SCOLIOSIS PLAIN FILM MEASUREMENT TUTORIAL

Reference Guide for Neuroradiology Practice

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Scoliosis Plain Film Measurement Tutorial & PowerScribe Macros

Reference Guide for Neuroradiology Practice

Section 1: Radiographic Technique & Patient Positioning

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Accurate measurement begins with proper technique. All standard scoliosis measurements require full-length standing radiographs — the patient's posture directly affects every parameter.

Patient Positioning Protocol

For the PA/AP Coronal View:

- Patient stands barefoot, natural erect posture, feet gently spread (shoulder width)
- Knees held in full extension
- Arms at sides or hands resting behind the cassette (not on hips)
- Stomach against the cassette (PA preferred in AIS to reduce breast dose)
- Imaging field: skull base to proximal femora (or at minimum C7 to femoral heads)

For the Lateral Sagittal View:

- Patient naturally standing, looking horizontally at a fixed point on the wall
- Preferred arm position: Fingertips resting on both clavicles/cheekbones OR arms at 45° forward flexion on a support pole — this avoids humeral superimposition on the thoracic spine while not altering the natural spinal posture
- Critically: Verify that hips and knees are in full extension on the lateral view; compensatory flexion at these joints will artifactually reduce apparent sagittal imbalance
- Imaging field: external acoustic meatus (EAM) to femoral heads; include both femoral heads for pelvic parameter measurement

Critical Quality Check Before Measuring:

- Both femoral heads should be visible and overlapping on the lateral view (or very close)
- C7 vertebral body must be fully visible
- S1 endplate must be clearly visible
- Patient should be in neutral stance (no hip/knee flexion)

Section 2: Part A — Universal Measurements (Both AIS & ASD)

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These measurements apply to all scoliosis evaluations regardless of etiology.

Measurement 1: Cobb Angle

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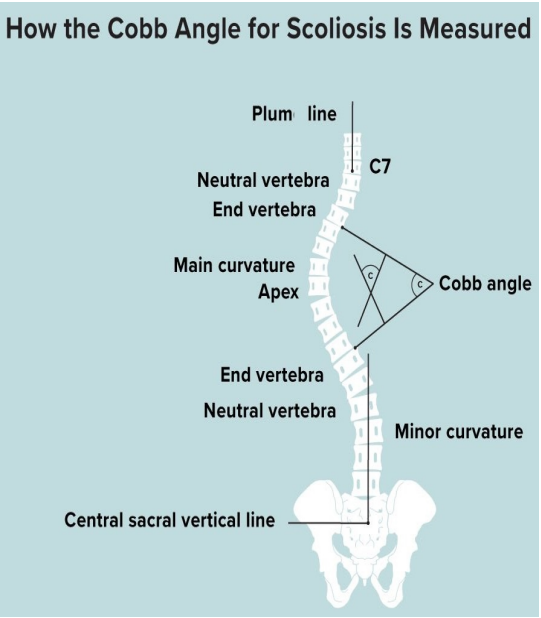

Figure A: Cobb angle — labeled diagram showing end vertebrae, apex, and angle measurement. Radiopaedia/Gaillard, CC BY-NC-SA

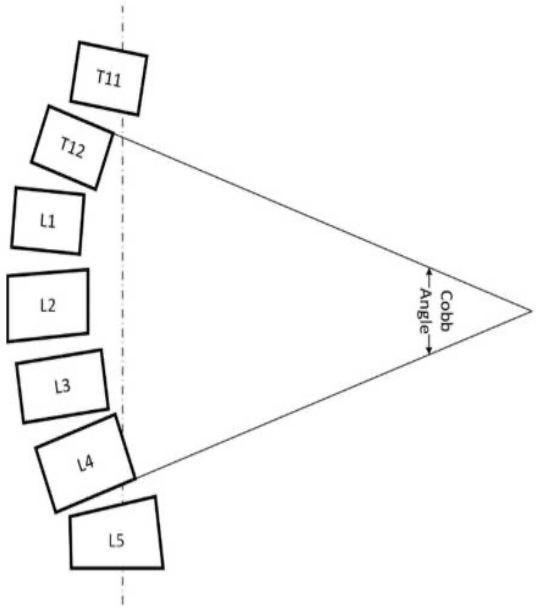

Figure B: Cobb angle geometry — endplate lines and perpendicular construction.

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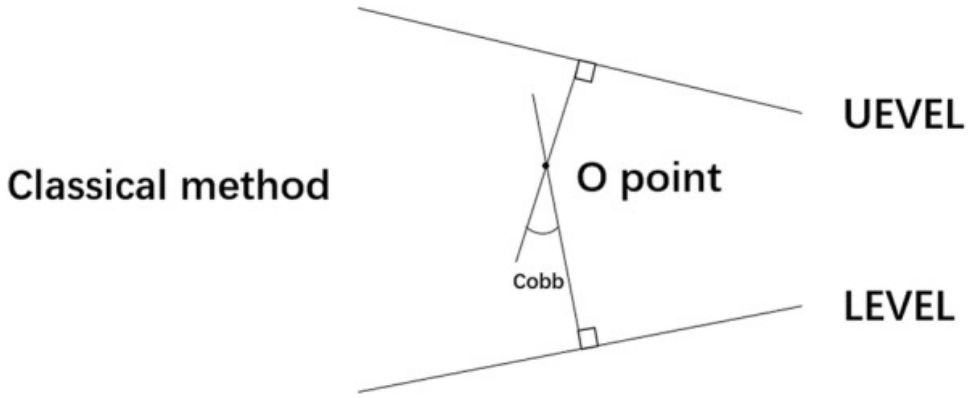

[Figure 1: Cobb angle measurement (classical method) — Wang et al. 2018, PMC6124002, open access (CC BY)]

Definition:

The gold standard angular measurement of spinal curvature in the coronal plane, defined as the angle subtended between the most tilted vertebra above and below the curve apex.

Anatomical Concept:

- Apical vertebra = the most laterally deviated and most rotated vertebra; located at the curve's geometric center
- Upper end vertebra (UEV) = the most cephalad vertebra whose superior endplate tilts into the concavity of the curve (i.e., the most tilted vertebra above the apex)

- Lower end vertebra (LEV) = the most caudal vertebra whose inferior endplate tilts into the concavity of the curve (the most tilted vertebra below the apex)

Step-by-Step Measurement (Classic Cobb Method):

1. Identify the curve apex — the vertebra that is furthest from vertical and most rotated. This is your anatomical landmark to orient the search for end vertebrae.
2. Identify the UEV — scan superiorly from the apex; the UEV is the last vertebra whose superior endplate still tilts toward the concavity (into the curve). The next vertebra above will have a superior endplate tilting in the opposite direction (away from concavity).
3. Identify the LEV — scan inferiorly from the apex; same principle. The LEV is the last vertebra whose inferior endplate tilts toward the concavity.
4. Draw line #1: Along the superior endplate of the UEV (or through the pedicles if endplates are indistinct).
5. Draw line #2: Along the inferior endplate of the LEV.
6. Measure the angle between these two lines directly if they intersect within the film, OR draw perpendiculars to each line and measure the angle between the perpendiculars (equivalent result).
7. The resulting angle = Cobb angle.

Alternative (Tilt Angle Method):

Measure the angle each endplate makes with the horizontal. The Cobb angle = sum of UEV tilt angle + LEV tilt angle. This method is equally accurate and faster on PACS (no perpendicular lines required).

Pearl — Identifying End Vertebrae:

The end vertebra is NOT the most rotated or most displaced — it is specifically the most tilted vertebra relative to horizontal. When end vertebrae are ambiguous, select the vertebra with the steepest endplate inclination that still participates in the primary curve.

In S-shaped / Double Curves:

- Measure each curve separately with its own UEV and LEV
- The LEV of the upper curve IS the UEV of the lower curve (shared transitional vertebra)
- Label each curve by its apex level: thoracic, thoracolumbar, or lumbar

Normal / Threshold Values:

Cobb Angle	Clinical Significance
< 10°	Not scoliosis by definition
10–24°	Mild — observation ± serial imaging
25–45°	Moderate — brace therapy consideration in AIS
> 45–50°	Severe — surgical consultation
> 50° at skeletal maturity	Strong surgical indication in AIS

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Reproducibility:

Inter-observer variability is 6–9° and intra-observer variability is 3–5°; a change of >5° between serial radiographs is considered clinically significant progression.

PowerScribe Macros: Scoliosis_COBB | Scoliosis_QUICK_Adult | Scoliosis_QUICK_Pediatric

Measurement 2: Apical Vertebral Rotation — Nash-Moe Grade

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Definition:

Semiquantitative assessment of axial vertebral rotation at the curve apex using pedicle shadow position on the AP/PA radiograph.

Anatomical Basis:

On a non-rotated vertebra, both pedicles appear symmetric and are equidistant from the lateral vertebral walls. Rotation causes the convex-side pedicle to migrate toward midline and the concave-side pedicle to disappear toward/behind the vertebral body.

Step-by-Step Grading:

Divide the width of the apical vertebral body into three equal thirds. Identify the convex-side pedicle position:

Grade	Convex Pedicle Position	Concave Pedicle
0	Normal, symmetric, at lateral edge	Visible, normal position
I	Moved to outer third of vertebral body	Still visible
II	Moved to middle third	Barely visible
III	Moved to inner third / midline	Disappeared behind body
IV	Pedicle crossed midline to opposite side	Not visible

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Clinical Application (AIS):

Grade the rotation at the apical vertebra of the primary curve. Report as Nash-Moe Grade [0–IV].

Measurement 3: Risser Sign (AIS — Skeletal Maturity)

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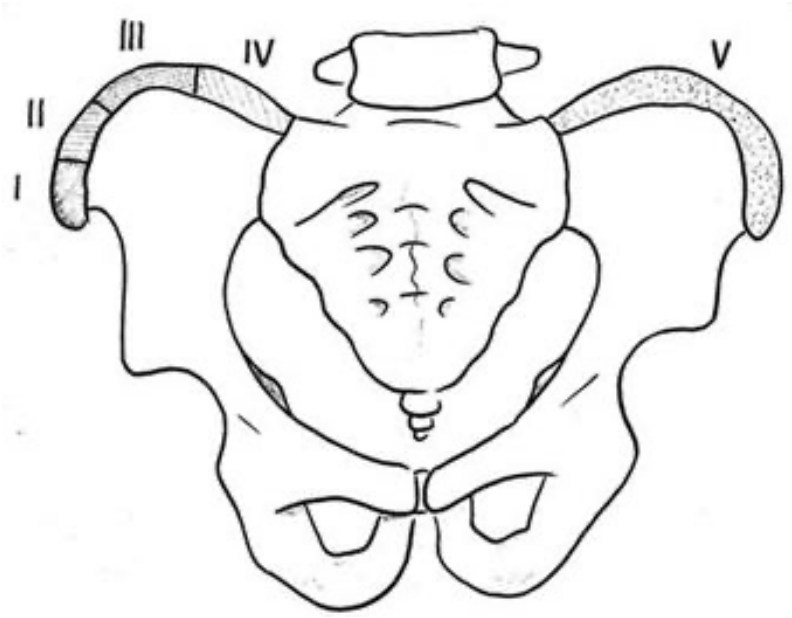

Figure: Risser grading — iliac apophysis ossification stages 0–5.

Definition:

Grading of iliac apophysis ossification on the AP/PA radiograph as a surrogate for skeletal maturity and residual growth potential.

Step-by-Step Grading:

The iliac apophysis begins ossifying at the anterolateral iliac crest and progresses posteromedially. The iliac crest is conceptually divided into four equal quarters:

Risser Grade	Appearance
0	No iliac apophysis ossification visible
1	Ossification of outer 25% (anterolateral quarter)
2	Ossification of outer 50%
3	Ossification of outer 75%
4	Ossification complete, not yet fused to ilium
5	Complete fusion of apophysis to iliac crest (skeletal maturity)

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Clinical Relevance:

Curves in Risser 0–2 patients have higher progression risk. Risser 4–5 indicates skeletal maturity with minimal further curve progression expected.

Section 3: Sagittal Parameter Measurements

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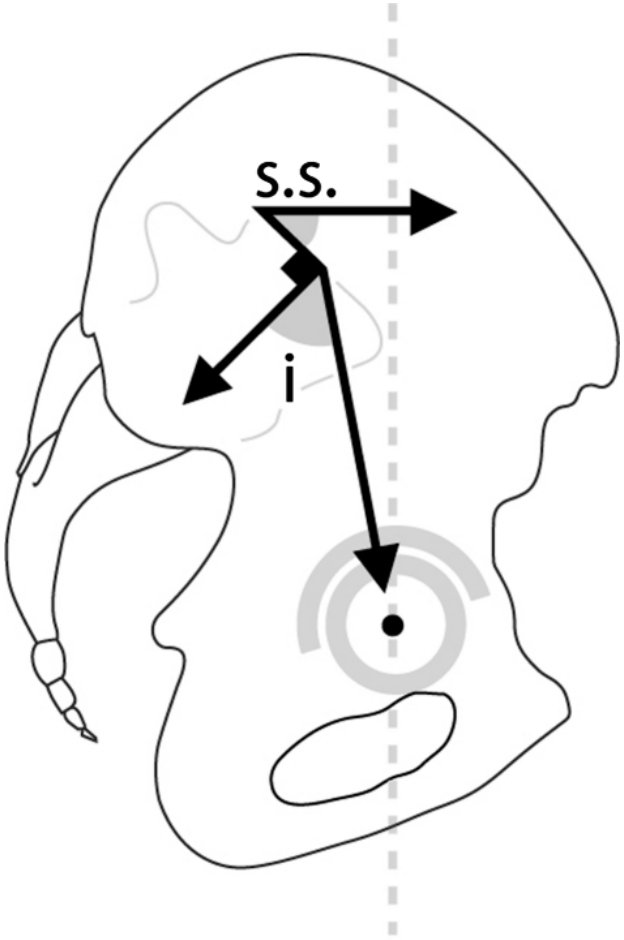

[Figure 2: Hip-spine sagittal balance — pelvic incidence and sacral slope. Lazennec et al. 2011, PMC3175930, open access (CC BY-NC)]

All sagittal measurements are performed on the lateral standing full-spine radiograph. Establish the following landmarks before measuring:

Required Landmarks (Lateral View):

- Bicoxofemoral axis = midpoint between the two femoral head centers (or the center of a single femoral head if both overlap)

  Definition — Bicoxofemoral axis: a straight line connecting the rotational centers of both hip joints (or the midpoint of a single femoral head circle if both heads overlap on the lateral view).

- S1 endplate midpoint = midpoint of the superior S1 endplate
- C7 vertebral body center = geometric center of C7 vertebral body
- Posterosuperior corner of S1 = the dorsal-superior corner of the S1 vertebral body

Measurement 4: Pelvic Incidence (PI)

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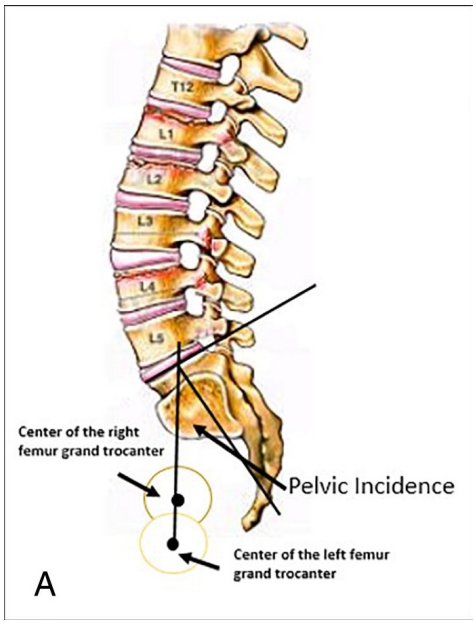

Figure A: Pelvic incidence — femoral head center to S1 midpoint geometry.

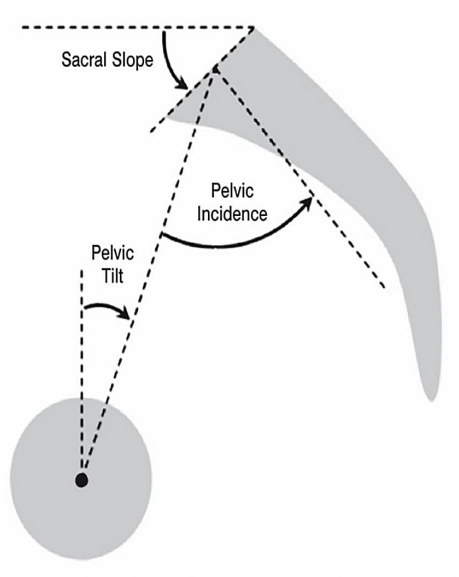

Figure B: PI/SS/PT triangle — geometric identity PI = PT + SS.

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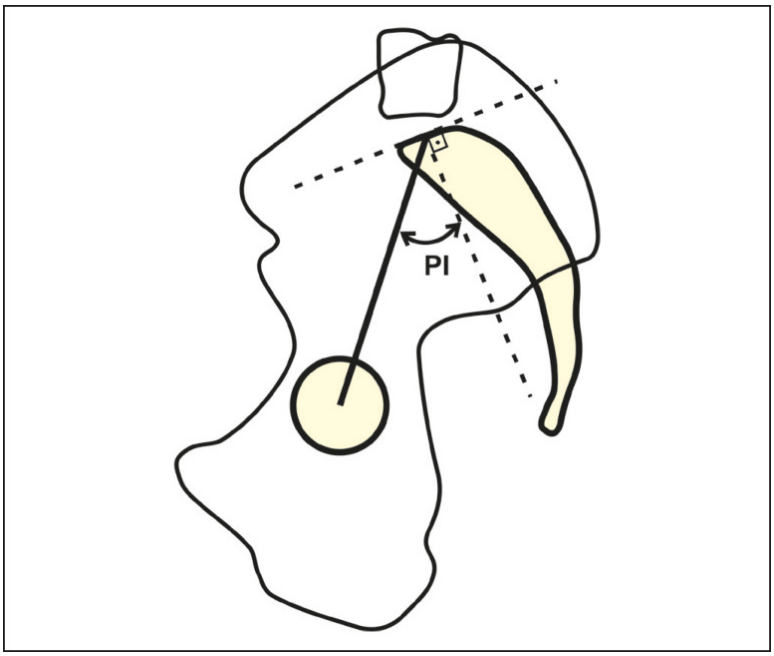

[Figure 3: Pelvic incidence (PI) — angle between the line perpendicular to the S1 endplate and the line from the midpoint of S1 to the bicoxofemoral axis. Yagi & Faria 2020, PMC7302896, open access (CC BY)]

Definition — Bicoxofemoral axis: a straight line connecting the rotational centers of both hip joints (or the midpoint of a single femoral head circle if both heads overlap on the lateral view).

Definition:

A fixed morphological parameter unique to each individual that describes the "thickness" of the pelvis. PI is the angle between a line perpendicular to the S1 endplate (drawn from its midpoint) and a line from the S1 endplate midpoint to the bicoxofemoral axis.

Critical Concept:

PI does not change with posture — it is an anatomical constant. It governs the required lumbar lordosis for balanced standing (LL ≈ PI ± 9°).

Step-by-Step Measurement:

1. Identify the S1 midpoint (Point S): Locate the center of the sacral endplate (superior S1 endplate); place a dot at its midpoint.
2. Identify the bicoxofemoral axis (Point C): If both femoral heads are visible and overlapping, place a dot at the center of the circular femoral head shadow; if slightly separated, place a dot at the midpoint of the line joining both centers.
3. Draw the C–S line: Connect Point C to Point S.
4. Draw the S1 endplate tangent: Draw a line along the superior endplate of S1.
5. Draw a perpendicular to the S1 endplate passing through Point S (i.e., perpendicular to the tangent line, passing through S).
6. Measure the angle between the C–S line and this perpendicular = Pelvic Incidence.

Normal Value:

Mean 52–55° ± 10° (range broadly 30°–80°)

Relationship:

PI = PT + SS (always; this is a geometric identity) → See: Pelvic Incidence (PI) | Sacral Slope (SS) | Pelvic Tilt (PT)

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Measurement 5: Sacral Slope (SS)

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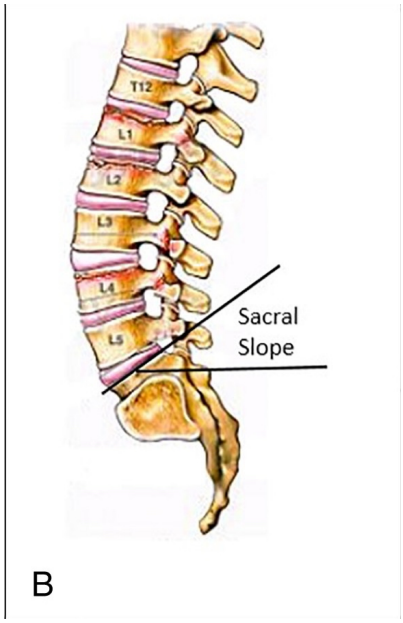

Figure A: Sacral slope — S1 endplate angle to horizontal.

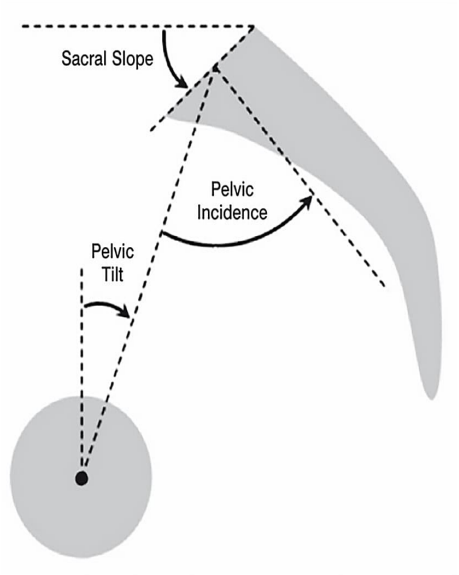

Figure B: PI/SS/PT triangle showing SS in spinopelvic context.

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Definition:

The angle between the superior S1 endplate and the horizontal plane. It reflects how anteriorly/posteriorly tilted the sacrum is.

Step-by-Step Measurement:

1. Draw a horizontal reference line (use the bottom edge of the image frame or the floor line as reference).
2. Draw a tangent line along the superior S1 endplate.
3. Measure the angle between the S1 endplate tangent and the horizontal = Sacral Slope.
4. Higher SS = more anteriorly tilted sacrum = more lordotic pelvis.

Normal Value:

Mean 42° ± 8°

Relationship to PI:

SS = PI − PT. As the pelvis rotates posteriorly (retroversion), SS decreases and PT increases.

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Measurement 6: Pelvic Tilt (PT)

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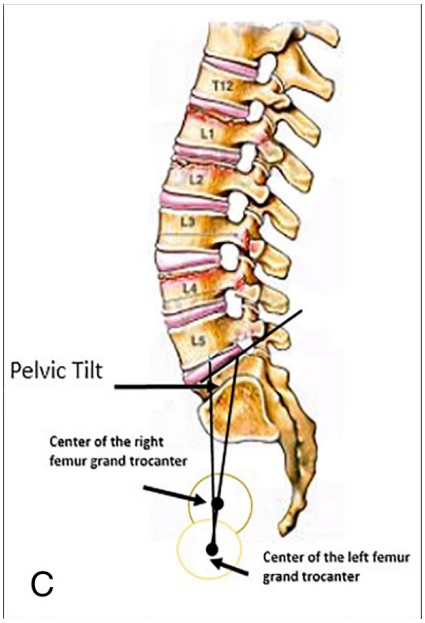

Figure A: Pelvic tilt — C–S line to vertical.

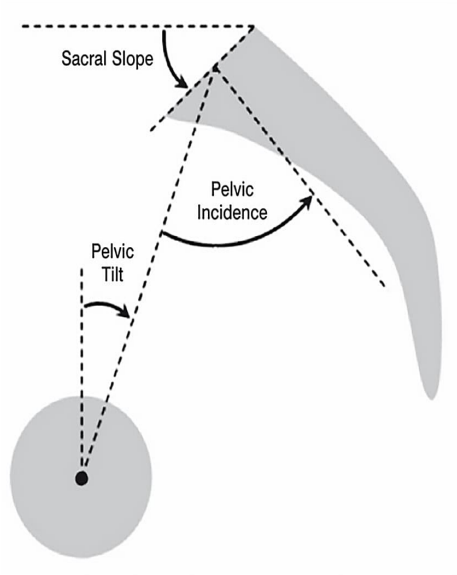

Figure B: PI/SS/PT triangle showing PT in spinopelvic context.

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Definition:

The angle between the C–S line (bicoxofemoral axis to S1 midpoint) and the vertical. PT is a positional/functional parameter that reflects pelvic retroversion as a compensatory mechanism for sagittal malalignment.

> *Definition — Bicoxofemoral axis: a straight line connecting the rotational centers of both hip joints (or the midpoint of a single femoral head circle if both heads overlap on the lateral view).*

Step-by-Step Measurement:

1. Using Points C and S identified for PI (above).
2. Draw the C–S line connecting bicoxofemoral axis to S1 midpoint.
3. Draw a vertical reference line through Point C.
4. Measure the angle between the C–S line and the vertical = Pelvic Tilt.
5. Anterior tilt = negative PT (rare); posterior tilt = positive PT.

Normal Value:

Mean 13° ± 6°

SRS-Schwab Modifier Thresholds (ASD):

PT Modifier	Threshold
0 (normal)	< 20°

+ (moderate)	20°–30°
++ (severe)	> 30°

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Clinical Pearl:

Elevated PT is the body's primary mechanism to compensate for loss of lumbar lordosis — the pelvis rotates posteriorly to shift the center of mass backward. PT > 25° reliably indicates compensatory pelvic retroversion from sagittal deformity.

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Measurement 7: Lumbar Lordosis (LL)

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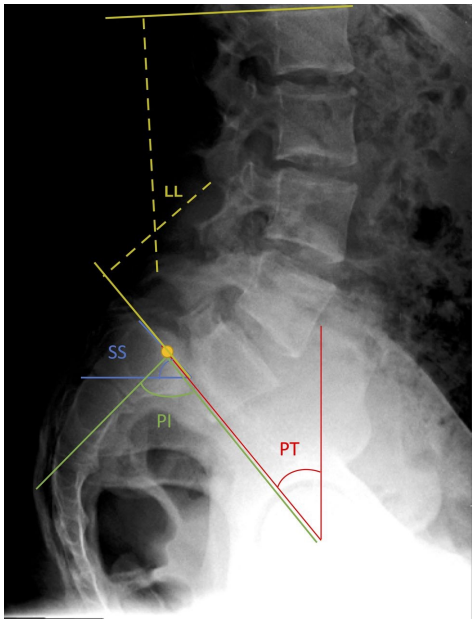

Figure A: Lumbar lordosis (LL) — lateral radiograph with LL, SS, PI, PT annotated.

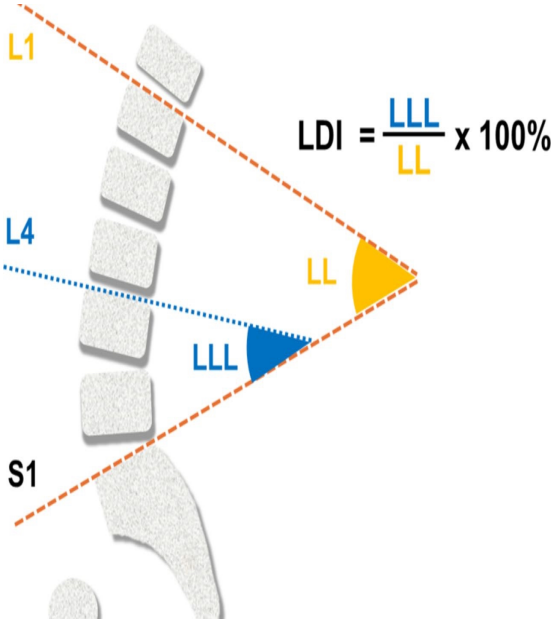

Figure B: LL measurement diagram — L1 to S1 endplate lines with Cobb angle construction.

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Definition:

The Cobb angle of lumbar lordosis measured on the lateral radiograph.

Step-by-Step Measurement:

1. Locate the superior endplate of L1 (cranial-most lumbar vertebra).
2. Locate the superior endplate of S1.
3. Draw a line along each endplate.
4. Measure the Cobb angle between these two lines (angle opens posteriorly = lordosis).
5. Alternatively: some protocols use L1 inferior endplate to S1 superior endplate — specify method used.

Normal Value:

Mean 40–60° (sex and PI-dependent)

Target Value:

LL should approximately equal PI ± 9° for balanced sagittal alignment

SRS-Schwab PI–LL Mismatch Modifier: → See: Pelvic Incidence (PI) | Lumbar Lordosis (LL)

PI–LL Modifier	Threshold
0 (aligned)	PI − LL < 10°

+ (moderate)	PI − LL = 10°–20°
++ (severe)	PI − LL > 20°

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PowerScribe Macros: Scoliosis_SPINOPELVIC | Scoliosis_SAGITTAL_BAL | Scoliosis_QUICK_Pediatric

Measurement 8: Thoracic Kyphosis (TK)

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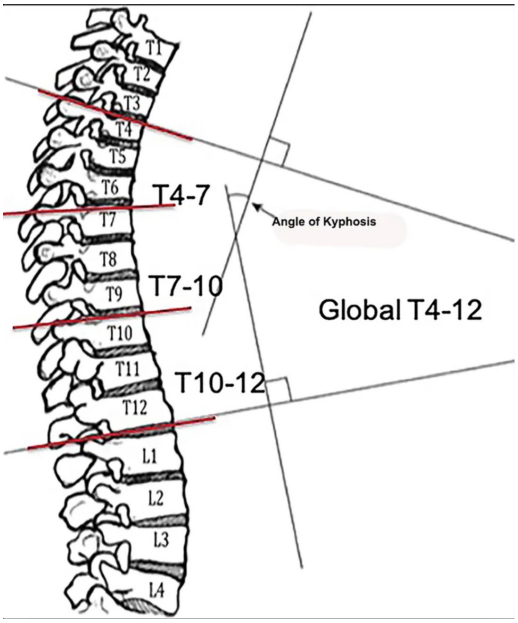

Figure: Thoracic kyphosis (TK) — Cobb angle measurement T4–T12 with segmental and global kyphosis arcs labeled.

Definition:

The Cobb angle of thoracic kyphosis measured on the lateral radiograph between T4 (or T5) and T12.

Standard Landmarks:

- Upper endplate of T4 (some references use T5 — specify)
- Lower endplate of T12

Step-by-Step Measurement:

1. Identify T4 (or T5) on the lateral view — count from C7 downward (C7 = 0, T1 = 1st thoracic with rib; T4 = 4th thoracic).
2. Draw a line along the superior endplate of T4.
3. Identify T12 — last thoracic vertebra with a rib.
4. Draw a line along the inferior endplate of T12.
5. Measure the Cobb angle between the two lines = Thoracic Kyphosis.
6. The angle opens anteriorly.

Lenke Sagittal Modifier (AIS context):

Uses T5–T12. Classify as Hypokyphosis (−) < 10°, Normal (N) 10–40°, Hyperkyphosis (+) > 40°.

Normal Value:

Mean 40° ± 10° (T4–T12)

Clinical Significance:

- TK < 20° in AIS = hypokyphosis (common in thoracic AIS)
- TK > 60° = hyperkyphosis; one of the ASD inclusion criteria

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Measurement 9: Sagittal Vertical Axis (SVA)

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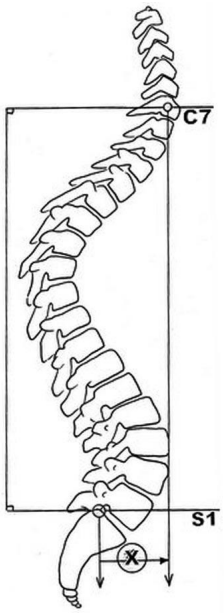

Figure A: SVA — C7 plumb line to S1 posterosuperior corner (coronal view).

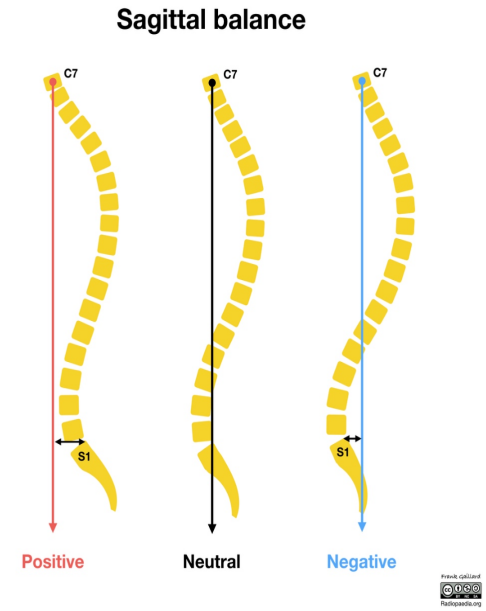

Figure B: SVA — sagittal balance positive/neutral/negative. Radiopaedia/Gaillard, CC BY-NC-SA

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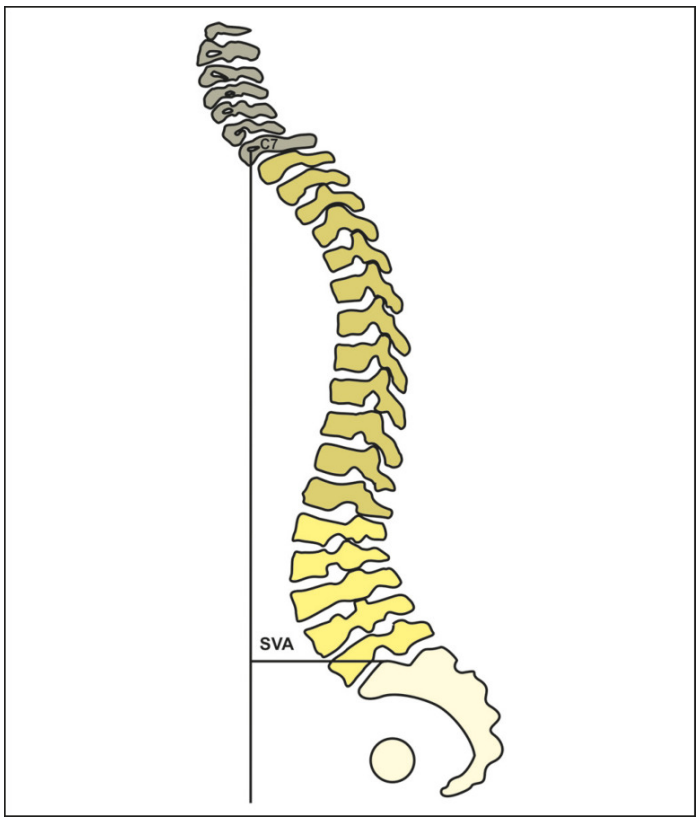

[Figure 4: Sagittal vertical axis (SVA) — horizontal distance between the C7 plumb line and the posterosuperior corner of S1. Yagi & Faria 2020, PMC7302896, open access (CC BY)]

Definition:

The horizontal distance between the posterosuperior corner of S1 and the C7 plumb line. SVA is the primary measure of global sagittal balance.

Step-by-Step Measurement:

1. Identify the center of the C7 vertebral body on the lateral radiograph.
2. Drop a true vertical line from the C7 body center (C7 plumb line — perpendicular to the floor).
3. Identify the posterosuperior corner of S1.
4. Measure the horizontal distance between the posterosuperior S1 corner and the C7 plumb line.
5. Positive SVA = C7 plumb line falls anterior to S1 posterosuperior corner (sagittal imbalance, forward trunk shift).
6. Negative SVA = C7 plumb line falls posterior to S1 corner (rare, posterior imbalance).

Normal Value:

< 4 cm (40 mm); ideal < 2 cm in young adults

SRS-Schwab SVA Modifier:

SVA Modifier	Threshold
0 (normal)	< 40 mm
+ (moderate)	40–95 mm
++ (severe)	> 95 mm

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Clinical Significance:

SVA > 5 cm correlates strongly with pain, disability, and decreased quality of life. SVA is the SRS-Schwab modifier with highest inter-rater reliability (ICC 0.90–0.97).

Section 4: Coronal Balance Measurements

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Performed on the AP/PA coronal standing radiograph.

PowerScribe Macros: Scoliosis_SVA | Scoliosis_QUICK_Adult

Measurement 10: Coronal Balance / C7 Coronal Plumb Line

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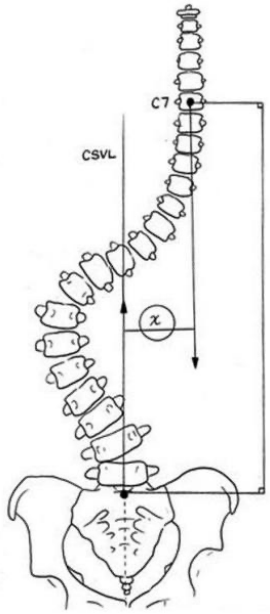

Figure A: Coronal balance — C7 plumb to CSVL (lateral diagram).

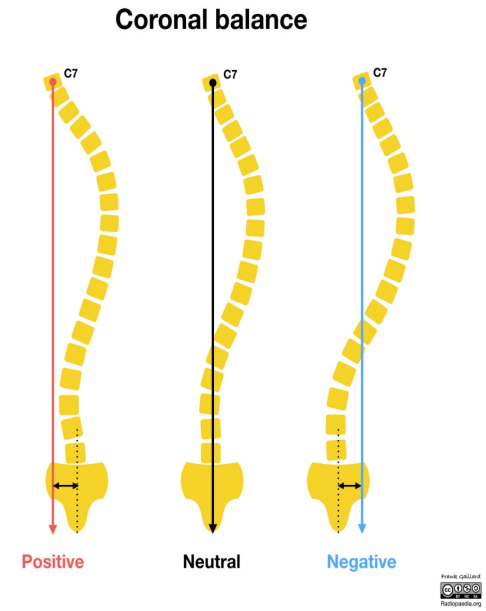

Figure B: Coronal balance positive/neutral/negative. Radiopaedia/Gaillard, CC BY-NC-SA

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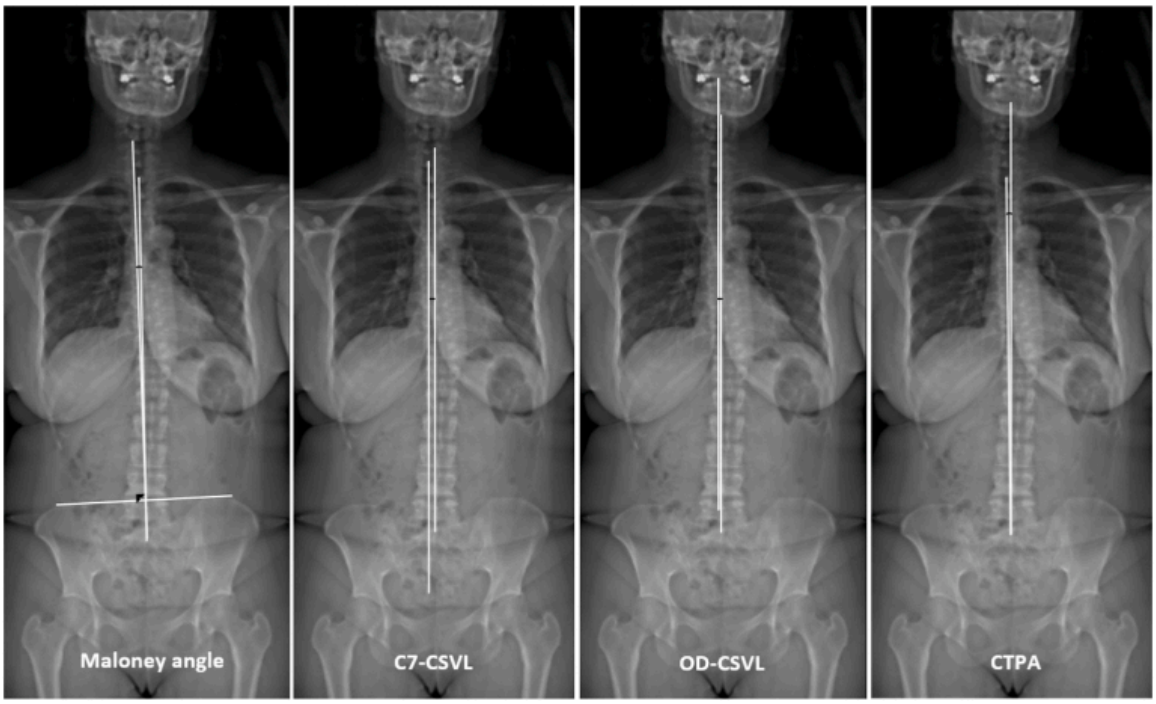

[Figure 5: Global coronal alignment parameters — C7-CSVL, OD-CSVL, Maloney angle, CTPA. Brain Spine 2024, PMC11736157, open access (CC BY)]

CSVL = Central Sacral Vertical Line (vertical line through center of S1 superior endplate)

Definition:

The horizontal distance between the C7 plumb line and the central sacral vertical line (CSVL). Measures global coronal balance.

Step-by-Step Measurement:

1. Draw the CSVL (Center Sacral Vertical Line): Identify the center of the S1 superior endplate on the AP view; draw a vertical line through this midpoint perpendicular to the floor (CSVL).
2. Identify the C7 plumb line: Identify the center of the C7 vertebral body; drop a vertical line from the C7 center perpendicular to the floor.
3. Measure the horizontal distance between the two vertical lines at any level.
4. Positive coronal balance = C7 plumb line falls to the right of CSVL.

CSVL = Central Sacral Vertical Line (vertical line through center of S1 superior endplate)

5. Negative coronal balance = C7 plumb line falls to the left of CSVL.
6. Report direction and magnitude in millimeters.

Normal Value:

< 20 mm (2 cm)

ASD Coronal Deformity Definition:

Cobb angle ≥ 20° or coronal SVA/CVA ≥ 3 cm

PowerScribe Macros: Scoliosis_CORONAL_BAL | Scoliosis_QUICK_Adult | Scoliosis_QUICK_Pediatric

Measurement 11: CSVL and Lenke Lumbar Modifier (AIS-Specific)

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Definition:

The position of the lumbar apical vertebra relative to the CSVL determines the Lenke lumbar modifier, which affects surgical planning for curve fusion level selection.

CSVL = Central Sacral Vertical Line (vertical line through center of S1 superior endplate)

Step-by-Step:

1. Draw the CSVL as above (vertical through center of S1 superior endplate).
2. Identify the lumbar apical vertebra (most laterally displaced lumbar vertebra).
3. Assess the relationship of the lumbar apical pedicles to the CSVL:

Modifier	Pedicle–CSVL Relationship
A	Both pedicles of apical lumbar vertebra touch or are medial to CSVL (CSVL between pedicles or lateral to both)
B	CSVL touches but does not cross the concave-side pedicle
C	CSVL is completely medial to the concave-side pedicle (apical vertebra significantly displaced from CSVL)

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Section 5: Derived Calculations

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These are computed from the primary measurements above.

Derived Parameter	Formula	Normal Target	Clinical Threshold
PI–LL Mismatch	PI − LL	< 10°	> 20° = severe deformity (SRS-Schwab ++)
PI–SS	PI − SS = PT	—	Geometric identity; confirms measurement accuracy
T1 Pelvic Angle (T1PA)	Angle from bicoxofemoral axis to T1 centroid, vs vertical	< 14°	> 22° = significant sagittal deformity
Ideal LL	LL ≈ PI ± 9°	PI-specific	Surgical correction target

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See measurement pages: PI | SS | PT | LL | TK | SVA | Coronal Balance

T1 Pelvic Angle (T1PA) Step-by-Step:

1. Identify the bicoxofemoral axis (Point C).

   Definition — Bicoxofemoral axis: a straight line connecting the rotational centers of both hip joints (or the midpoint of a single femoral head circle if both heads overlap on the lateral view).

2. Identify the center of the T1 vertebral body.
3. Draw a line from Point C to T1 center.
4. Measure the angle between this line and the vertical through Point C.

T1PA combines truncal inclination and pelvic retroversion into a single metric; normal < 14°, values > 22° indicate clinically significant sagittal deformity.

PowerScribe Macros: Scoliosis_QUICK_Adult | Scoliosis_SPINOPELVIC

Section 6: Part B — Adolescent Idiopathic Scoliosis (AIS) — Systematic Measurement Approach

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Standard AIS Radiographic Series:

- Standing PA full-spine (36-inch or long-cassette, or EOS)
- Standing lateral full-spine
- Supine bending views (left and right) for surgical planning
- Add lateral bending if Lenke classification needed

AIS Measurement Checklist

Coronal (AP/PA) View:

- Cobb angle — measure each curve separately; report as primary and compensatory
- Identify curve type (single/double/triple)
- Curve location: thoracic (apex T2–T11/12), thoracolumbar (apex T12–L1), lumbar (apex L1/2–L4), or double
- Nash-Moe vertebral rotation grade at apical vertebra
- Lenke lumbar modifier (A/B/C) via CSVL

CSVL = Central Sacral Vertical Line (vertical line through center of S1 superior endplate)

- Risser sign (0–5) — right iliac crest
- Coronal balance (C7–CSVL distance)

Sagittal (Lateral) View:

- Thoracic kyphosis T4–T12 (Lenke modifier: −/N/+)
- Lumbar lordosis L1–S1

Lenke Classification Summary (AIS):

The Lenke classification uses three components:

1. Curve type (1–6): Based on which curves are structural (non-reducible on bending films, Cobb > 25°)
2. Lumbar modifier (A/B/C): CSVL relationship to lumbar apical vertebra
3. Sagittal modifier (−/N/+): T5–T12 thoracic kyphosis

Lenke Type	Description
1	Main thoracic (MT structural, others compensatory)
2	Double thoracic (proximal thoracic + MT both structural)
3	Double major (MT + thoracolumbar/lumbar both structural)
4	Triple major (all three regions structural)

5	Thoracolumbar/lumbar (TL/L structural, thoracic compensatory)
6	Thoracolumbar/lumbar–main thoracic (TL/L > MT by ≥ 5°)

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Section 7: Part C — Adult Degenerative / Spinal Deformity (ASD) — Systematic Measurement Approach

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Standard ASD Radiographic Series:

- Standing PA full-spine
- Standing lateral full-spine (including femoral heads)
- Lateral supine or prone hyperextension views (for flexibility)

ASD Measurement Checklist

Coronal (AP/PA) View:

- Maximum coronal Cobb angle (identify all curves)
- Lateral vertebral translation/listhesis (measure if present, in mm)
- Coronal balance: C7–CSVL distance

  CSVL = Central Sacral Vertical Line (vertical line through center of S1 superior endplate)
- Lateral olisthesis at degenerate levels
- SRS-Schwab curve type (T, L, D, or N)

Sagittal (Lateral) View:

- Lumbar lordosis (L1 superior endplate to S1 superior endplate)
- Thoracic kyphosis (T4/T5 to T12)
- SVA (C7 plumb to S1 posterosuperior corner)
- Pelvic incidence (PI)
- Sacral slope (SS)
- Pelvic tilt (PT)
- Calculate PI–LL mismatch
- T1 pelvic angle (T1PA) if applicable
- Note hip/knee flexion compensation (qualitative)

SRS-Schwab Classification for ASD

Step 1 — Coronal Curve Type:

- T: Thoracic major Cobb > 30° (apex T9 or higher)
- L: Lumbar or thoracolumbar major Cobb > 30° (apex T10 or lower)
- D: Double major (both thoracic and lumbar/TL > 30°)
- N: No major coronal curve ≥ 30°

Step 2 — Apply Three Sagittal Modifiers:

Modifier	0 (Mild)	+ (Moderate)	++ (Severe)
PI–LL	< 10°	10–20°	> 20°
PT	< 20°	20–30°	> 30°
SVA	< 40 mm	40–95 mm	> 95 mm

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Simplified Composite Classification:

- Aligned: all modifiers 0
- Moderate deformity: 1–3 total "+" signs
- Severe deformity: 4–6 total "+" signs

Section 8: Summary Normal Values Reference Table

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Parameter	Normal Mean	Normal Range	Clinical Threshold
Cobb angle	—	< 10° normal	≥ 10° = scoliosis; ≥ 45° = surgical
Pelvic incidence	52–55°	30–80°	Morphological; no single normal
Sacral slope	42°	34–50°	< 30° or > 55° = abnormal posture
Pelvic tilt	13°	7–19°	> 20° = compensatory; > 30° = severe
Lumbar lordosis	50°	40–60°	PI ± 9° as individualized target
Thoracic kyphosis	40°	30–50° (T4–T12)	< 20° = hypo; > 60° = hyper
SVA	0–20 mm	< 40 mm	> 40 mm = moderate; > 95 mm = severe
Coronal balance	< 20 mm	< 20 mm	> 30 mm = clinically significant
PI–LL mismatch	< 10°	< 10°	> 10° = moderate; > 20° = severe
T1PA	< 14°	< 14°	> 22° = significant sagittal deformity

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PowerScribe 360 Macro Inserts

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Templates below are formatted for PowerScribe 360 / Dragon Medical. Each macro includes links to its corresponding measurement reference sections. Click any measurement name to navigate directly to the technique page.

Scoliosis_QUICK_Adult

Reference sections: Cobb Angle | Coronal Balance | SVA | Pelvic Incidence (PI) | Sacral Slope (SS) | PI–LL Mismatch

```
ADULT DEGENERATIVE SCOLIOSIS — STANDING RADIOGRAPHS

CORONAL:
Primary curve: [location], convex [R/L], Cobb [__]°
Coronal balance (C7-CSVL): [__] mm [R/L]

SAGITTAL / SPINOPELVIC:
SVA: [__] mm [0/<40mm / +/40-95mm / ++/>95mm]
PI: [__]°  |  PT: [__]° [0/<20° / +/20-30° / ++/>30°]
SS: [__]°  |  LL (L1-S1): [__]°
PI-LL mismatch: [__]° [0/<10° / +/10-20° / ++/>20°]

IMPRESSION: Adult [degenerative/idiopathic] scoliosis,
[location] Cobb [__]°.
SVA [__] mm, PI-LL mismatch [__]°, PT [__]°.
[Sagittal alignment within acceptable limits / Moderate / Severe sagittal
deformity.]
```

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Scoliosis_PT

Reference sections: Pelvic Tilt (PT)

```
Pelvic tilt (PT): [__]°
[Normal <20° / Moderate compensation 20-30° / Severe retroversion >30°]
[No compensatory pelvic retroversion / Compensatory pelvic retroversion noted,
consistent with sagittal malalignment]
```

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Scoliosis_PI

Reference sections: Pelvic Incidence (PI)

```
Pelvic incidence (PI): [__]° (normal mean 52–55°; range 30–80°)
Ideal lumbar lordosis target: PI ± 9° = [__–__]°
Measured LL: [__]°  |  PI–LL mismatch: [__]°
```

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Scoliosis_SPINOPELVIC

Reference sections: Pelvic Tilt (PT) | Pelvic Incidence (PI) | Sacral Slope (SS) | Lumbar Lordosis (LL)

```
Spinopelvic parameters:
  Pelvic incidence (PI): [__]° (fixed morphological parameter)
  Pelvic tilt (PT): [__]° — modifier: [0/<20° / +/20–30° / ++/>30°]
  Sacral slope (SS): [__]°
  Verification: PI [__]° = PT [__]° + SS [__]° = [__]° [checks out / recheck]
  Lumbar lordosis (L1–S1): [__]°
  PI–LL mismatch: [__]° — modifier: [0/<10° / +/10–20° / ++/>20°]
[Pelvic alignment compensated / Compensatory pelvic retroversion present
(elevated PT)]
```

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Scoliosis_SVA

Reference sections: SVA

```
Sagittal vertical axis (SVA): [__] mm
[Positive = C7 plumb anterior to S1 / Negative = posterior]
[Normal global sagittal balance / Forward sagittal imbalance present]
```

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Scoliosis_SAGITTAL_BAL

Reference sections: Thoracic Kyphosis (TK) | Lumbar Lordosis (LL)

```
Thoracic kyphosis (T5–T12): [__]°
Lumbar lordosis (L1–S1): [__]°
[No significant sagittal malalignment / Hypokyphosis noted / Hyperkyphosis
noted]
```

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Scoliosis_CORONAL_BAL

Reference sections: Coronal Balance

```
Coronal balance: C7 plumb line [__] mm [right/left] of CSVL
[Within normal limits (<20 mm) / Mildly imbalanced / Significantly imbalanced
```

```
(>30 mm)]
```

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Scoliosis_COBB

Reference sections: Cobb Angle

```
Cobb angle ([location], convex [R/L]): [__]°
End vertebrae: [__] (upper) to [__] (lower)
Apical vertebra: [__]
```

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Scoliosis_QUICK_Pediatric

Reference sections: Cobb Angle | Coronal Balance | Thoracic Kyphosis (TK) | Lumbar Lordosis (LL)

```
AIS SCOLIOSIS — STANDING RADIOGRAPHS

CORONAL:
Primary curve: [thoracic / TL / lumbar], convex [R/L]
Cobb angle: [__]°  End vertebrae: [__] to [__]
Coronal balance (C7–CSVL): [__] mm [R/L]

SAGITTAL:
Thoracic kyphosis (T5–T12): [__]°
Lumbar lordosis (L1–S1): [__]°

IMPRESSION: [R/L] [thoracic/TL/lumbar] AIS, Cobb [__]°,
[stable / increased __° / decreased __°] vs [date].
```

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