

SNS COLLEGE OF PHYSIOTHERAPY

COIMBATORE-35

COURSE NAME:BIOMECHANICS

2nd year

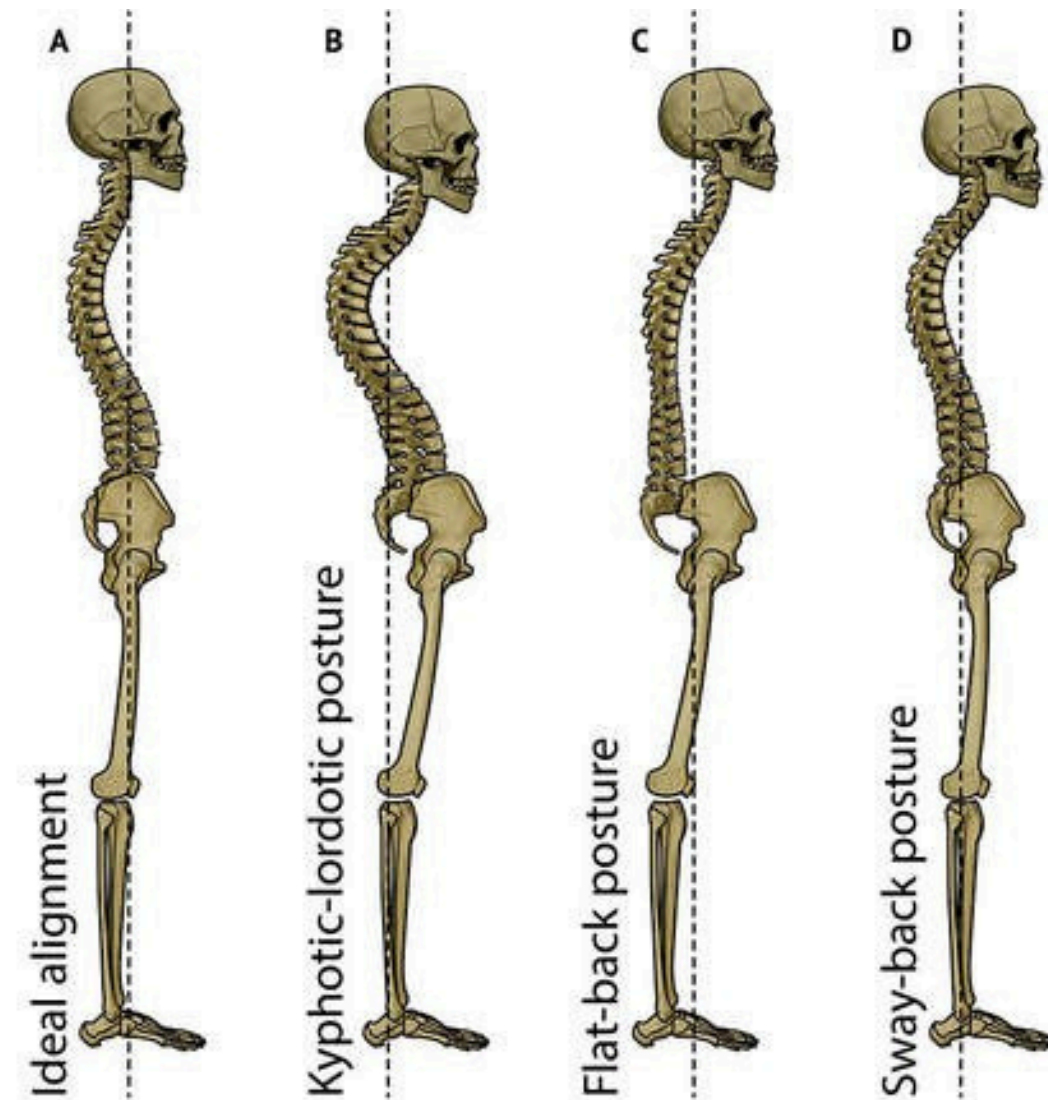
TOPIC : POSTURE

Empathize

- **Understand patient concerns regarding foot, spine, or gait abnormalities**
- **Identify symptoms: pain, fatigue, imbalance, difficulty walking**
- **Ask about daily habits: footwear, prolonged standing, sports activities**
- **Explore functional limitations: running issues, back pain, posture discomfort**
- **Understand patient goals – pain-free standing, normal foot function, improved posture**

Ideate

- Strengthen weak muscles (intrinsic foot muscles, spinal extensors, core)
- Stretch tight structures (calf muscles, hip flexors, pectorals)
- Recommend corrective orthotics (arch supports, toe spacers)
- Consider posture training & gait retraining
- Explore ergonomic and footwear modifications
- Develop long-term home exercise routines



Define & Explain

- **Pes Planus (Flat Foot):** dropped medial arch → pronation
- **Pes Cavus:** excessively high arch → rigid foot
- **Hallux Valgus:** lateral deviation of great toe → bunion formation
- **Idiopathic Scoliosis:** lateral spinal curvature without known cause
- **Kyphosis:** exaggerated thoracic flexion curvature
- **Lordosis:** excessive lumbar extension curvature

FOOT DEVIATIONS

1. Pes Planus (Flat Foot)

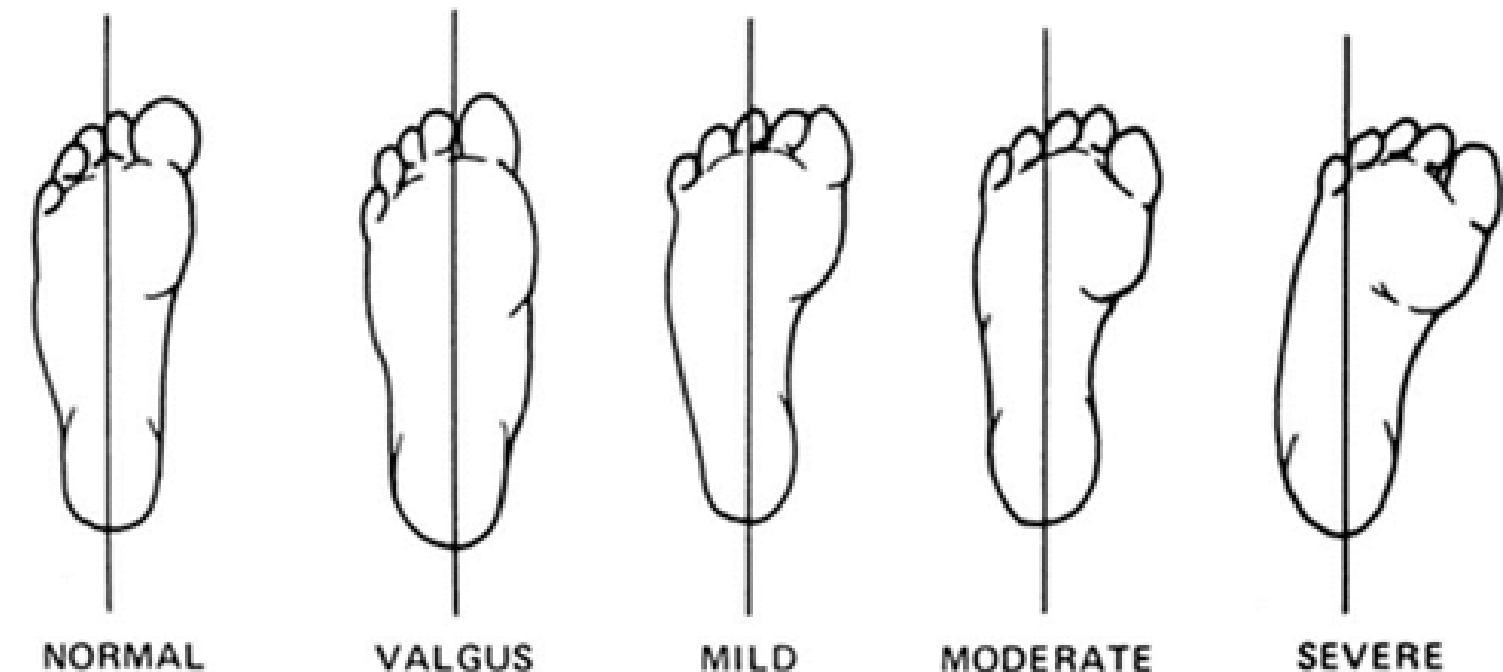
- Medial arch collapse
- Excessive pronation
- Causes: ligament laxity, weak tibialis posterior
- Effects: knee valgus, fatigue, pain

2. Pes Cavus (High Arch)

- Rigid, supinated foot
- Poor shock absorption
- Causes: neuromuscular imbalance
- Effects: ankle sprains, metatarsal pain

3. Hallux Valgus

- Lateral deviation of great toe
- Medial bunion formation
- Causes: genetics, narrow footwear
- Effects: pain, gait alteration



SPINAL DEVIATIONS

1. Idiopathic Scoliosis

- Lateral curvature with rotation
- Unknown cause
- Rib hump visible on forward bend
- May cause asymmetry & pain

2. Kyphosis

- Excessive thoracic flexion
- Causes: poor posture, osteoporosis, Scheuermann's disease
- Effects: rounded shoulders, breathing difficulty

3. Lordosis

- Excessive lumbar extension
- Causes: weak abdominals, tight hip flexors, obesity
- Effects: low back pain, anterior pelvic tilt



Scoliosis



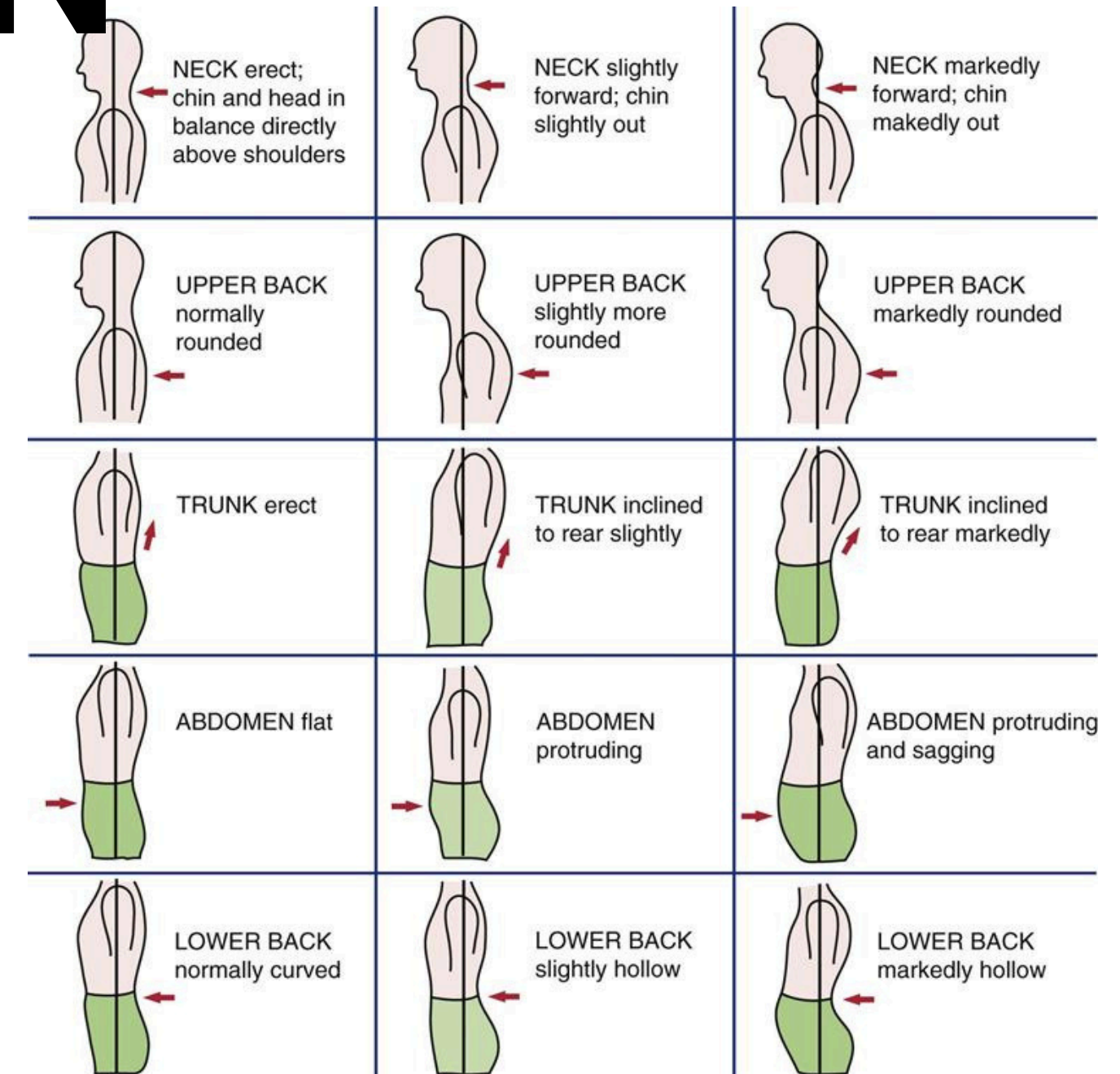
Kyphosis



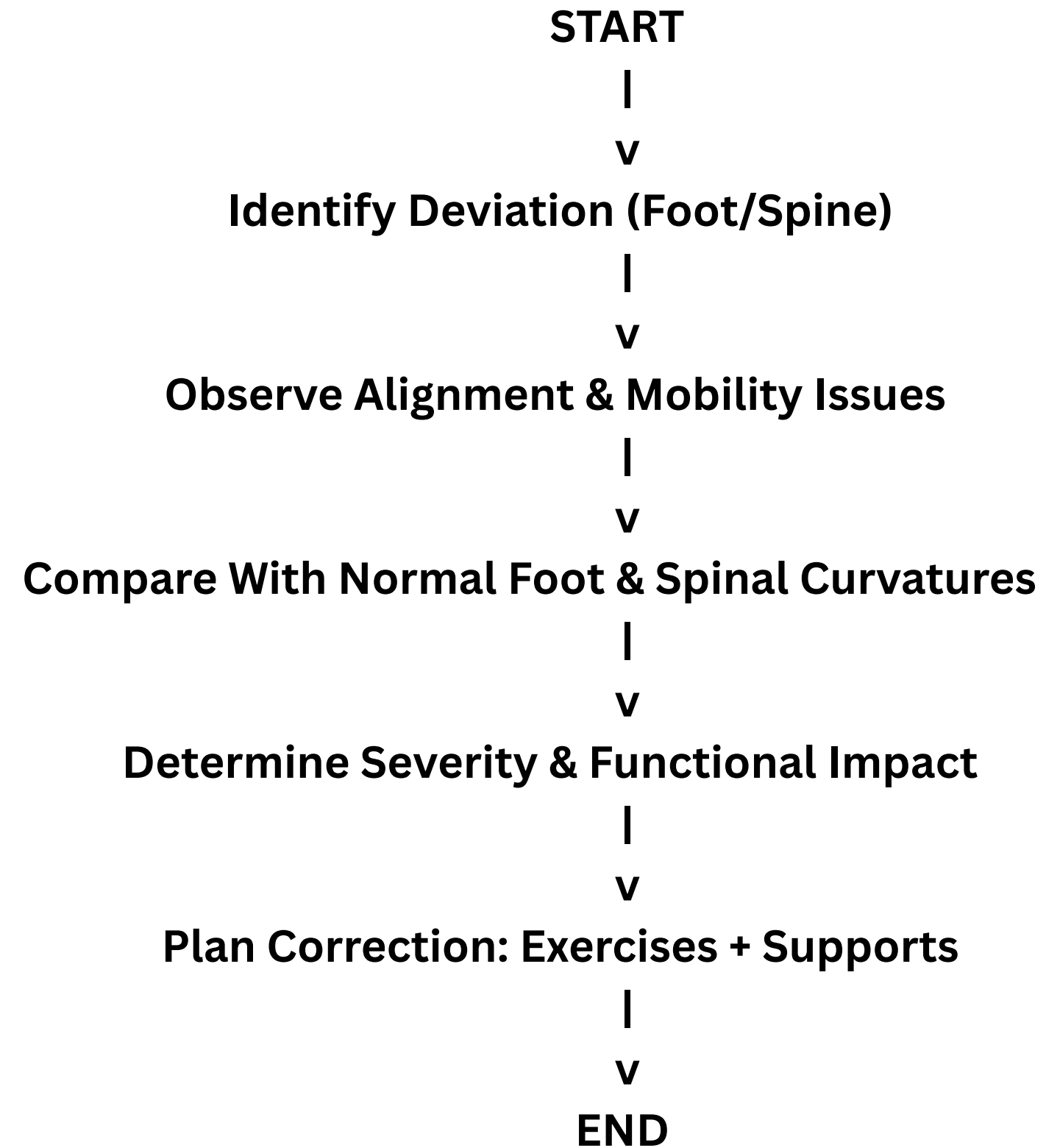
Lordosis

EFFECTS ON POSTURE & FUNCTION

- **Alter weight distribution**
- **Change muscle activation patterns**
- **Cause compensatory posture: hip drop, knee valgus, pelvic tilt**
- **Increase joint stress → long-term deformity**
- **Affect balance, gait, and stability**



FLOWCHART



MCQS

1. Pes planus is characterized by:

- A. High medial arch**
- B. Collapsed medial arch ✓**
- C. Excessive supination**
- D. Rigid foot structure**

2. Hallux valgus involves:

- A. Medial deviation of great toe**
- B. Lateral deviation of great toe ✓**
- C. Varus heel**
- D. Supinated foot posture**

3. Excessive thoracic curvature refers to:

- A. Lordosis**
- B. Kyphosis ✓**
- C. Scoliosis**
- D. Pes cavus**

MCQS

4. Pes cavus typically results in:

- A. Hyperpronation
- B. Rigid high arch ✓
- C. Medial arch collapse
- D. Toe valgus deformity

5. Idiopathic scoliosis commonly presents with:

- A. Flat lumbar spine
- B. Lateral curvature with rotation ✓
- C. Posterior pelvic tilt
- D. Excessive ankle pronation

6. Excessive lumbar lordosis is often due to:

- A. Tight hamstrings
- B. Weak calf muscles
- C. Tight hip flexors ✓
- D. Strong abdominals