Spinal Radiographic Measures: What is their Significance to Physical Therapists?

**Definitions of Spinal Radiographic Measures**¹,²

**Kyphosis:** A posterior convex angulation of the spine measured between the superior endplate of T2 and the caudal endplate of T12; normal is between 10°-40° of kyphosis

**Lumbar lordosis (LL):** An anterior convex angulation of the spine measured between the superior endplate of T12 and the endplate of S1; normal is between 40°-60° of lordosis

**Sacral Slope (SS):** The angle formed by a horizontal reference line and a line that runs along the S1 end plate

**Pelvic Tilt (PT):** The angle formed by a vertical reference line from the femoral head and the midpoint of the S1 end plate and the reference vertical line

**Pelvic Incidence (PI):** The angle formed between a line from the femoral head axis to the midpoint of the S1 end plate and a line perpendicular to the midpoint of the S1 end plate

**T1 Pelvic Angle (T1 PA):** The angle formed by a line from the femoral head to the center of the T1 vertebral body and a line from the femoral head to the center of the superior S1 end plate.

**Sagittal Vertical Axis (SVA):** The distance between the C7 plumb line and the posterior superior corner of S1 in the sagittal plane; normal is <5cm

**Sagittal Balance:**
- Positive sagittal balance—C7 is anterior to S1
- Negative sagittal balance—C7 is posterior to S1
- Neutral sagittal balance—C7 is directly over S1

**Important Relationships between Spinal Radiographic Measures**

Pelvic Tilt and Lumbar Lordosis

Lumbar Lordosis, Pelvic Tilt, and Sacral Slope

Thoracic Kyphosis and SVA

T1PA and pelvic rotation

Pelvic Tilt, Sacral Slope, and Pelvic Incidence
Coronal Curve Types

Sagittal Modifiers

- PI minus LL
- Global Alignment
- Pelvic Tilt

Integration with Functional Mobility in Patient Care
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