

# **Clinical anatomy of Back**

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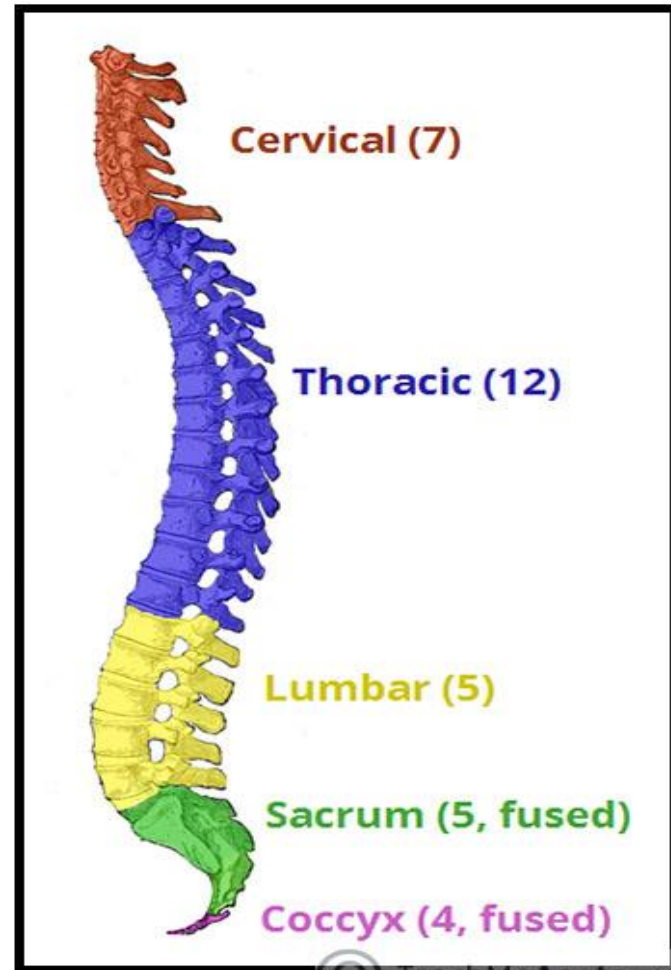
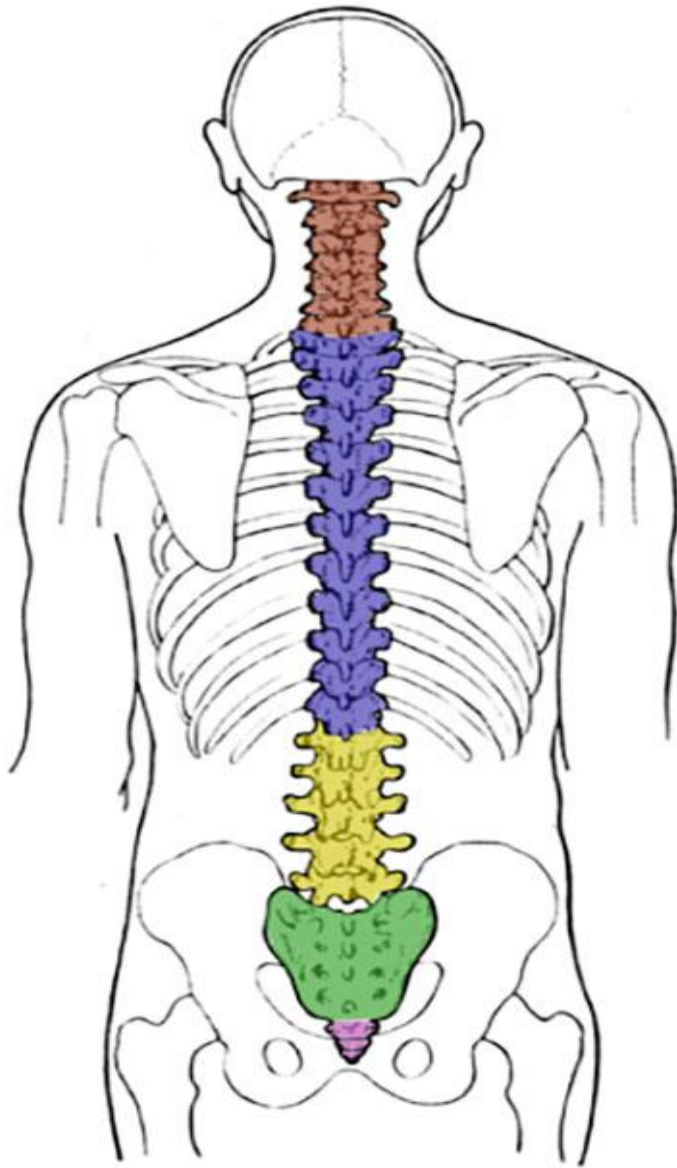
**Asso.Prof of Orthopaedics and Spine  
Surgery**

# outline

- Alignment of spine .
- Disease related to alignment of spine .
- Clinical applications of anatomy of spine

# Learning outcome

- To understand the importance of the anatomy of the vertebral column .
- To realize the impact of alignment of vertebral column on function of humans .
- To apply the basic knowledge in clinical practice

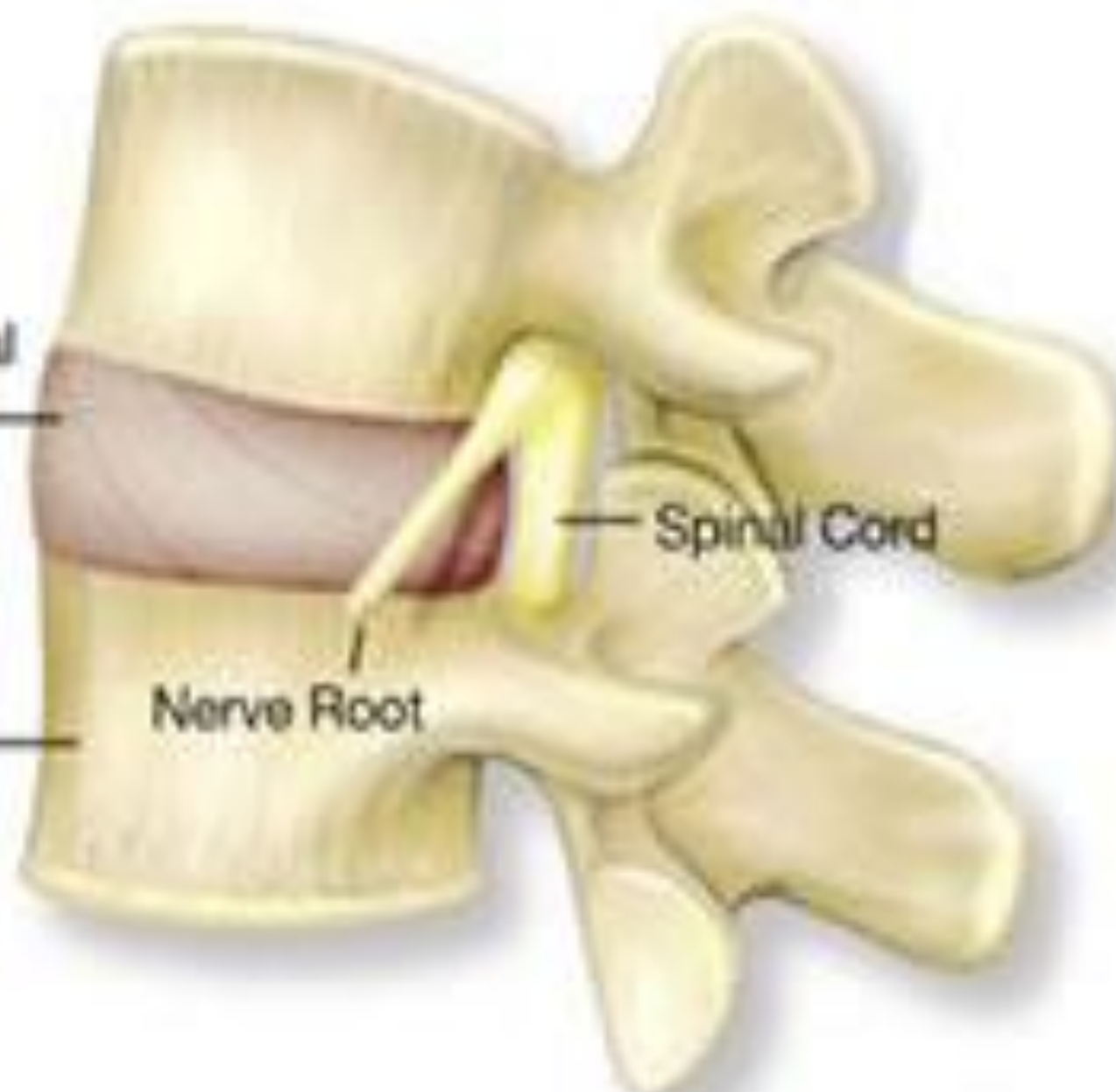


Intervertebral  
Disc

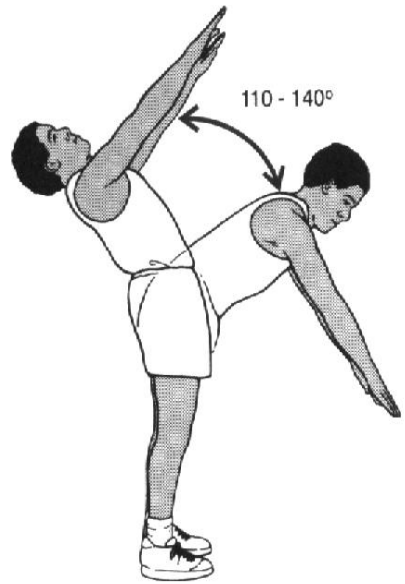
Vertebra

Nerve Root

Spinal Cord



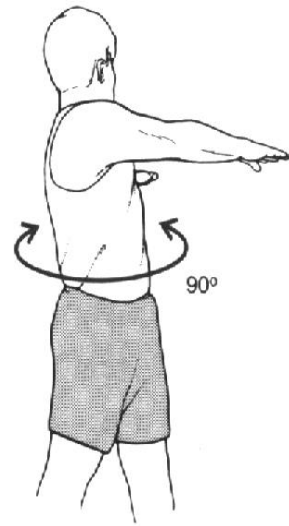
- collectively -- LARGE ROM
- flex/ ext
- L-R rotation
- L-R lateral flexion



Flexion and Extension

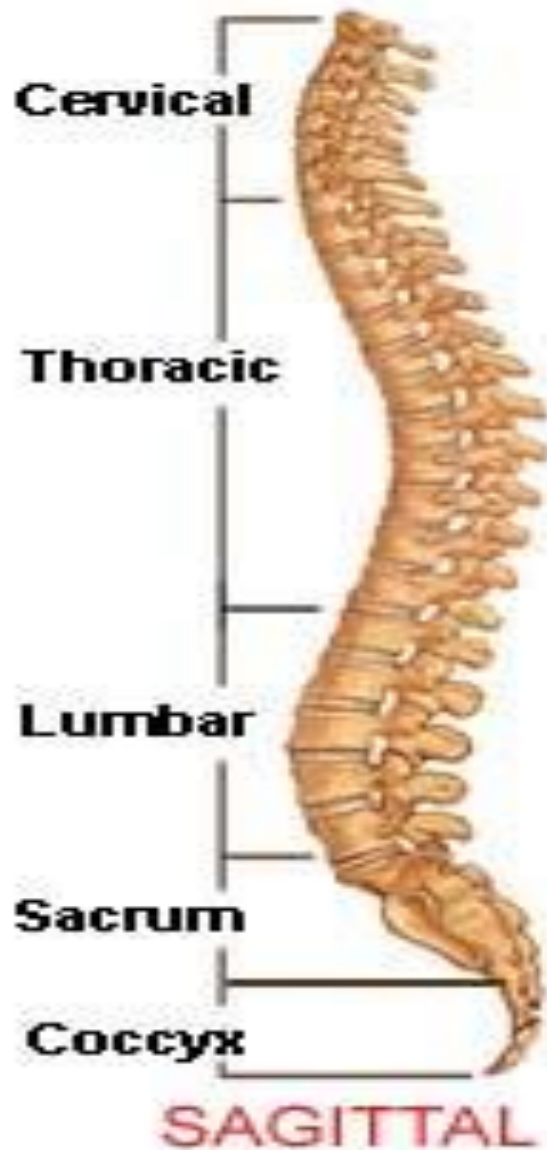


Lateral Flexion

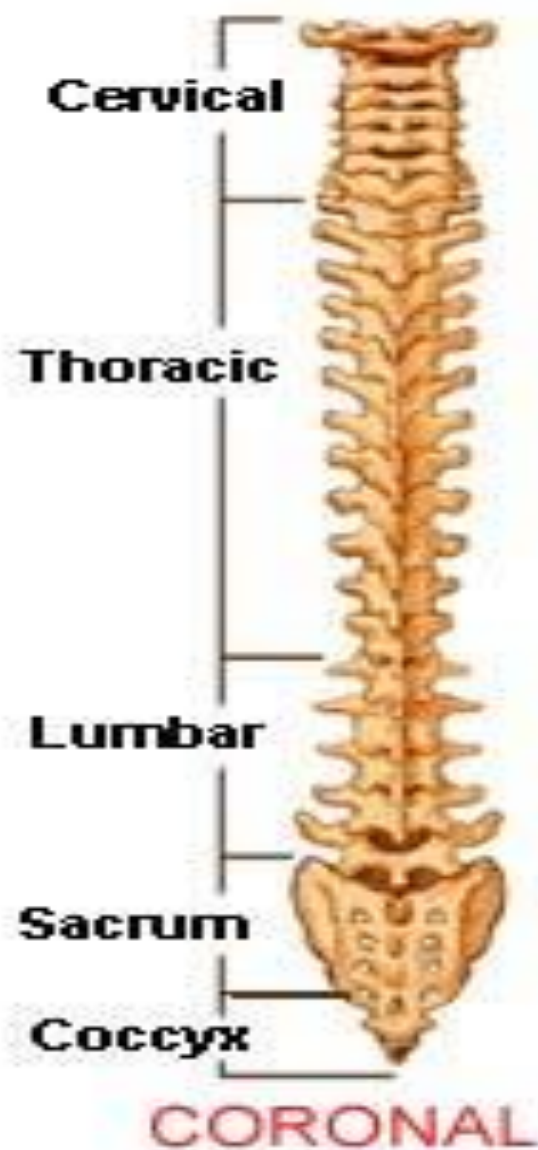


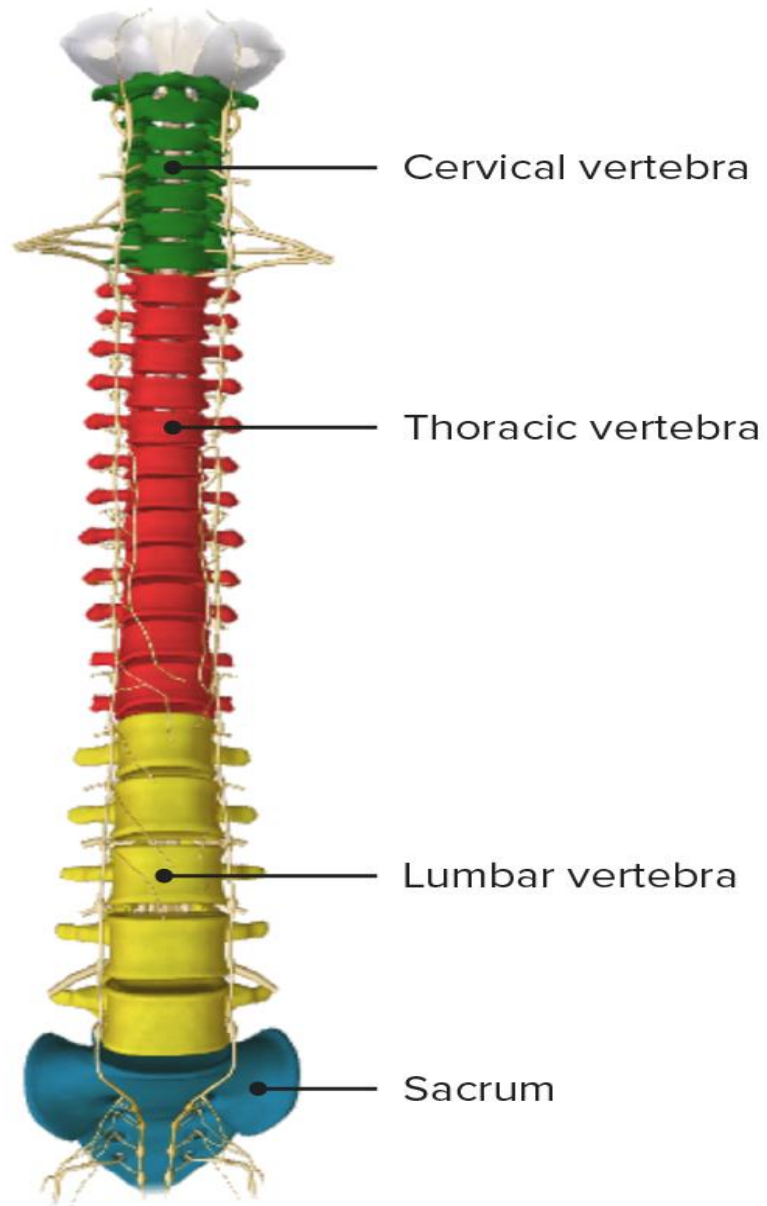
Rotation

## Lateral (Side) Spinal Column



## Posterior (Back) Spinal Column



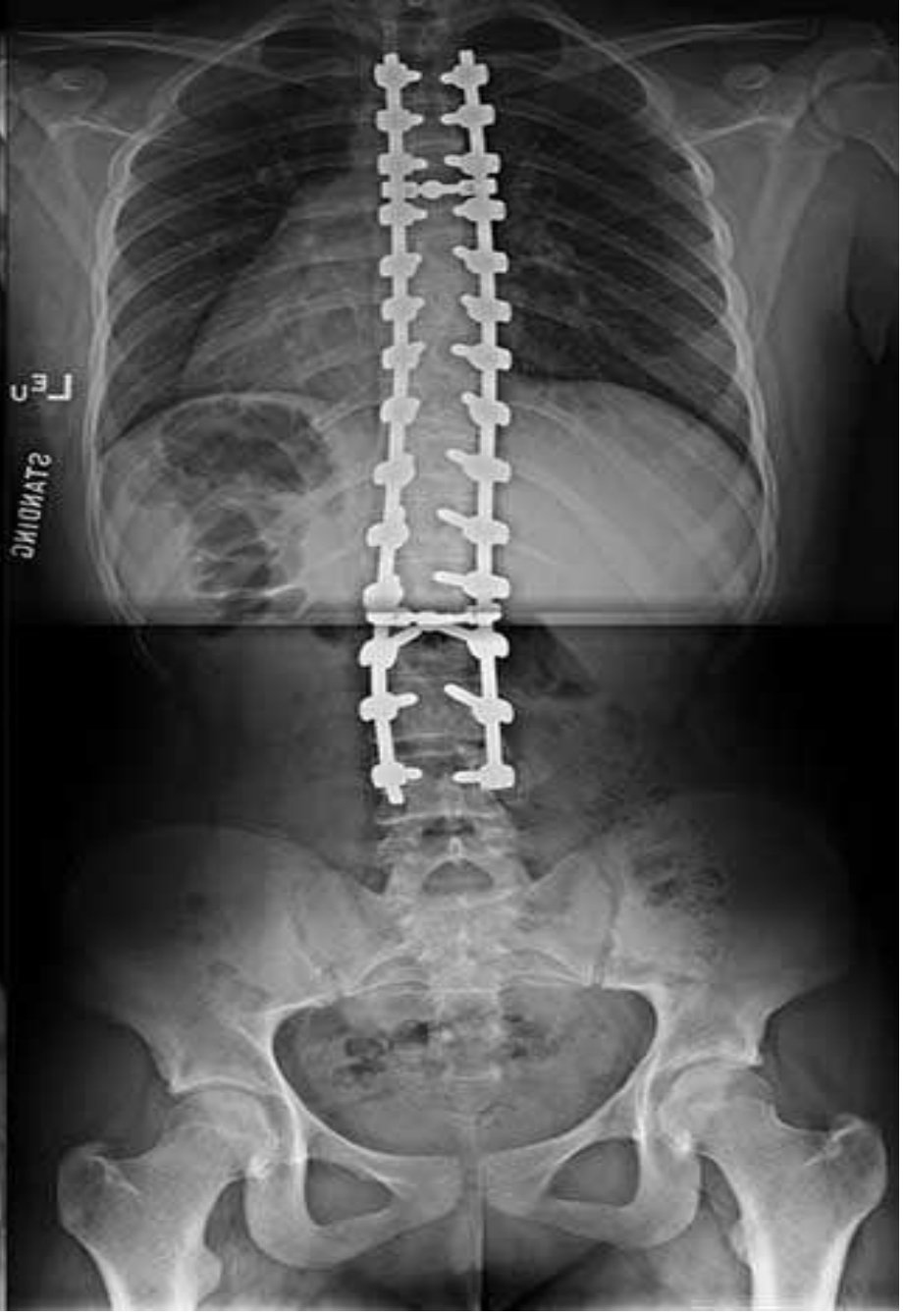


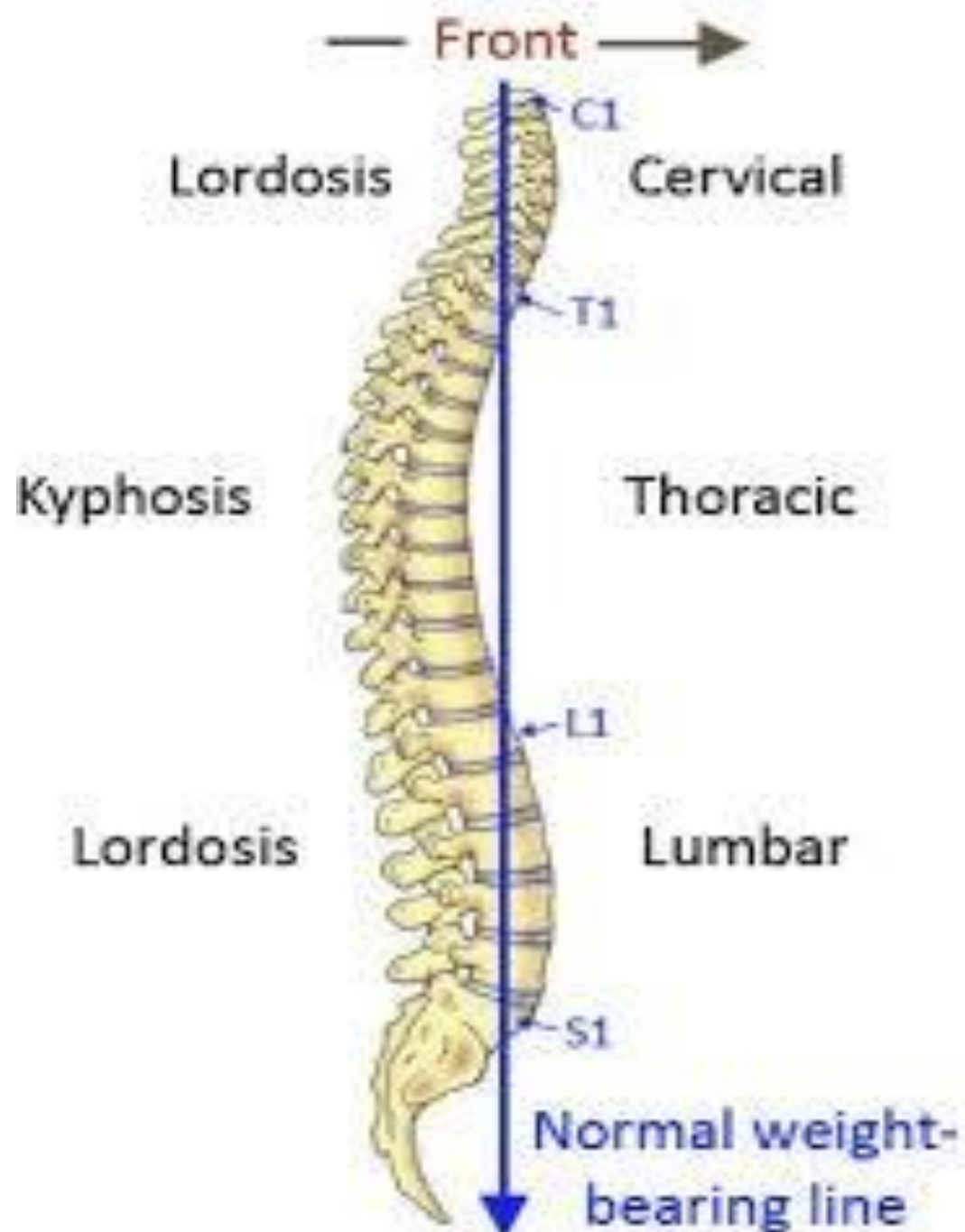










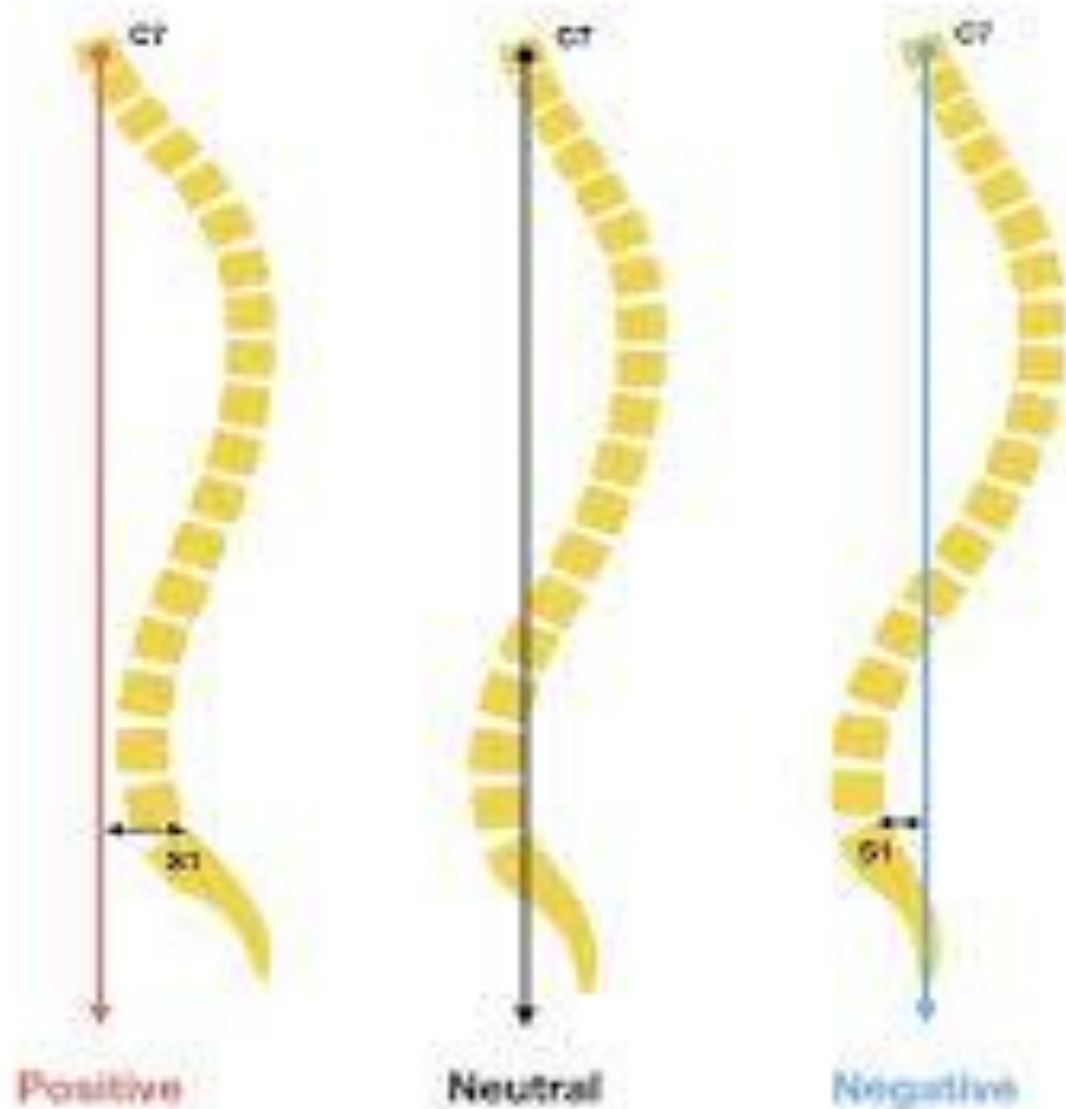




6.3 The newborn has a C-shaped spine. The first lordotic curve appears is the cervical lordosis with crawling (to maintain ho



## Sagittal balance



# Positive balance

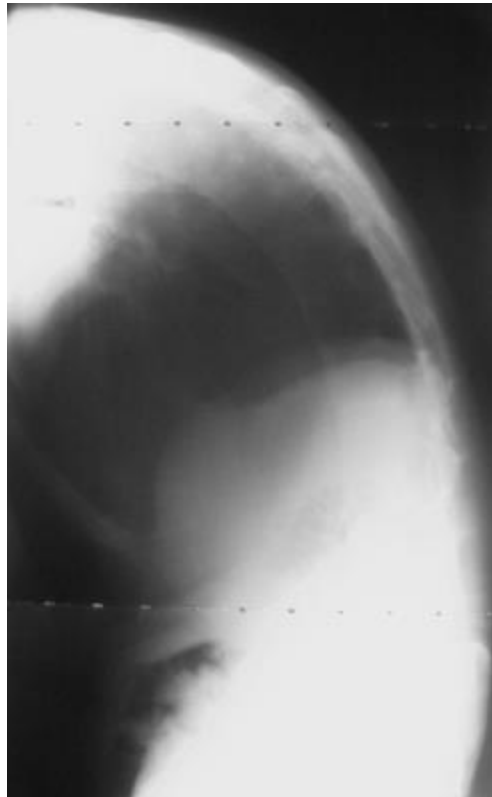
- Headche
- Migraine
- Decrease cervical motion
- Chronic neck and back tension
- Increase risk of CVD
- Pulmonary problems



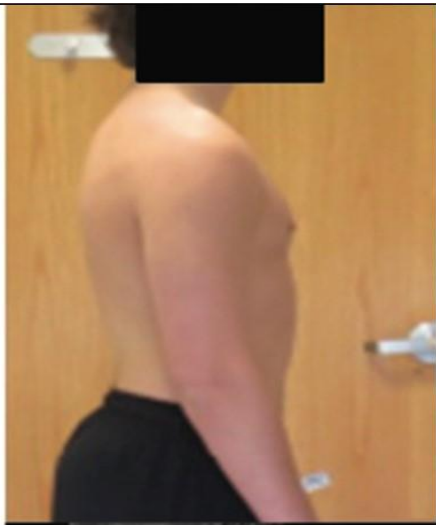
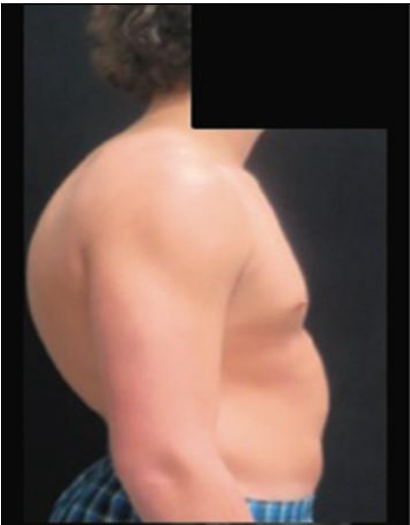
# Ankylosing spondylitis

## Clinical features

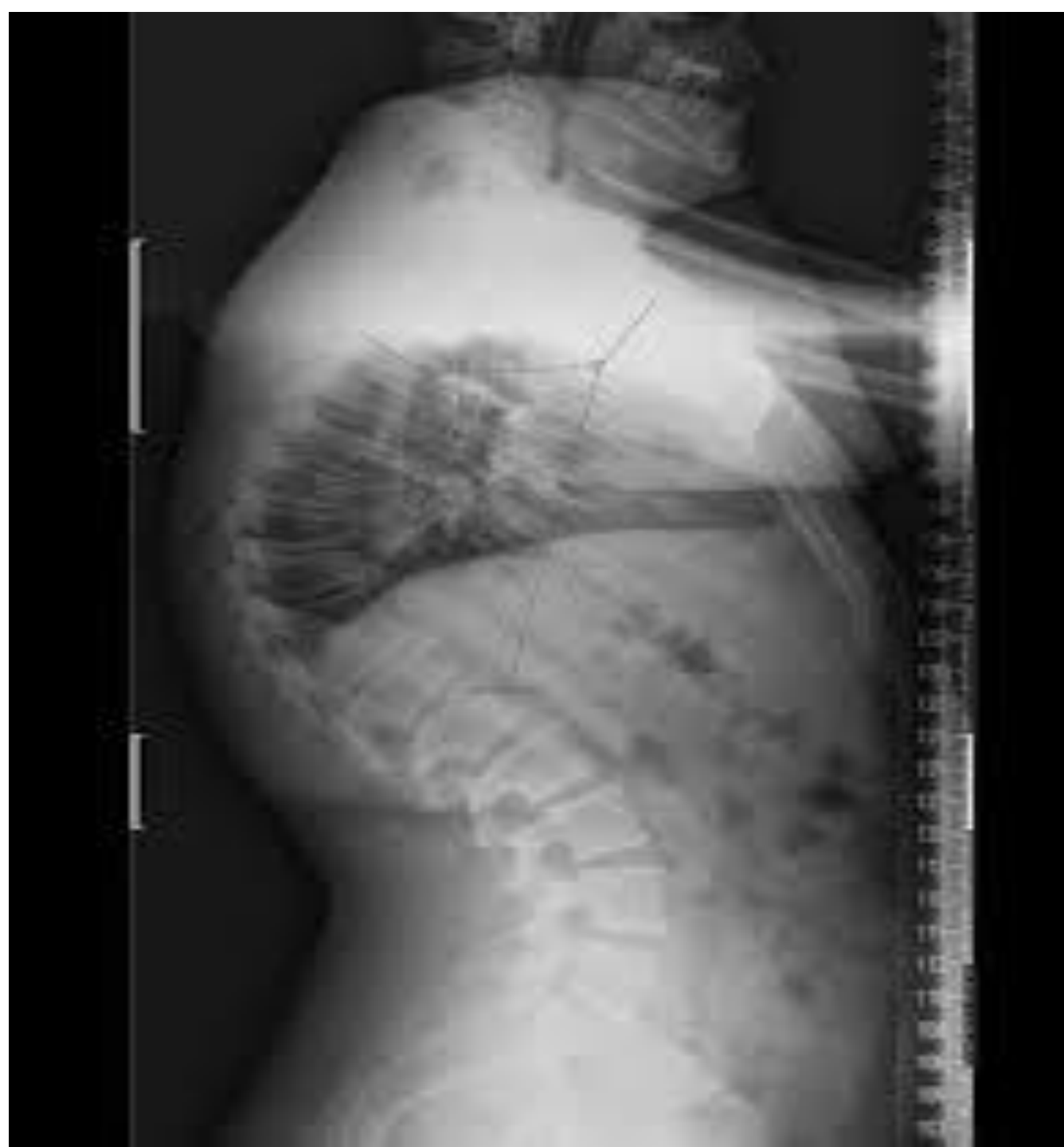
- Kyphotic posture



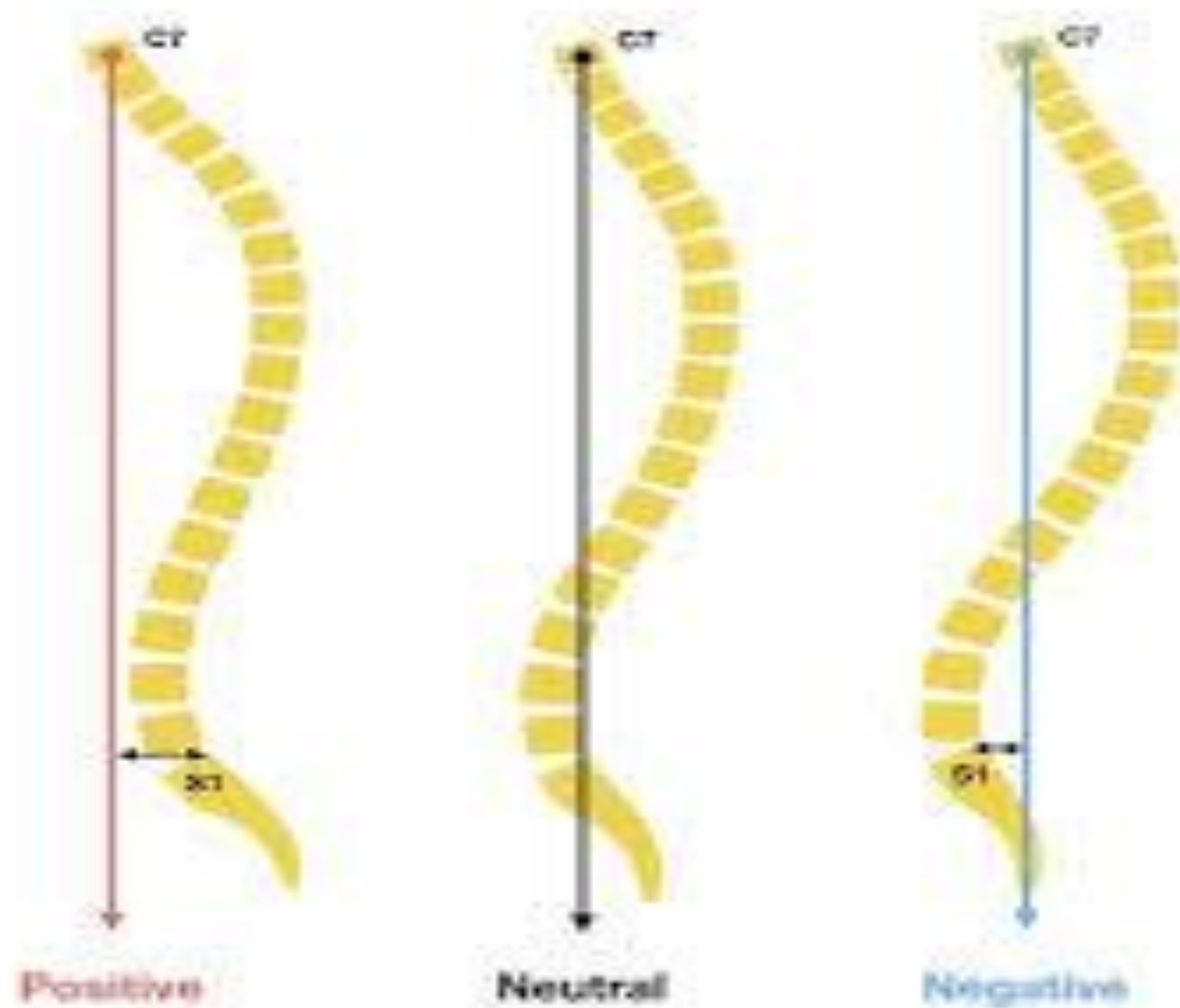




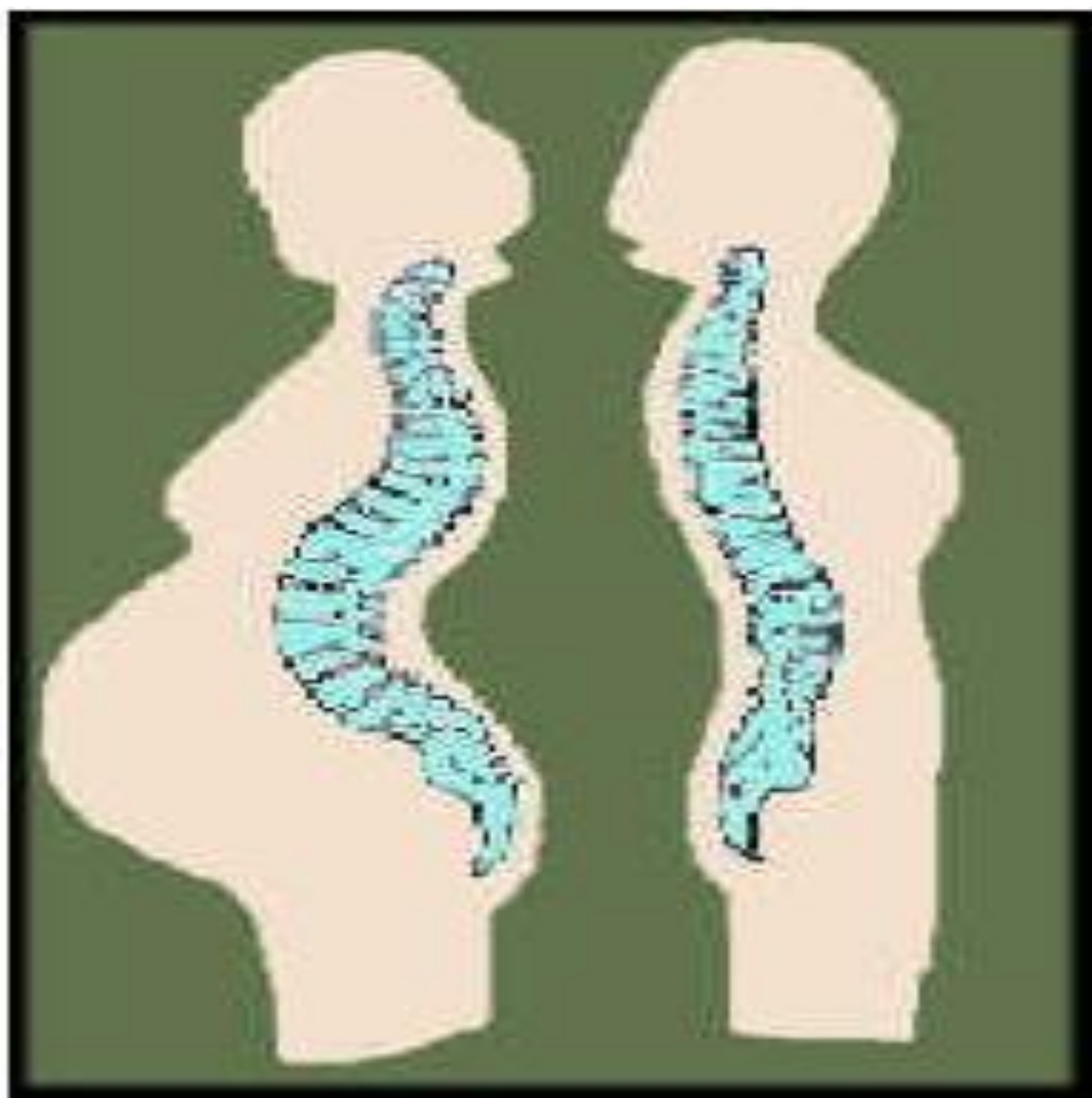




## Sagittal balance










# Negative sagittal balance

- Facet joint arthropathy
- Overload sacroiliac joint
- Overload hips and knees
- Muscles strains
- Fracture of pars interarticularis
- spondylolisthesis



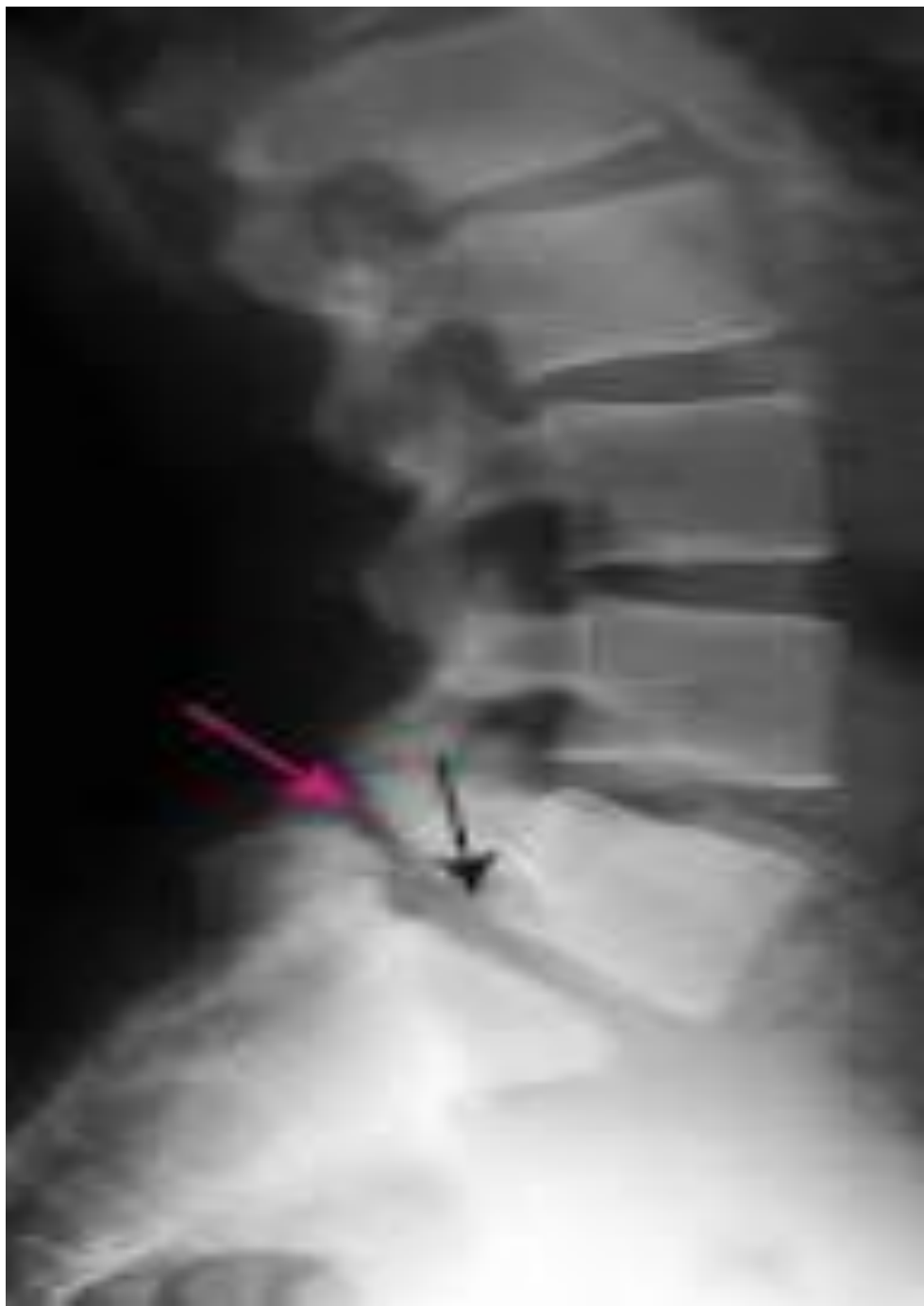
The diagram illustrates a cross-section of a vertebra. A blue syringe is shown on the left, with a needle inserted into the facet joint. The joint is highlighted with a green, wavy border. A red glow surrounds the joint, indicating inflammation. Labels with leader lines point to the 'Inflamed facet joint' and the 'steroid medication' being injected. The vertebrae are shown in a light brown color, and the intervertebral discs are shown in a light blue color.

**Inflamed  
facet joint**

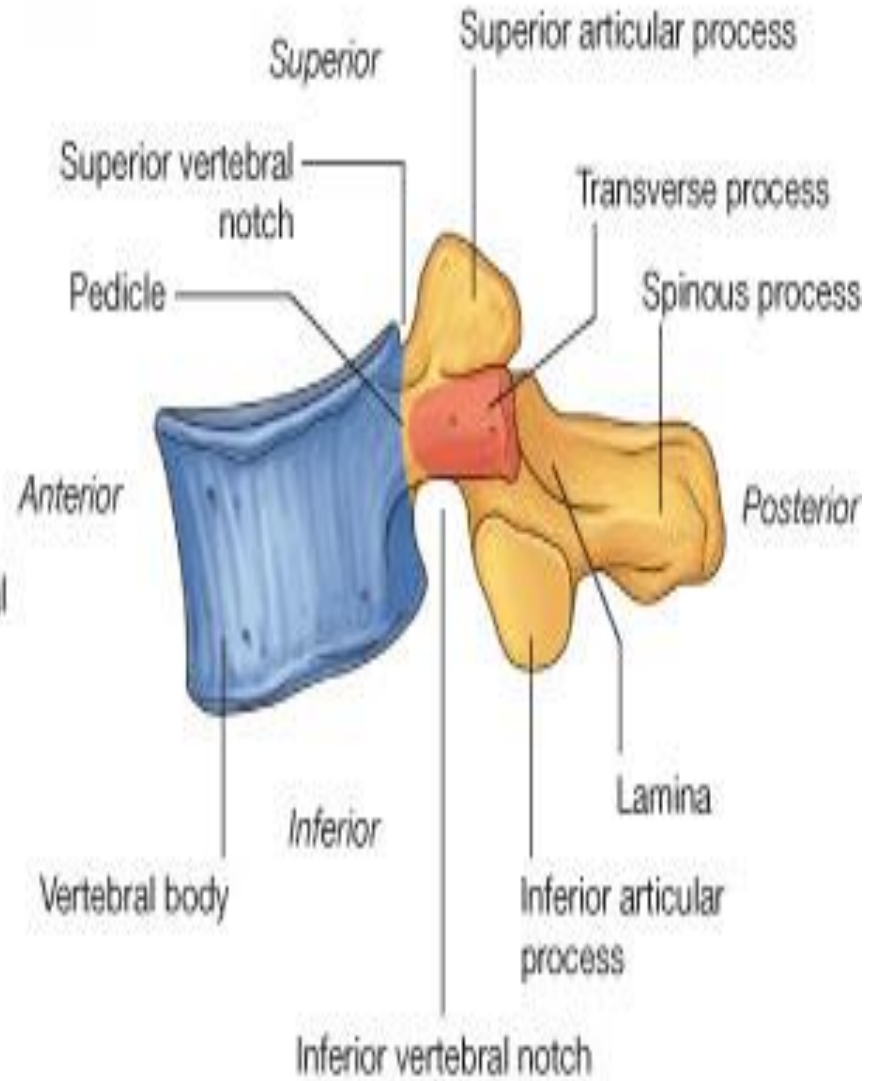
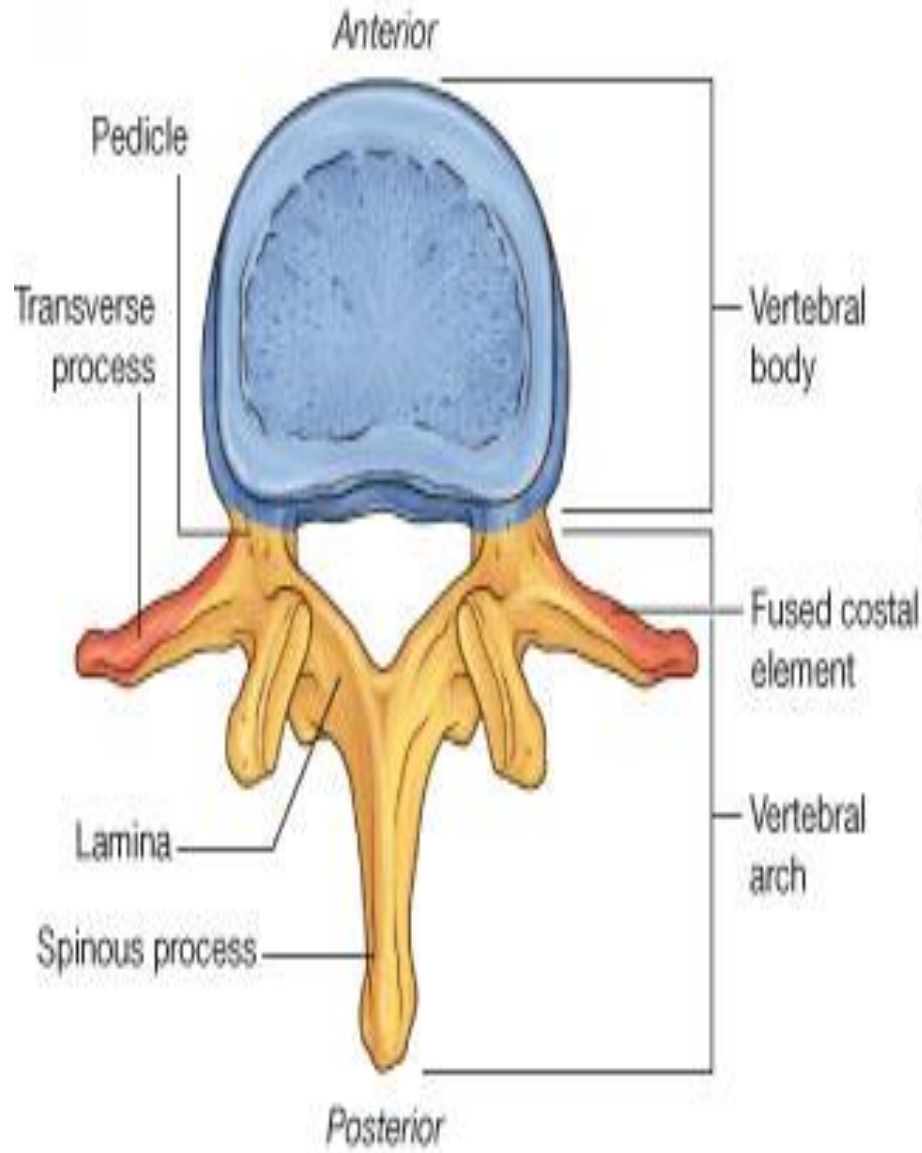
**steroid  
medication**











70%

30%



Superior  
vertebra

Superior end plate

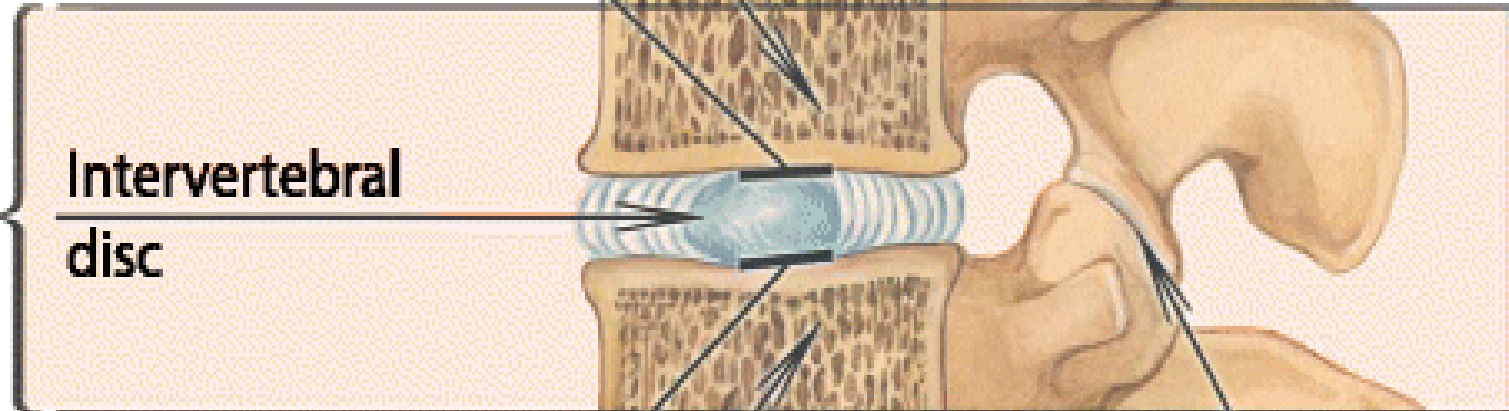
Intervertebral  
disc

Inferior end plate

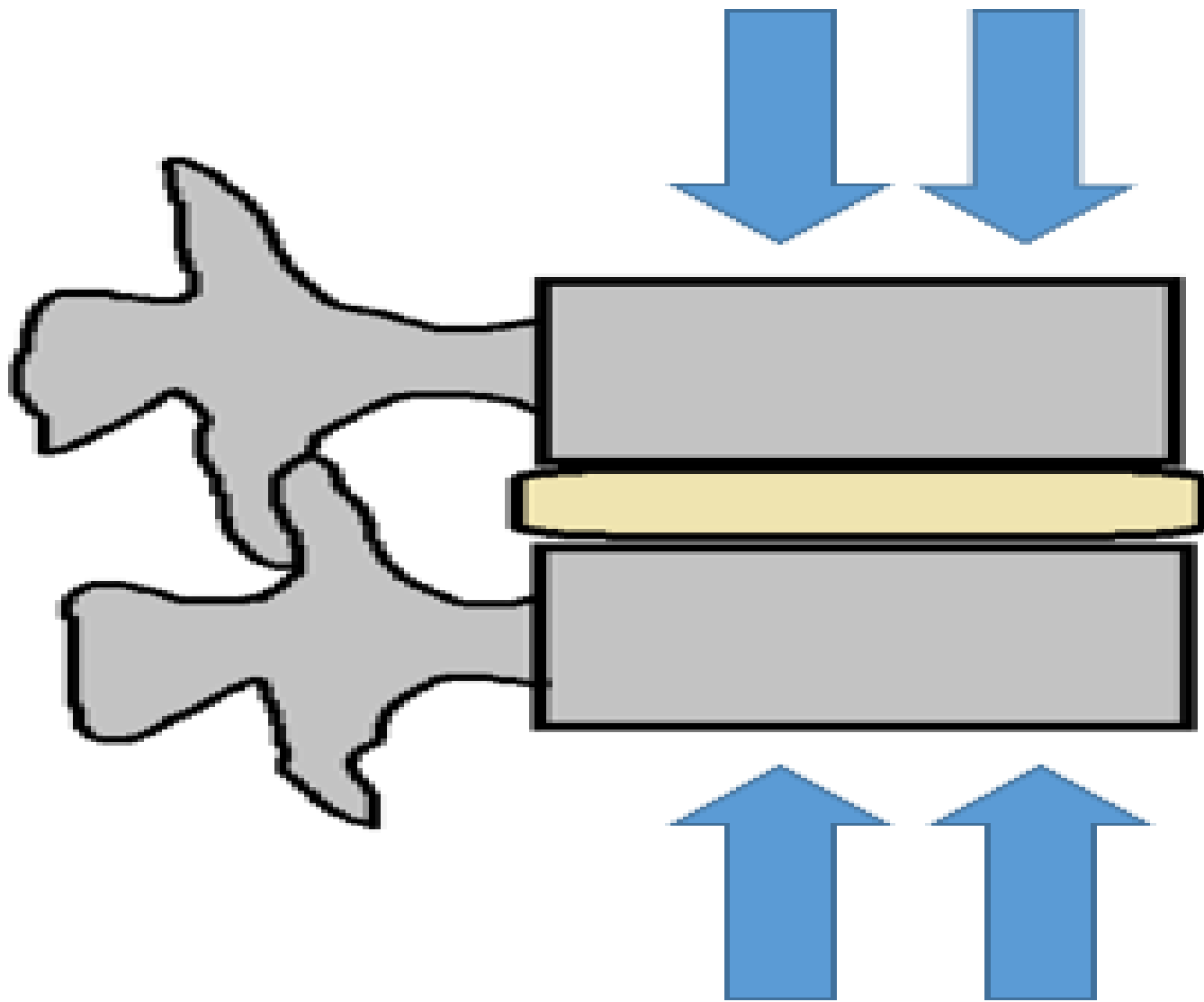
Inferior  
vertebra

Facet  
joint

FSU

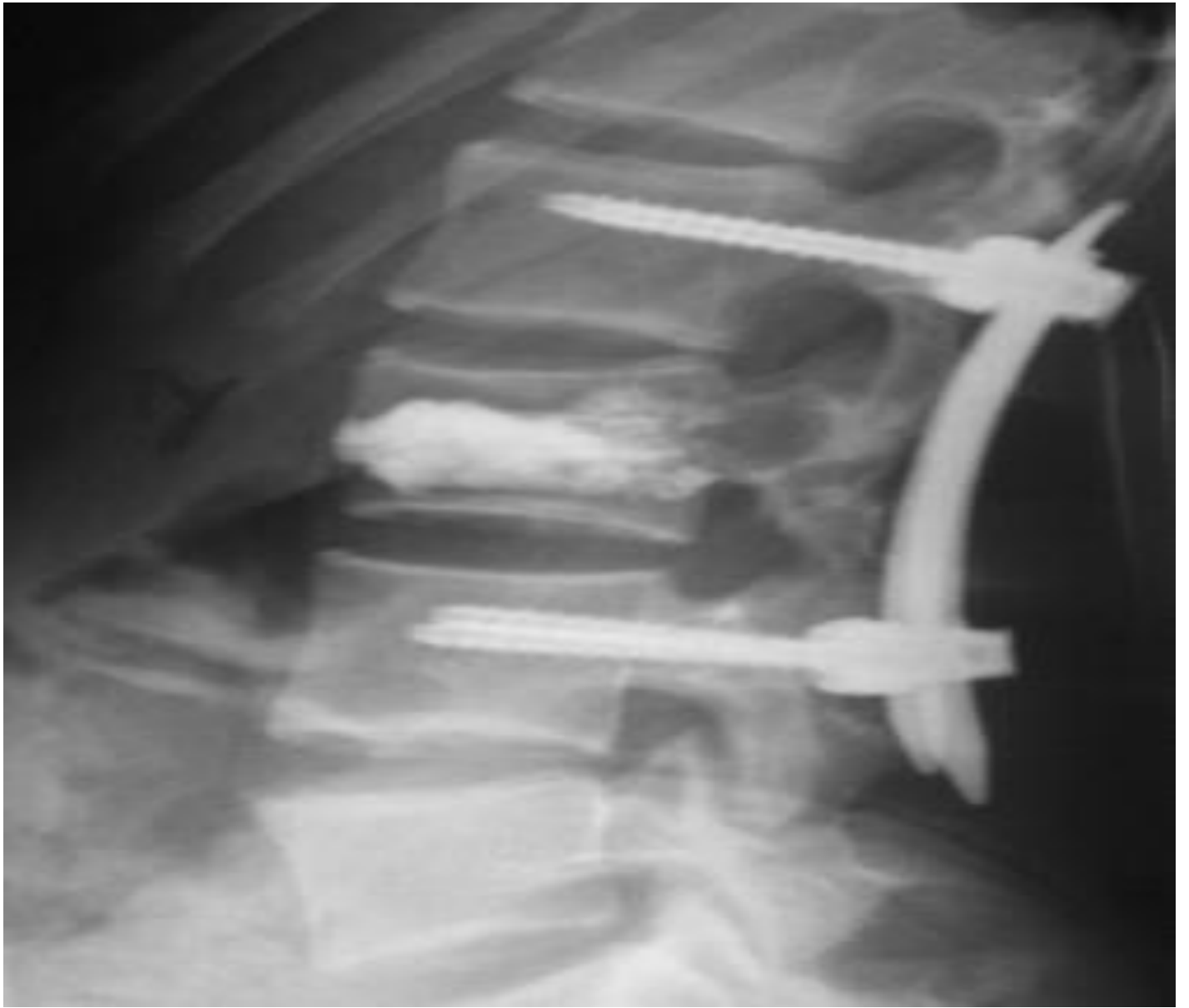




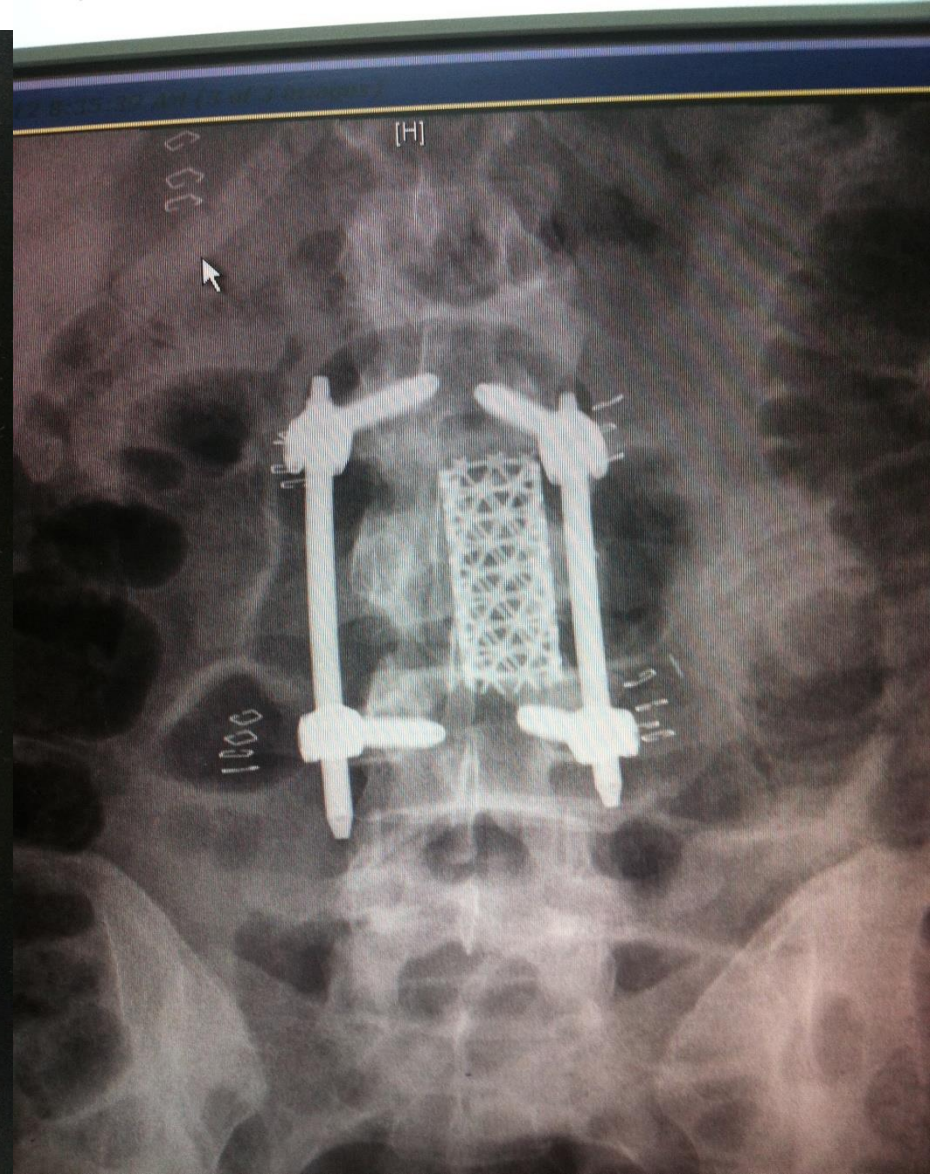
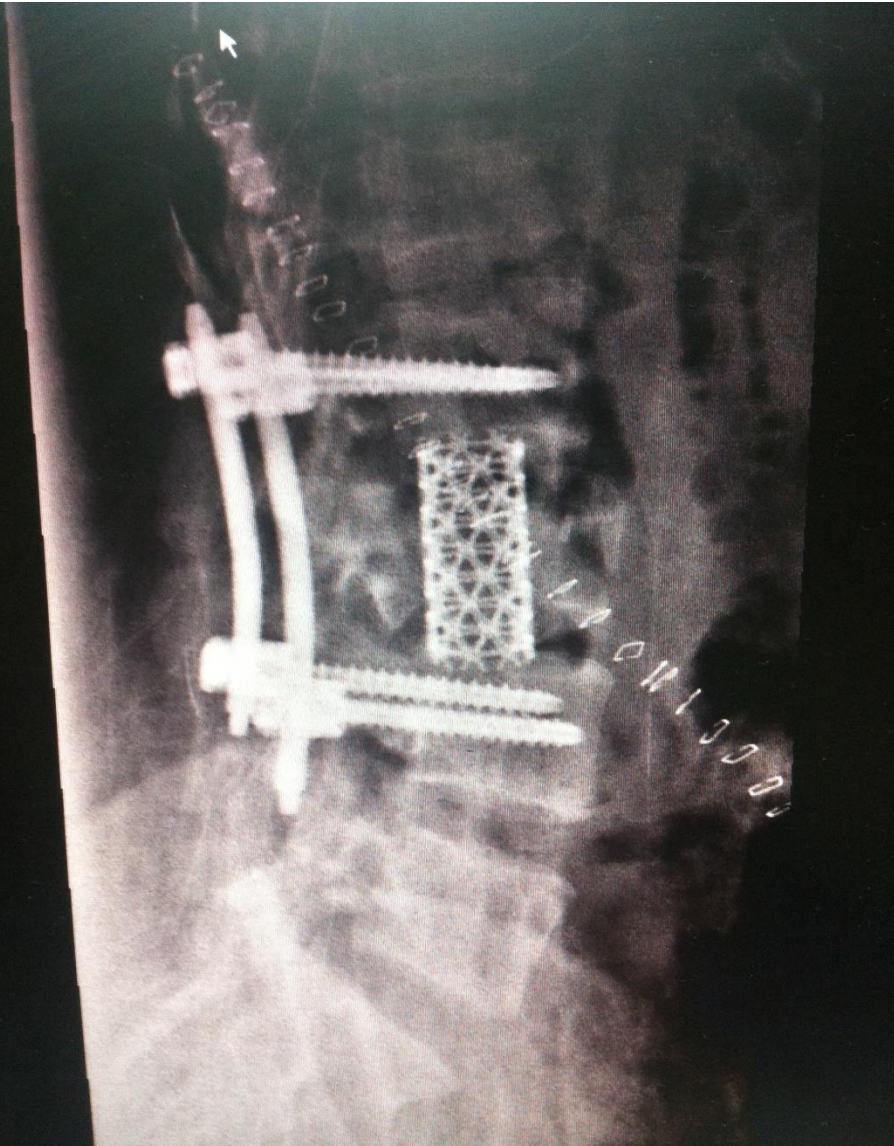


**AXIAL LOAD/ COMPRESSIVE FORCES**









# Take home message

- \*Normal alignment of spine is critical for optimal function**
- \*Sagittal balance is major predictor of disability related to chronic back pain especially in elderly patient like osteoporosis**

**Thank you**