord forming cavities called Syring
- Can spread over time destroying spinal cord
- May be related to congenital cerebellum disorder called chiari malformation
- May be secondary to trauma, meningitis or tumor
- Symptoms: tingling, numbness, pain, muscle weakness, bladder or bowel problems, paraplegia or quadriplegia
- Cape effect may be present

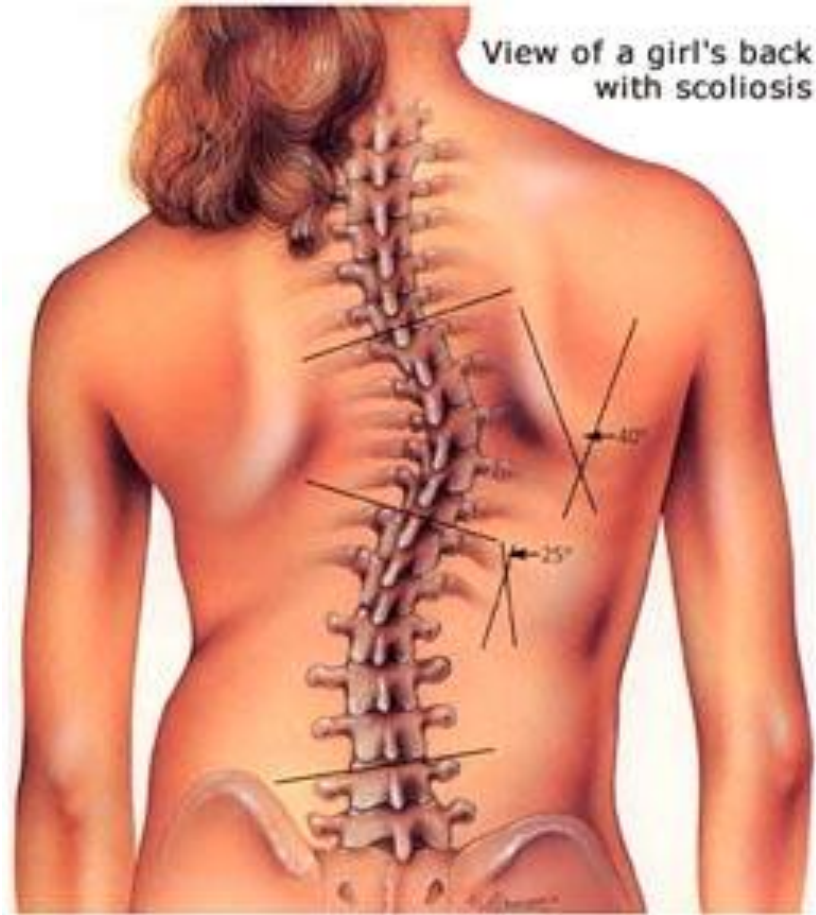


# Myofascial Pain Syndrome/trigger points

- Hypersensitive, tightened areas
- Nodularity
- May cause referred pain



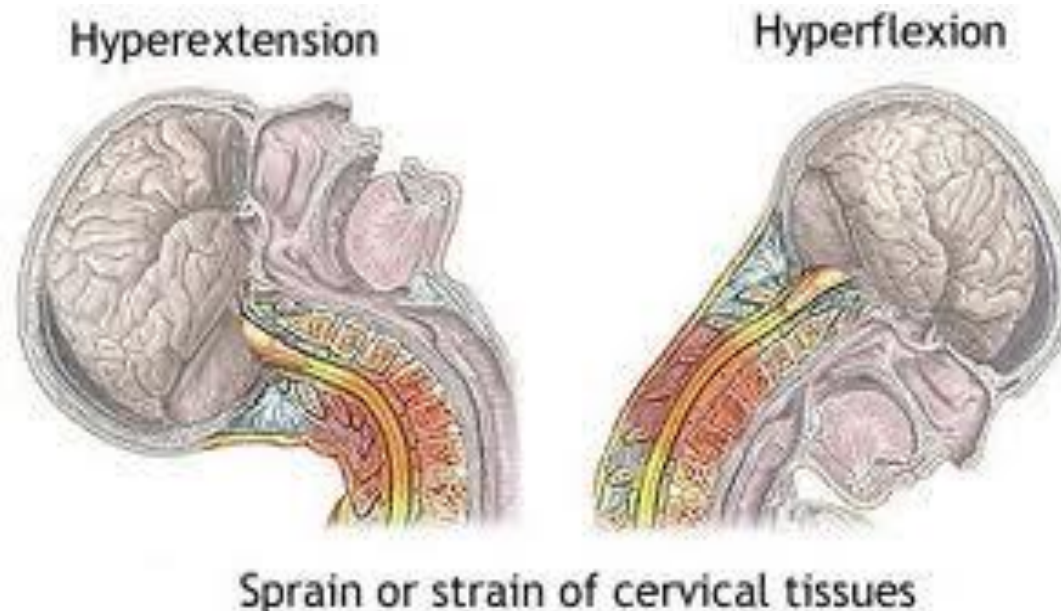
# Scoliosis



- Curves sideways
- Thoracic, lumbar or both
- Severity of Scoliosis is measured by degrees, ranges from 10-100 degrees
- Severity of Scoliosis suggests the treatment plan. Less than 40% is non surgical
- Four Types: Infantile, Juvenile, Adolescent and adult
- Most common is adolescent and adult
- Adolescent scoliosis is most common between age 10-18 and affects 3% of general population, more common in girls, there is genetic correlation
- Adult scoliosis is mostly secondary to degenerative changes, osteoporosis and paralysis

# Personal Injury and Back Pain

- Most patients after personal injury are seen in primary care as their first stop
- A complete evaluation of the patient in primary care setting is important
- Common pain is in the back from MVA
- Look for injuries like rib fractures/chest pain, headaches, TMJ dysfunction, shoulder pain and knee pain from dashboard injuries



# Disability and Back Pain

- Primary care providers have patients from insurance and state companies to evaluate them for disability claims and give their medical opinion
- Most common claim is back disorder
- Evaluate the patient from a holistic perspective
- Functional status and daily activities are an important part to be covered in the evaluation
- Co-morbidities are also important.
  - COPD, cardiac limitations, etc.

# Work Related Injuries and Back Pain



- Pathophysiology and biomechanics of worker's trauma are important to understand
- Occupation history is important, including the nature of job, mechanism of the injury, duration of employment, performance history
- Prior history of injury to the same area or different areas, work related or non-work related
- Job description needs to be understood before returning the patient to work with restrictions or without restrictions
- Onsite evaluation and vocational referral is required at times

# *Red Flag Symptoms of Potential Serious Back Pain*

1. Patient is over 50 or less than 20 years old
2. Symptoms of fever or chills, or have a recent infection
3. Chest pain along with back pain
4. Traumatic accident or fall
5. Radicular pain in the leg or arm
6. Weakness in leg or arm, loss of sensation that is getting worse
7. Loss of bladder or bowel functions, or numbness in genital area
8. Unexplained weight loss along with back pain
9. History of Osteoporosis
10. History of Cancer
11. Condition affecting immune system like HIV
12. Pain worse laying down or at night

Questions?

# References

Daniels, James M. Common Musculoskeletal Problems: (2015). A Handbook. Springer International Publishing.

Myrick, K. Orthopedic and Sports Medicine Case Studies for Nurse Practitioners. (2016). Springer Publishing.