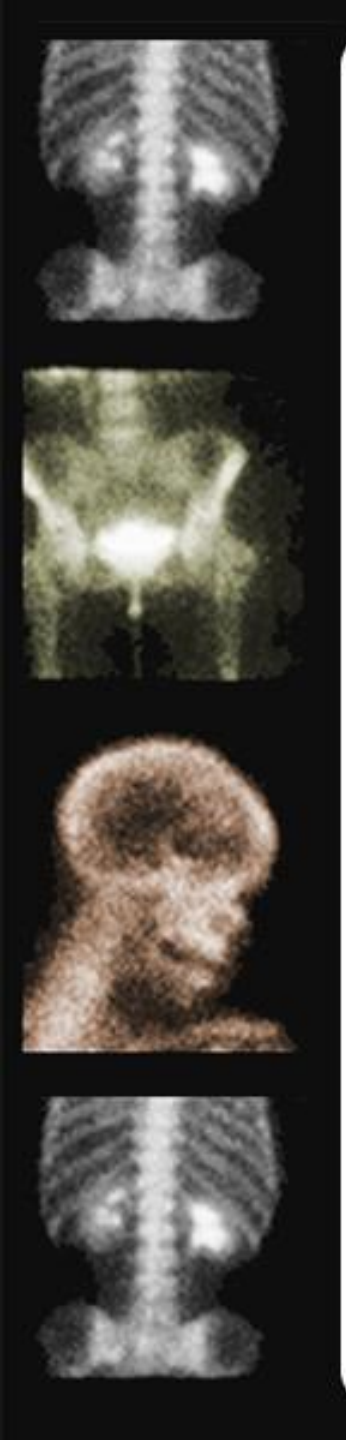
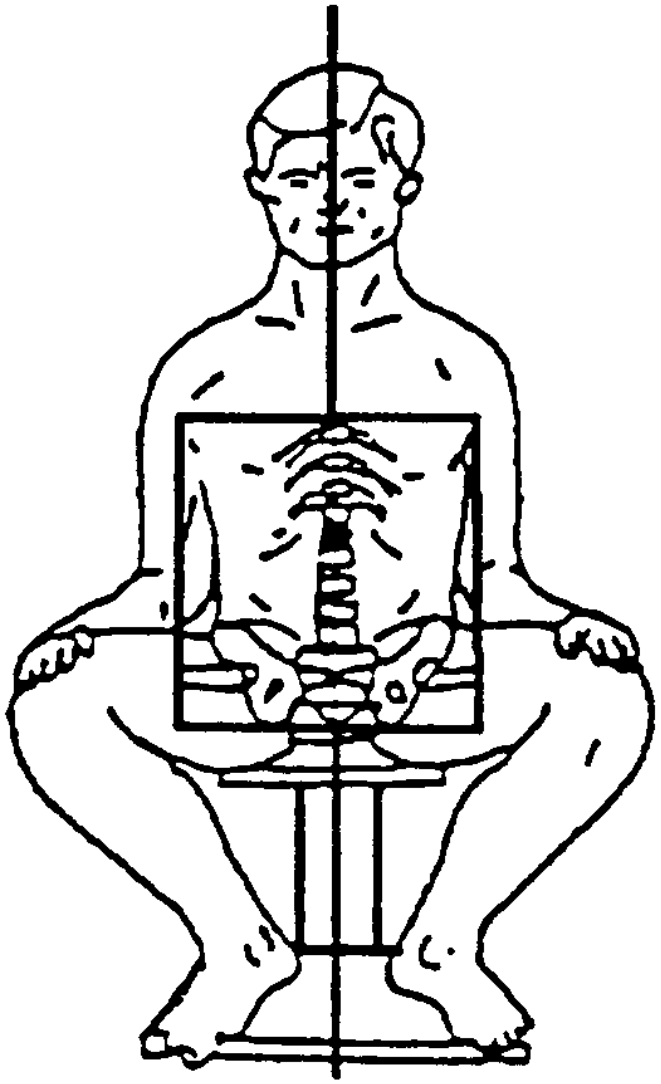
A-P Lumbar X-Ray Analysis

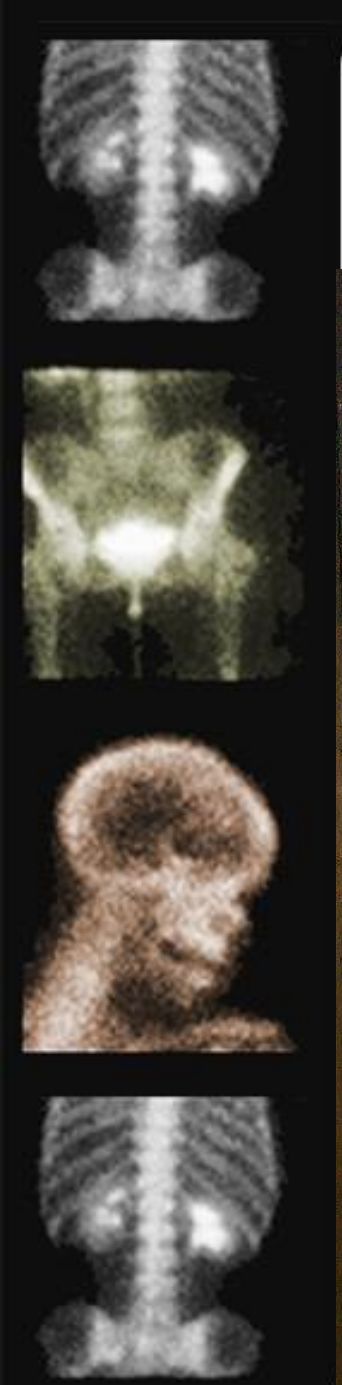
Dorsal-Lower Dorsal Angle, Lumbo-Dorsal Angle, Lumbo-Sacral Angle, Sacral Base Line

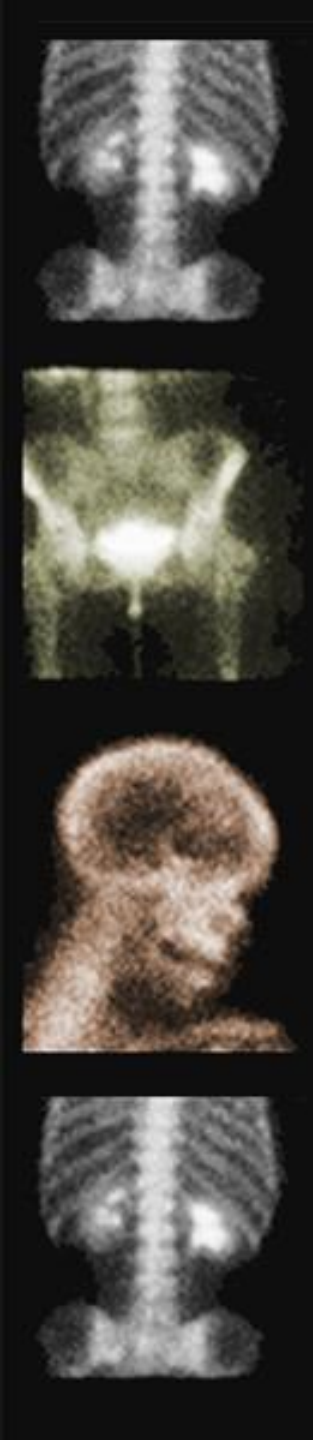


A-P Lumbo-Dorsal / Lumbo-Sacral X-Ray



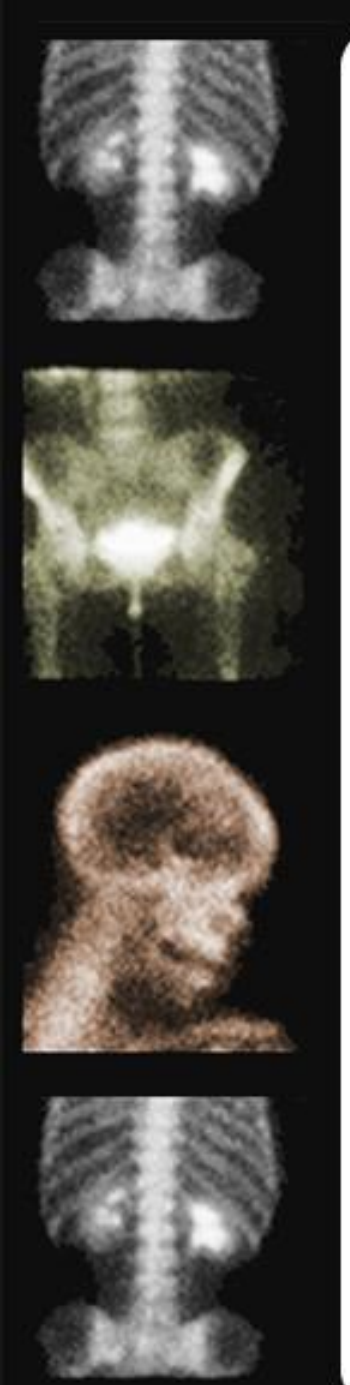
A-P Lumbo-Dorsal / Lumbo-Sacral X-Ray

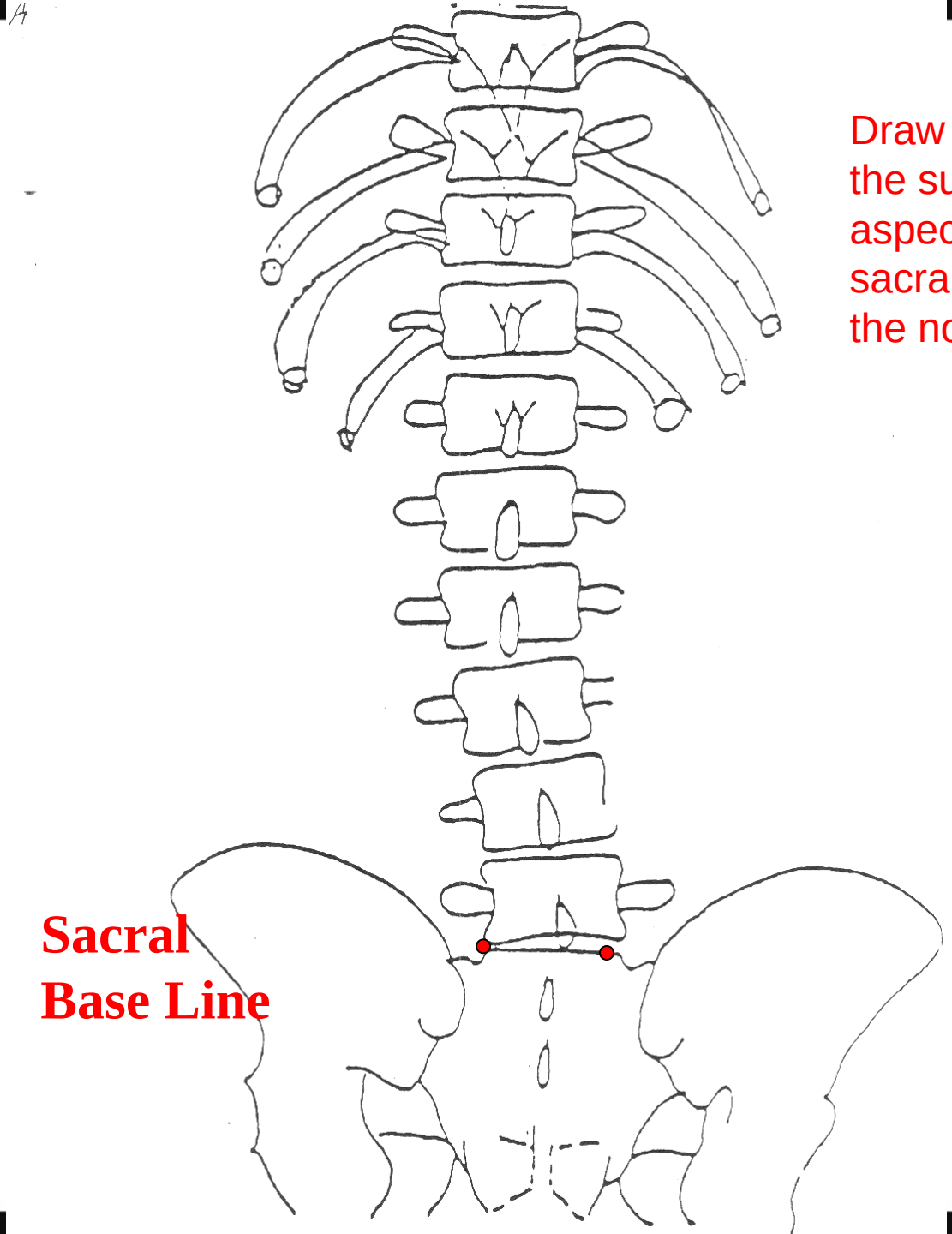




A-P Lumbo-Dorsal / Lumbo-Sacral X-Ray

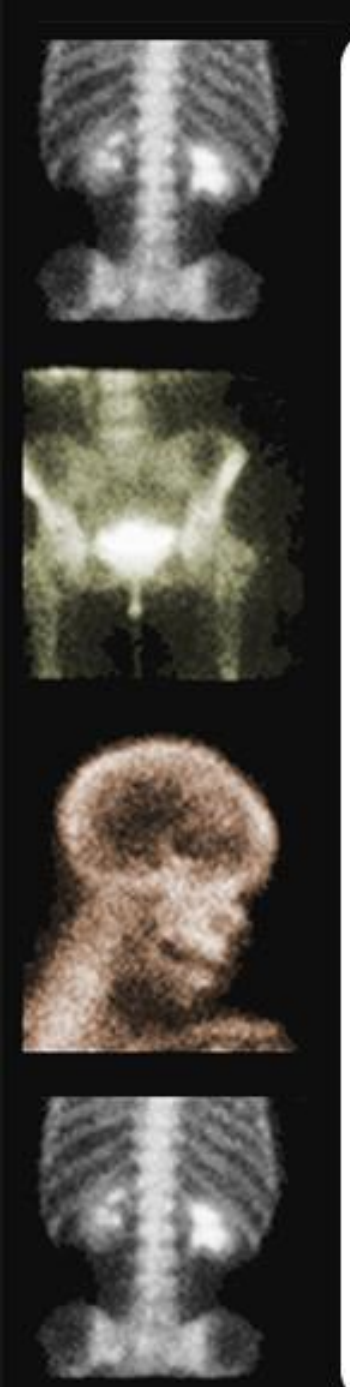
- Seated w/ hips & knees at 90º
- 14” x 17” cassette
- 72” focal film distance
- 1:5 ratio grid
- 80 lines per inch
- Heel effect wedge filter
- Central ray through L 5
- Feet flat on the floor

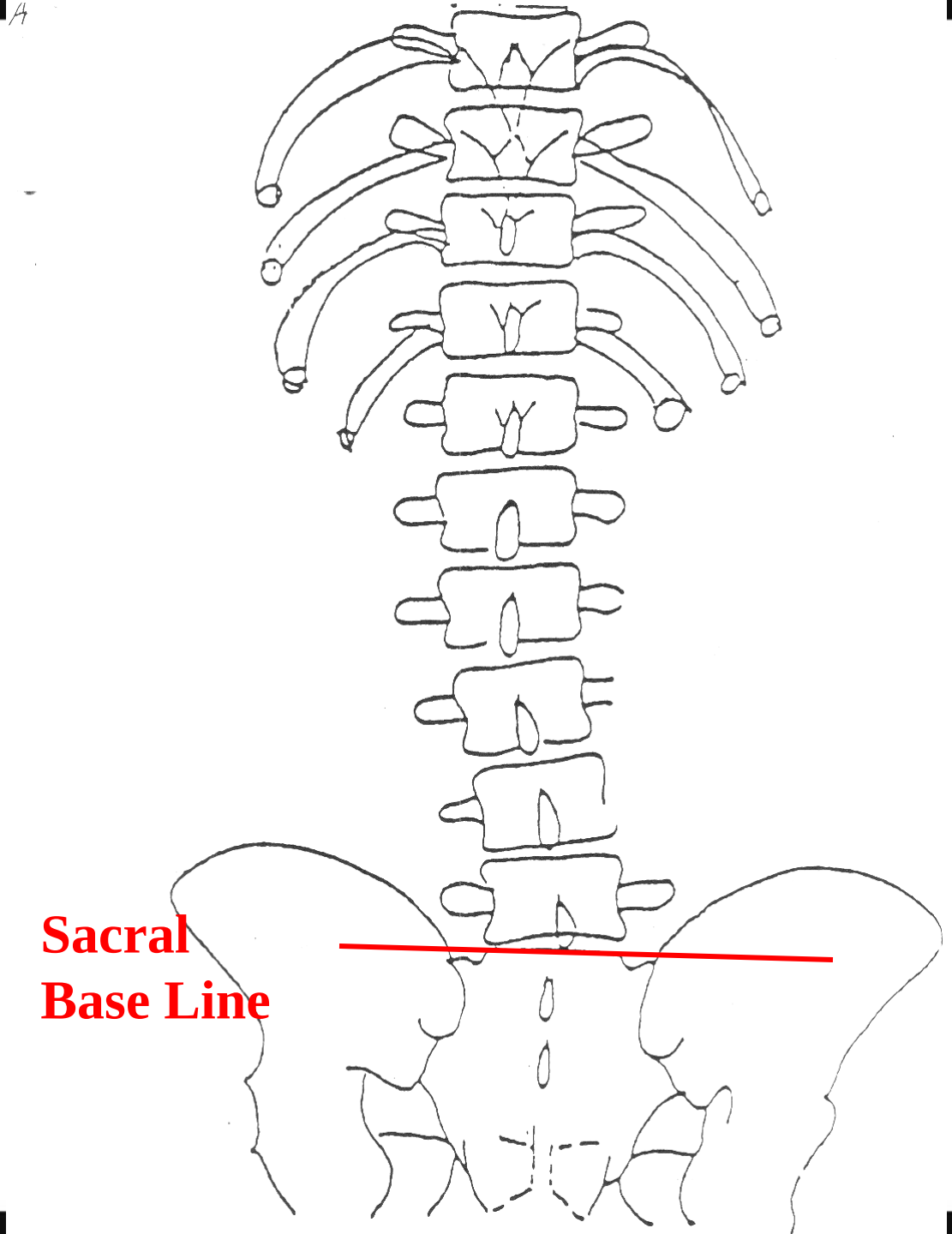


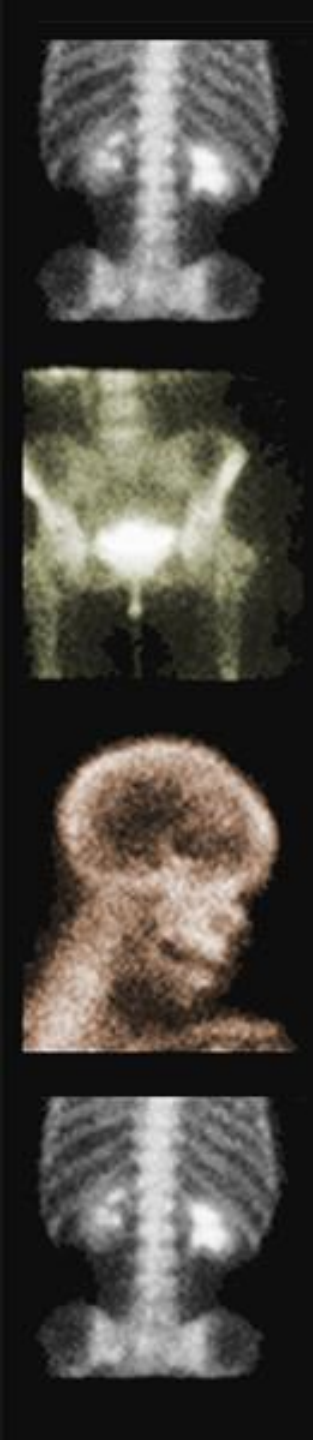


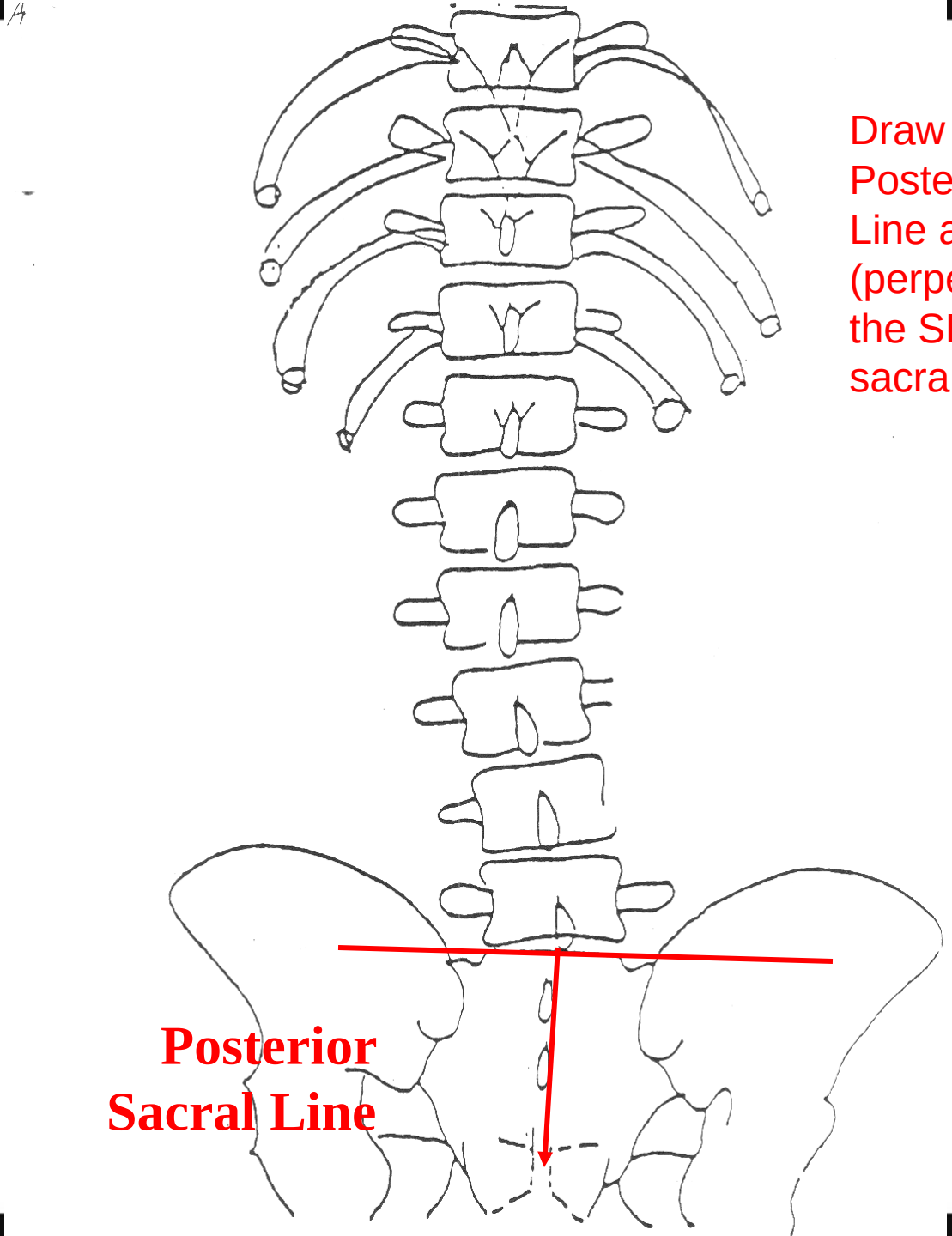
Draw the dots at the superior lateral aspects of the sacral base (not in the notches).

Sacral Base Line

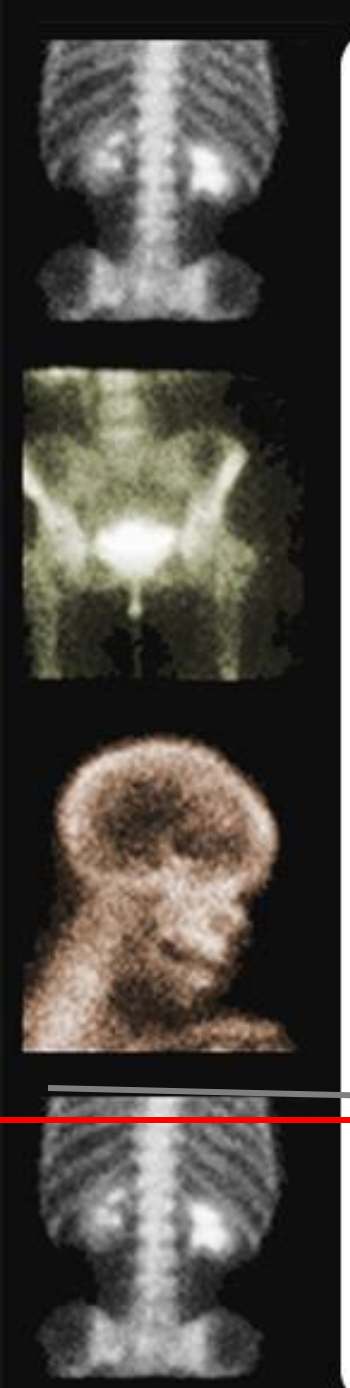



Sacral
Base Line





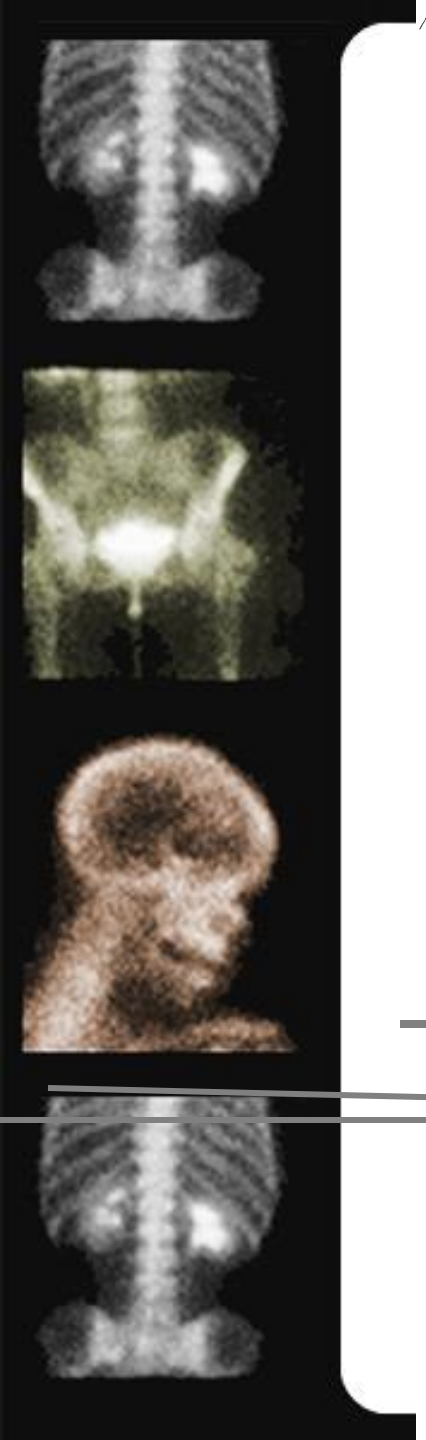
Draw a the Posterior Sacral Line at 90 degrees (perpendicular to the SBL) down the sacral tubercles.

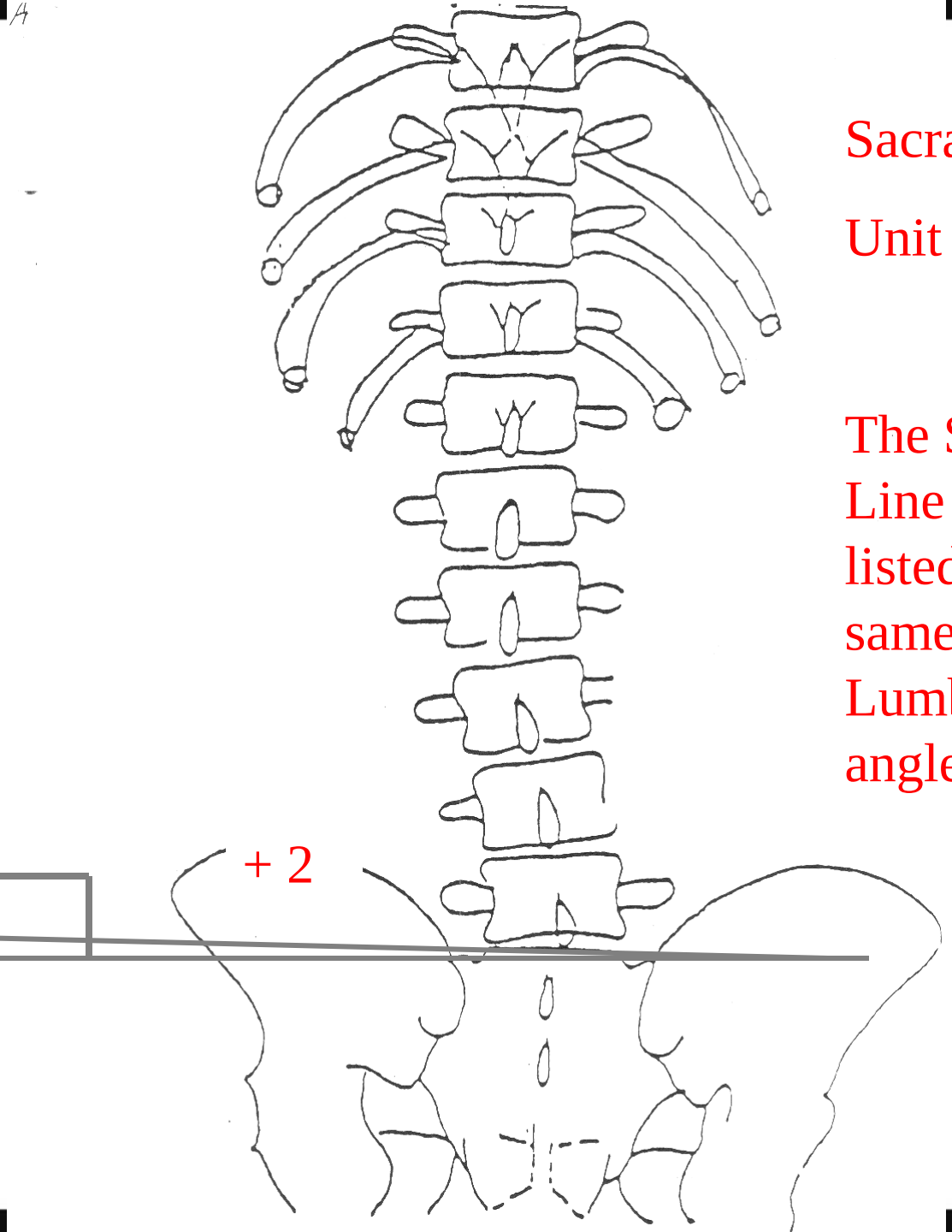


By comparing the angle of the SBL to a horizontal, the high Sacral Base angle is measured and recorded as a positive number on the side of the Lumbo-Sacral angle.

+ 2 degrees

Horizontal Plane Line

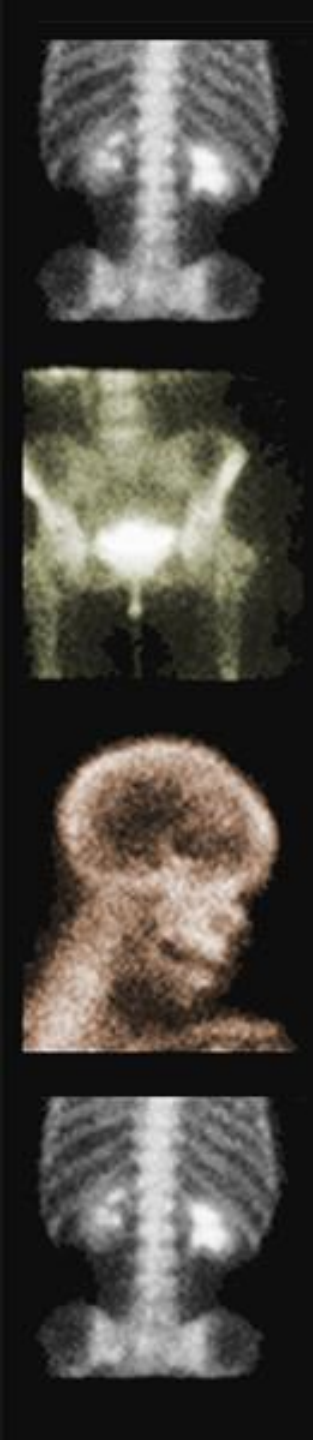


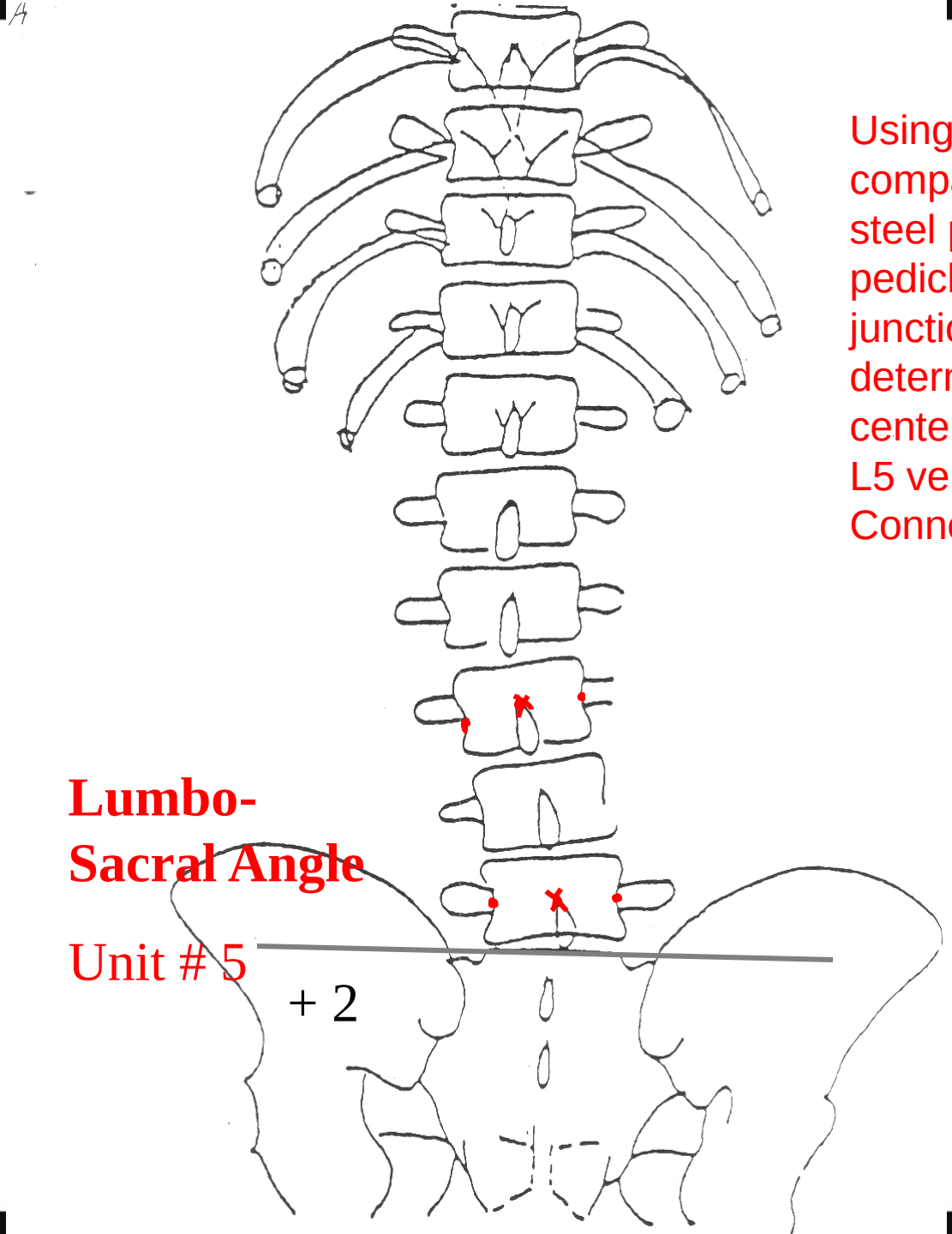


Sacral-Pelvic

Unit # 6

The Sacral Base Line is always listed on the same side as the Lumbo-Sacral angle.



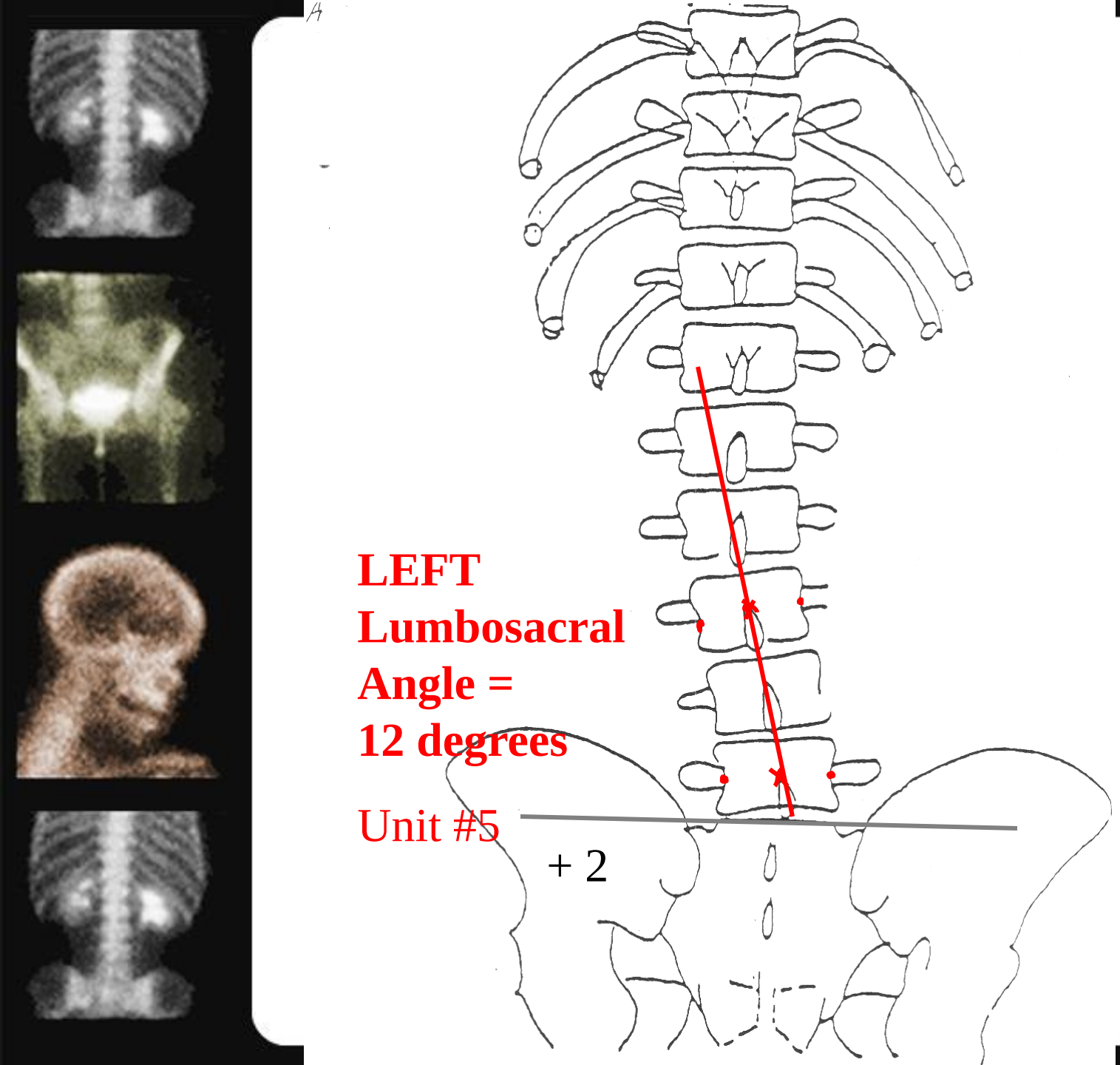


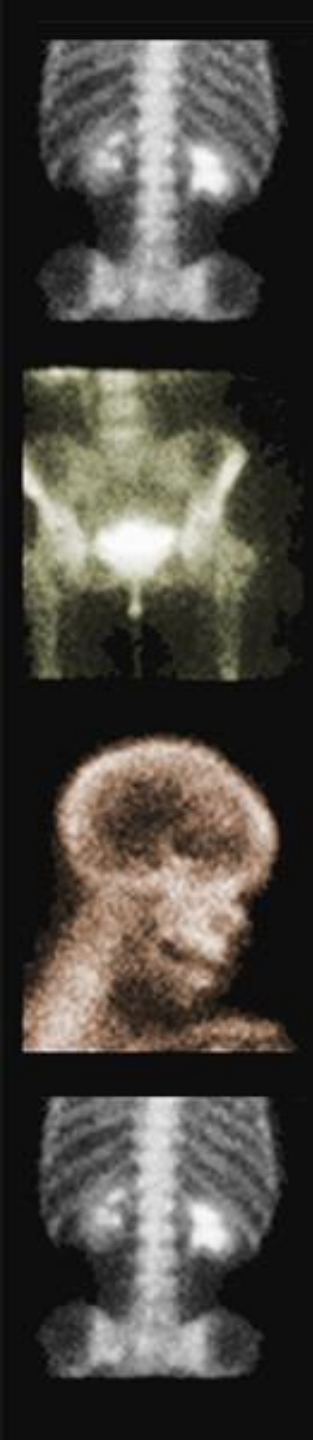
Using your compass (with the steel points on the pedicle / body junction), determine the center of the L3 & L5 vertebrae. Connect the dots.

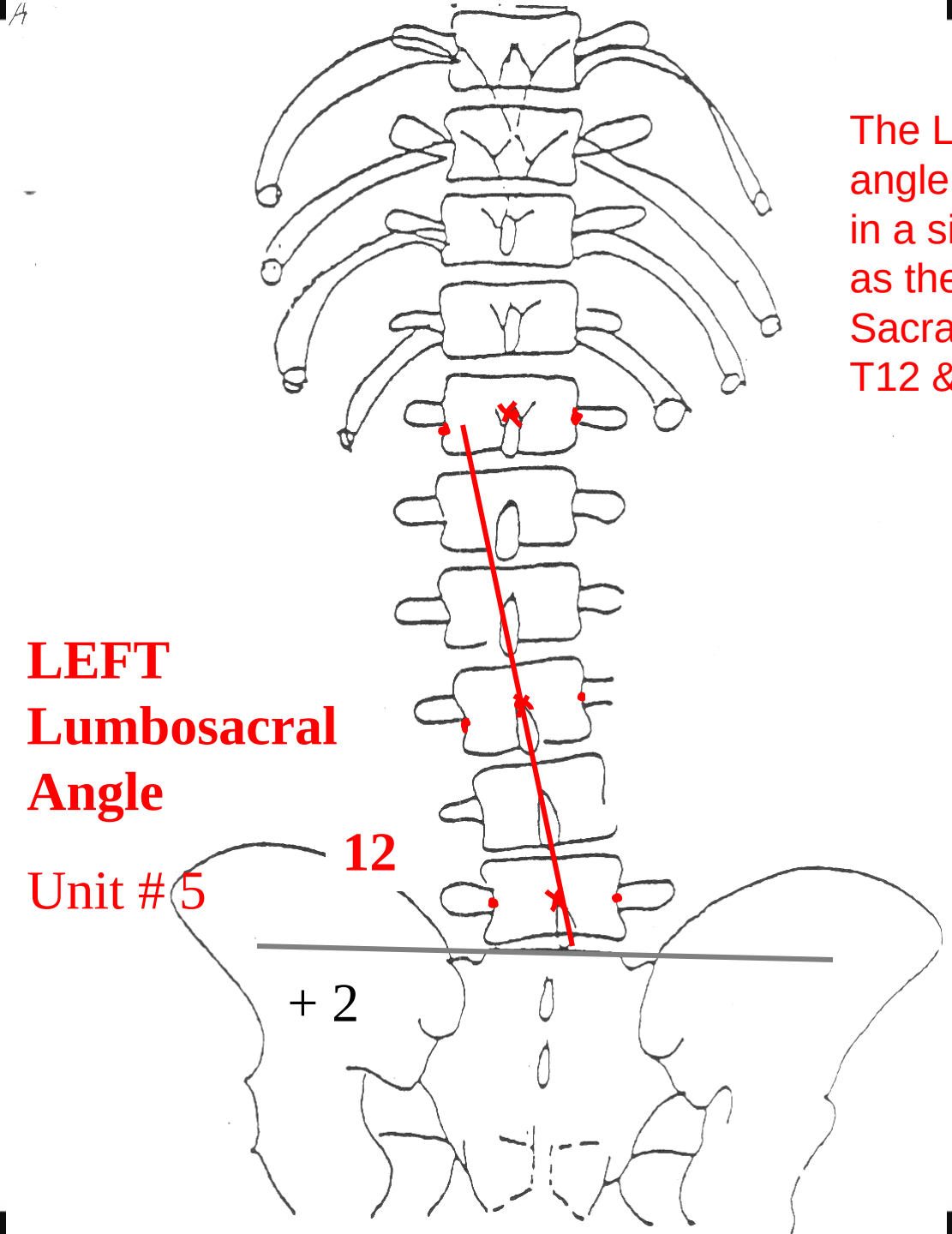
Lumbo-Sacral Angle

Unit # 5

+ 2


LEFT
Lumbosacral
Angle =
12 degrees
Unit #5
+ 2

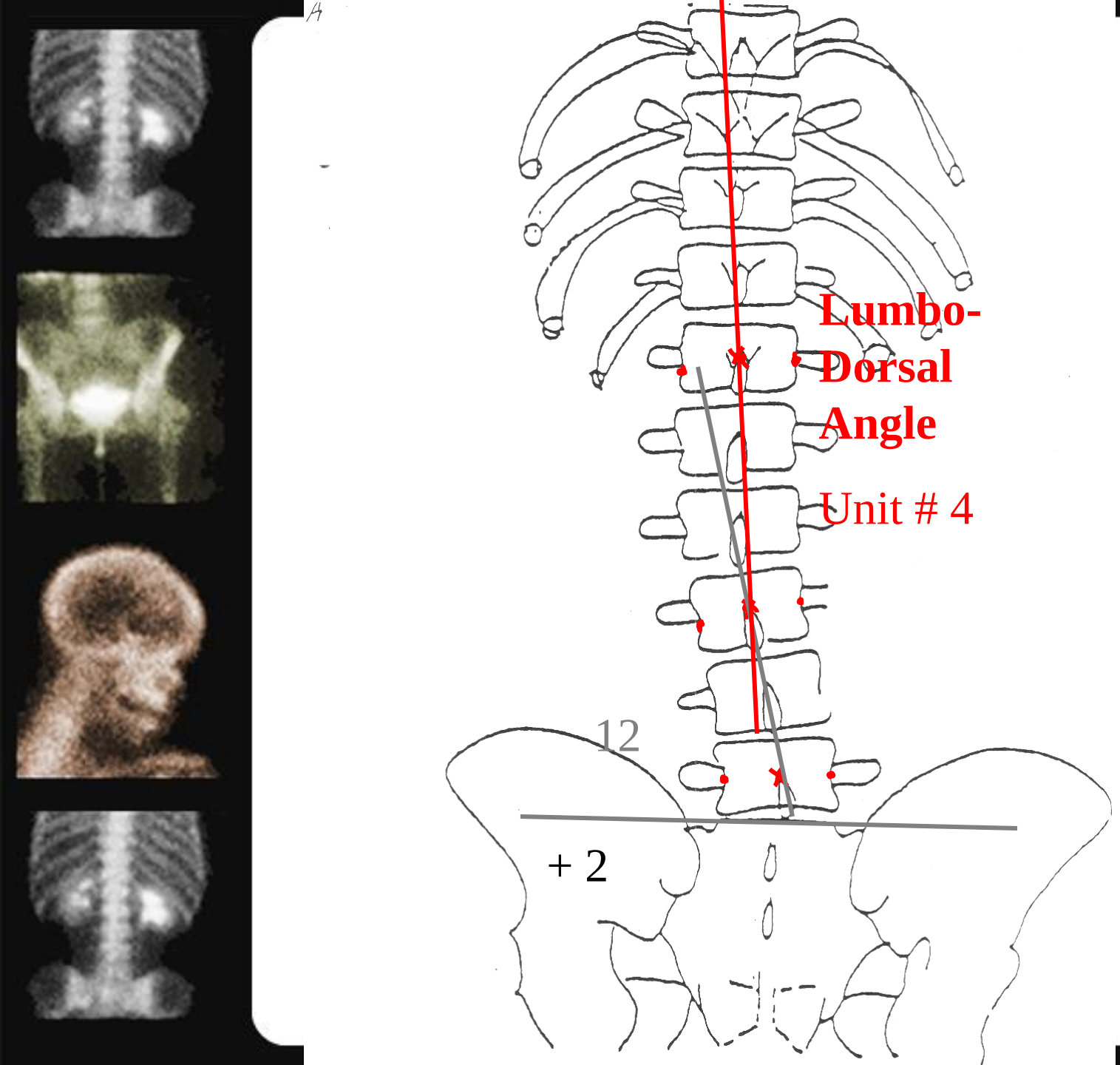


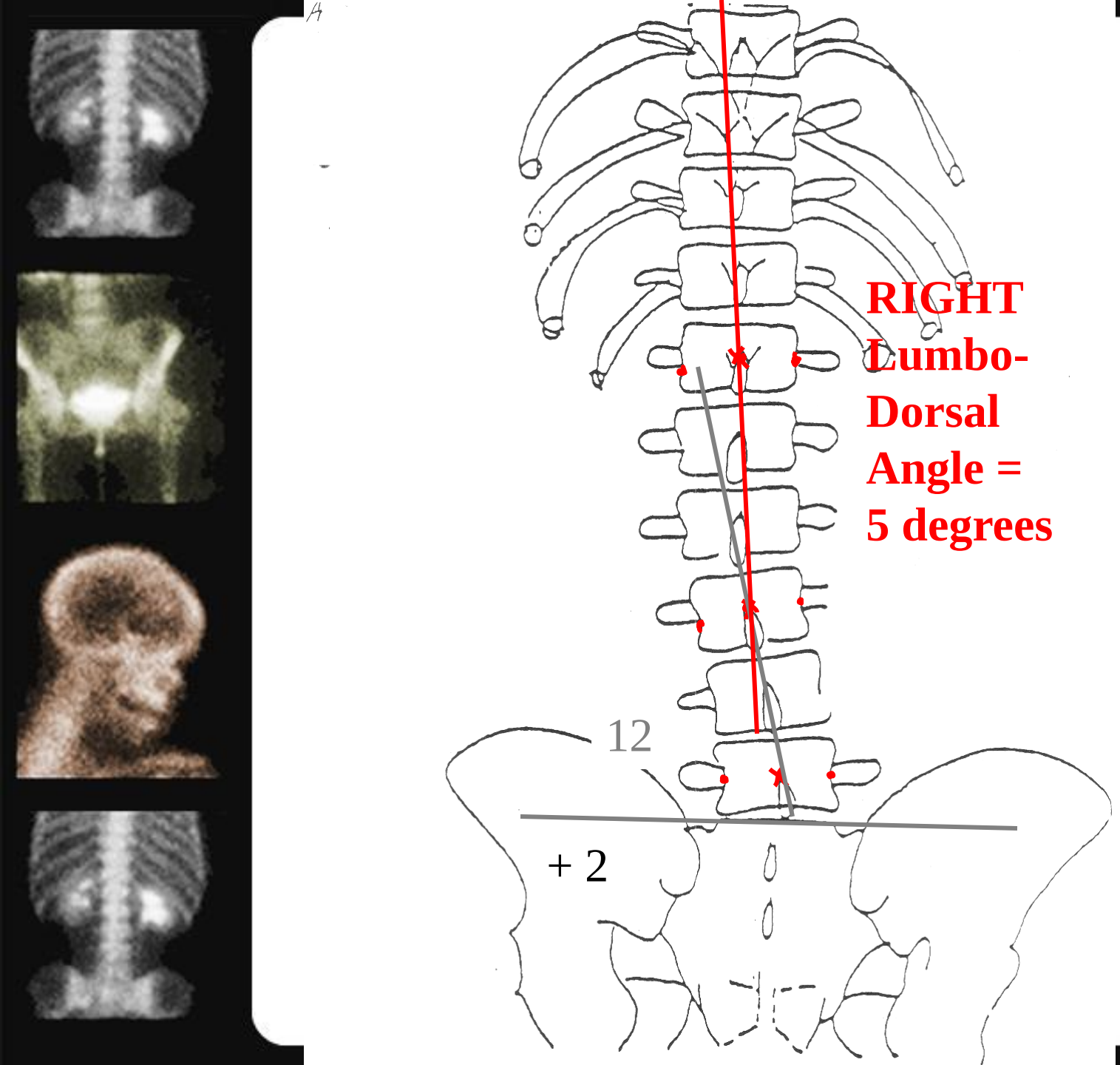


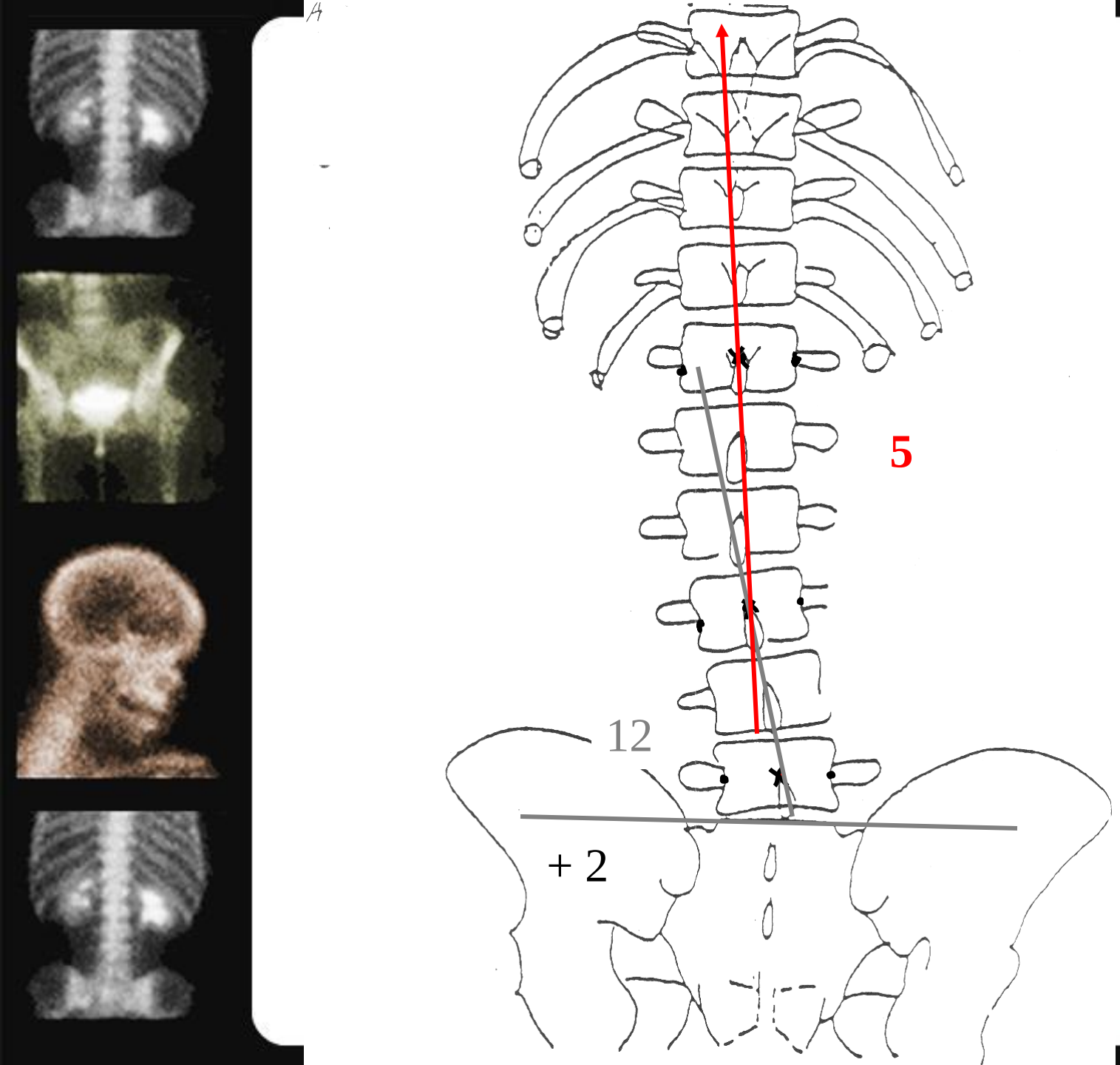
LEFT Lumbosacral Angle

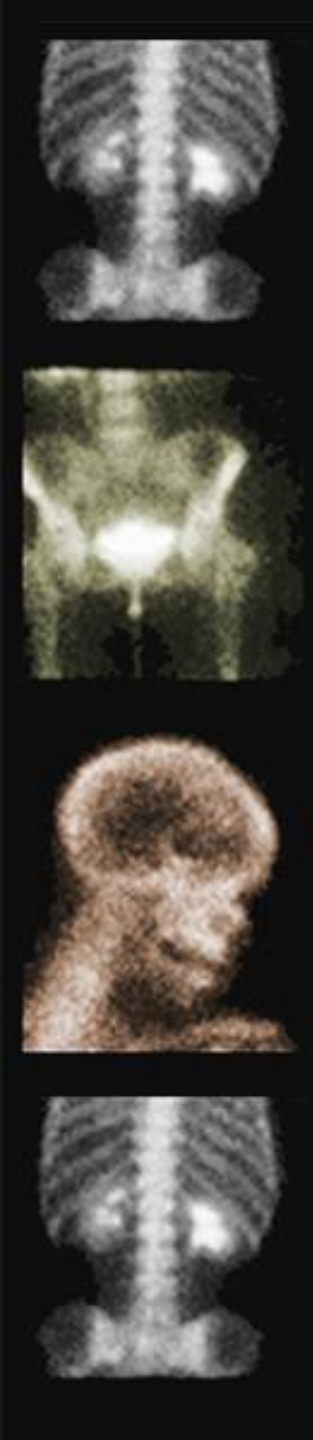
Unit # 5

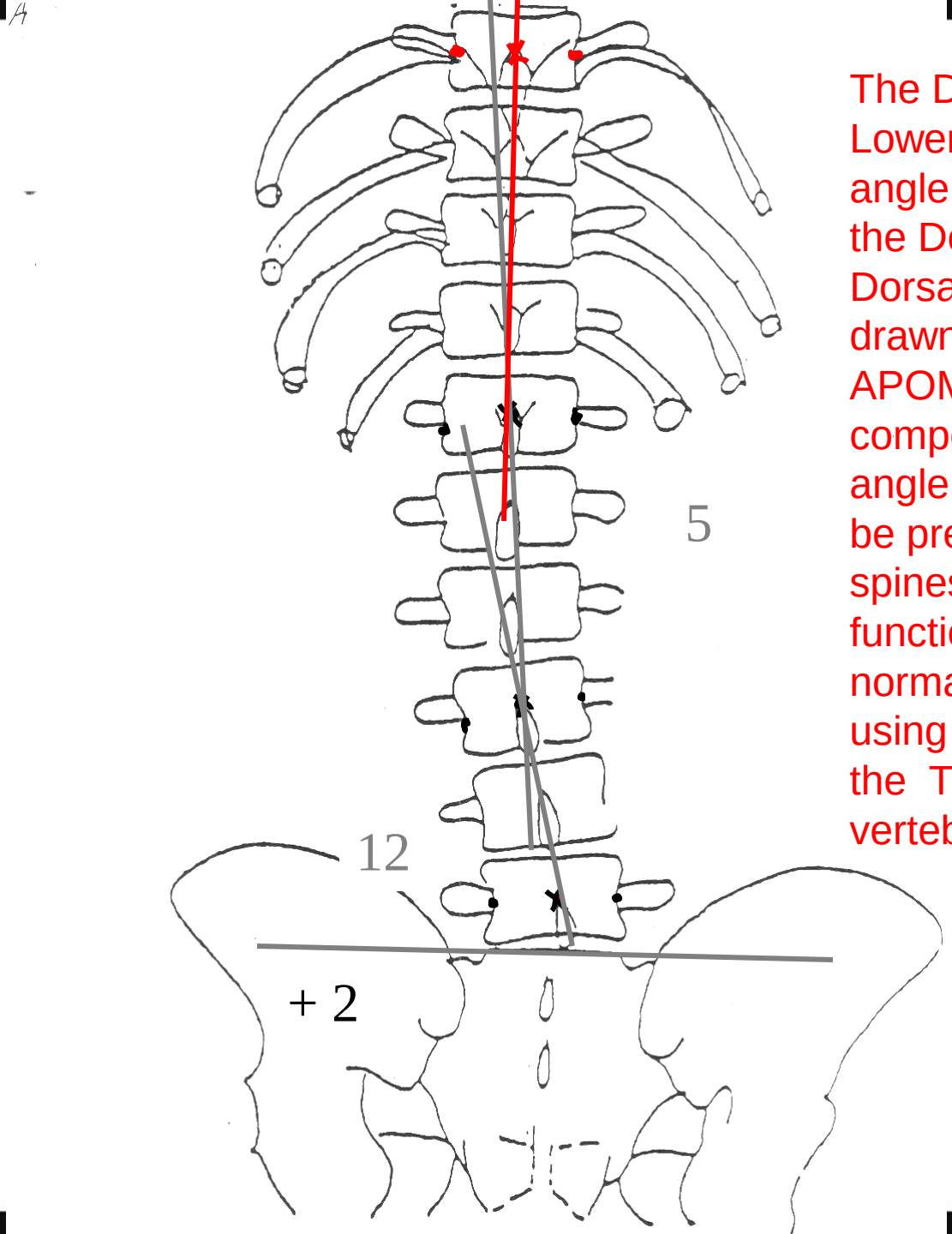
The Lumbo-Dorsal angle is measured in a similar fashion as the Lumbo-Sacral angle, using T12 & L3.


Lumbo-
Dorsal
Angle
Unit # 4
12
+ 2

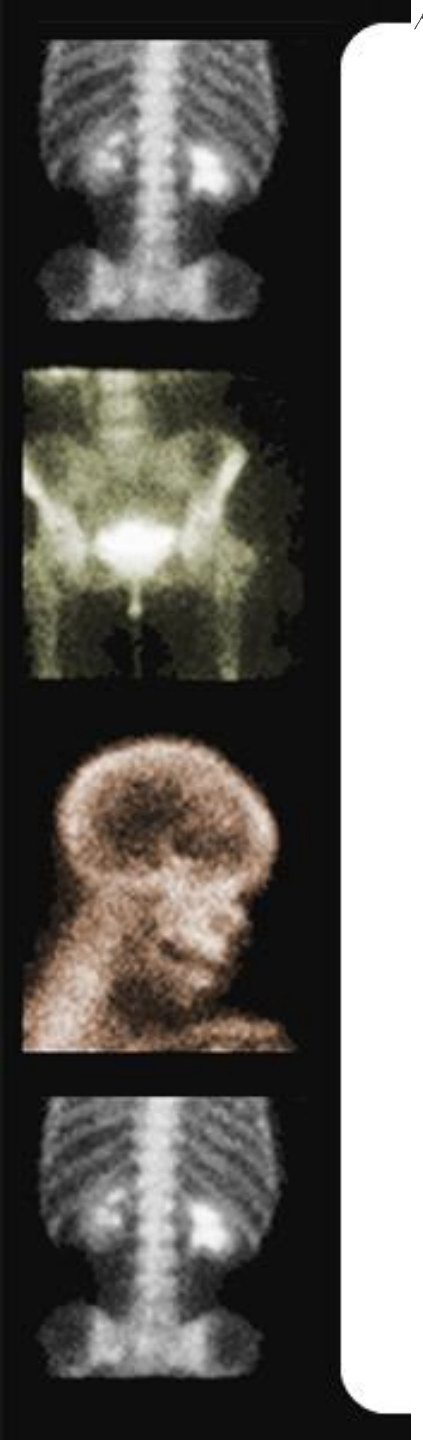

RIGHT
Lumbo-
Dorsal
Angle =
5 degrees
12
+ 2

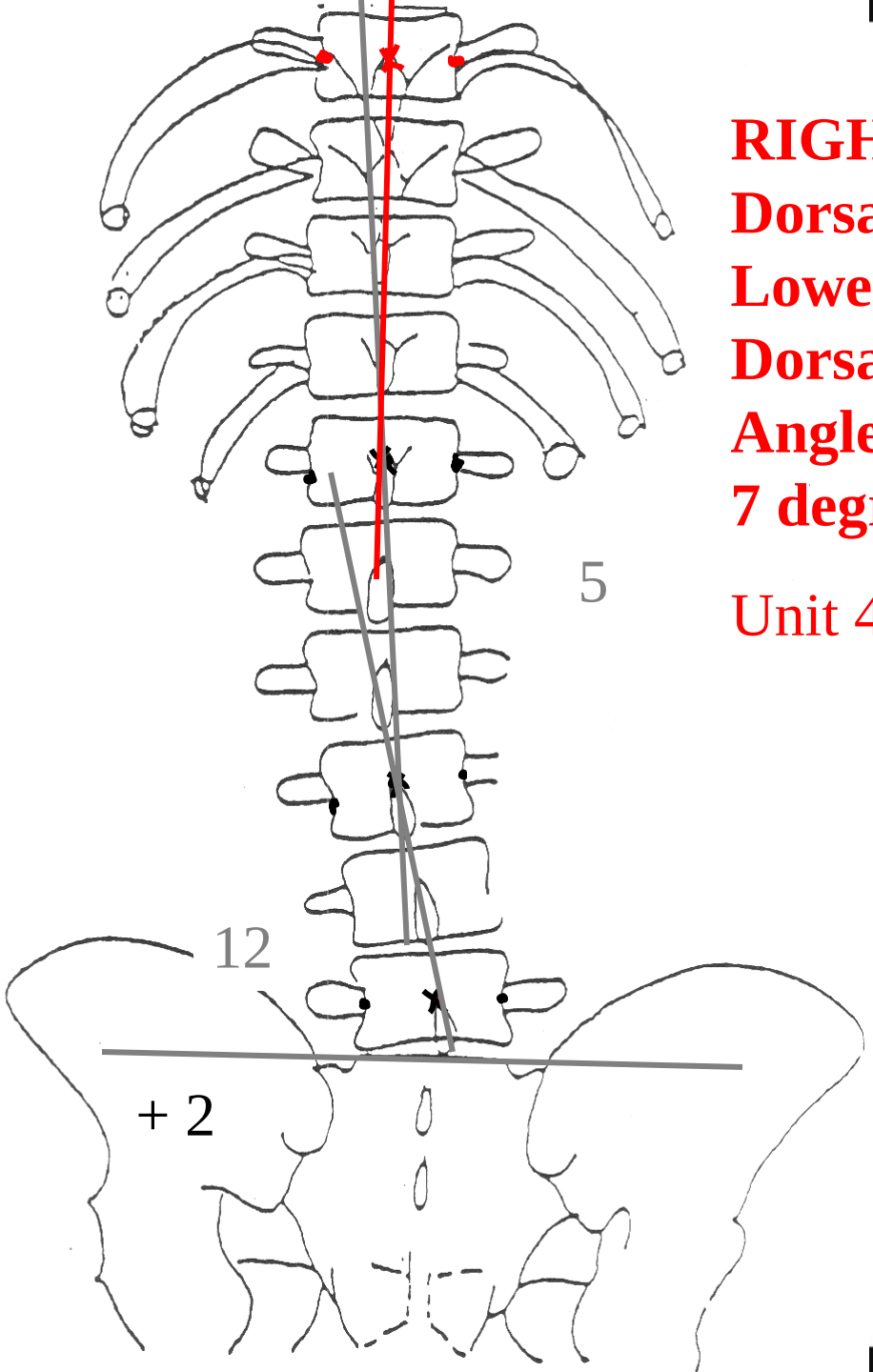

5
12
+ 2





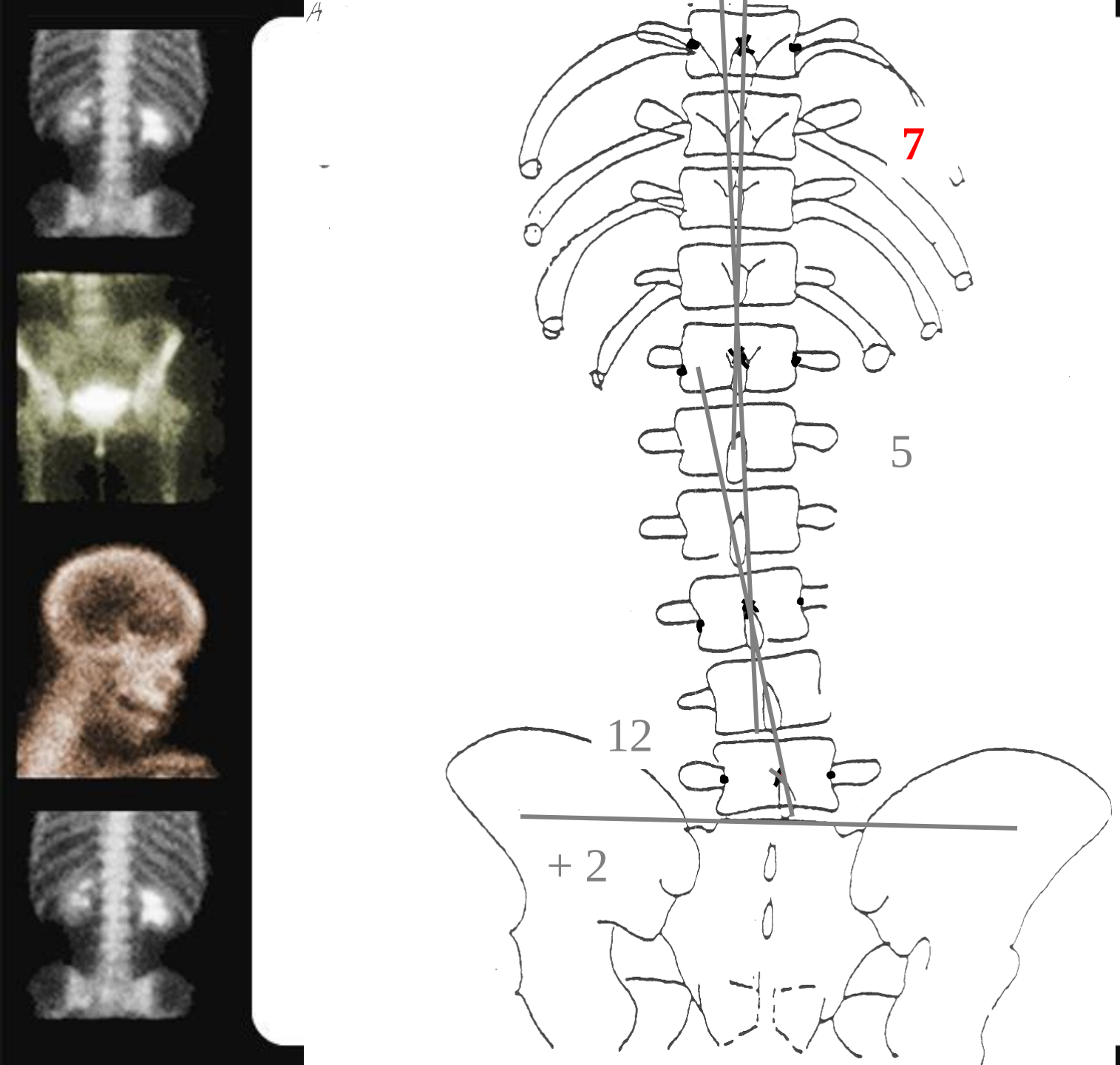
The Dorsal – Lower Dorsal angle (along with the Dorsal / Upper Dorsal angle, drawn from the APOM view) is a compensatory angle that may not be present in spines that are functioning normally. Drawn using the center of the T8 & T12 vertebrae.

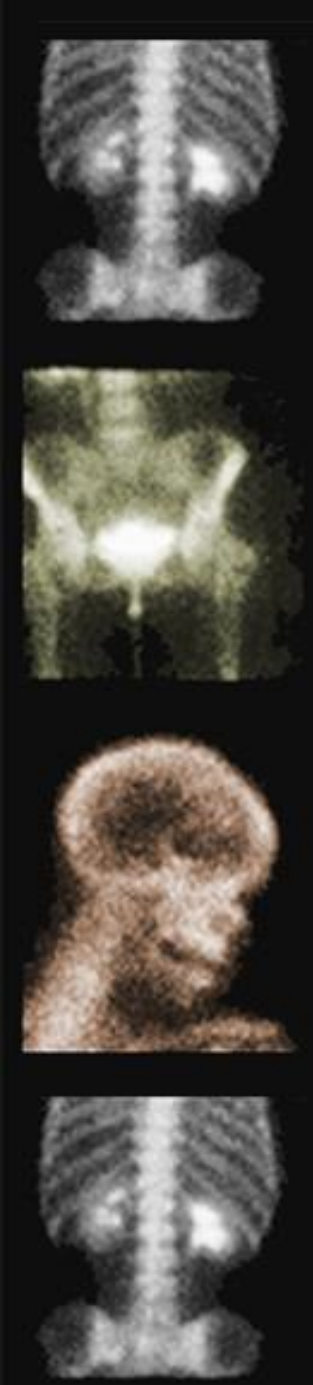


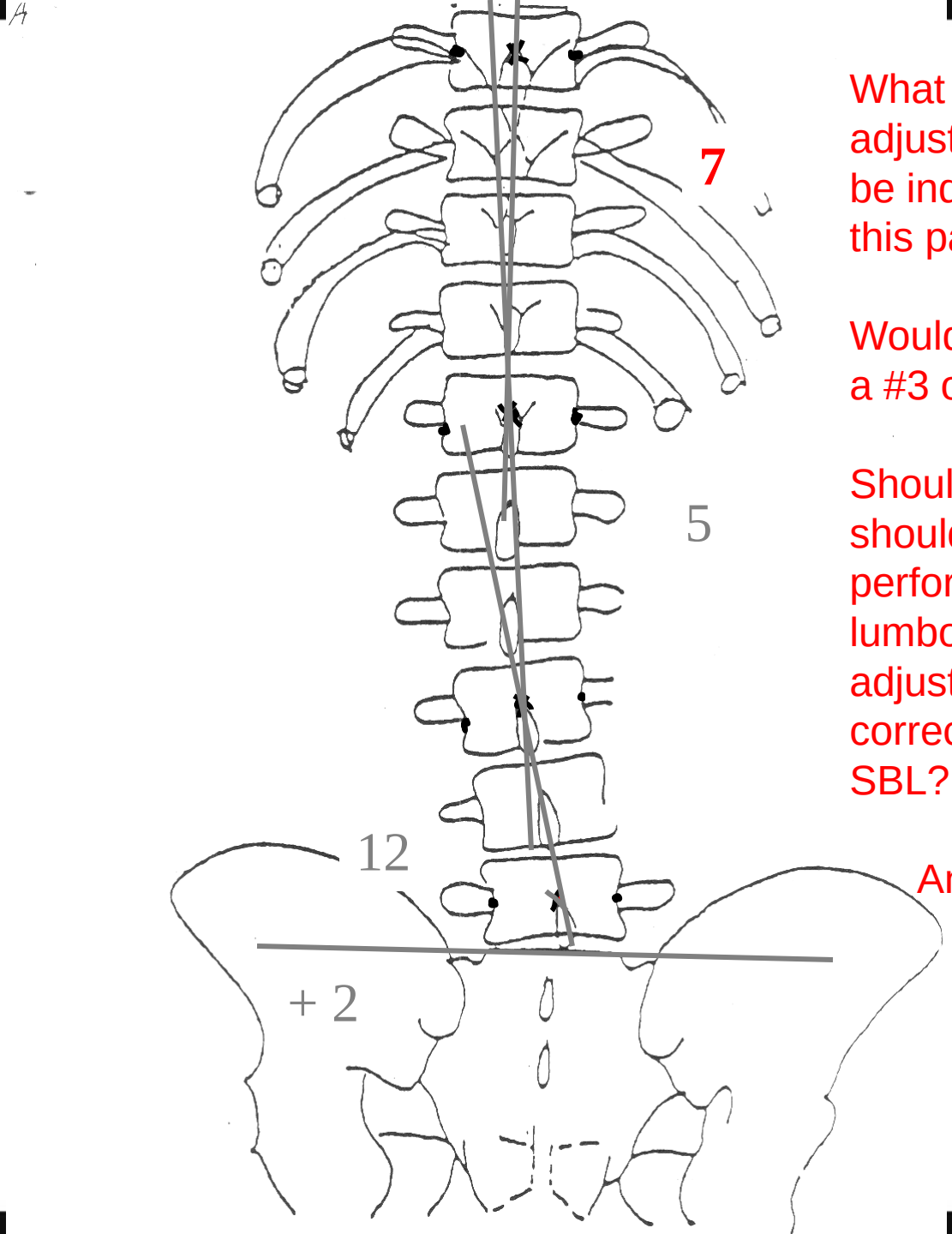


RIGHT
Dorsal
Lower
Dorsal
Angle =
7 degrees

Unit 4-A


7
5
12
+ 2



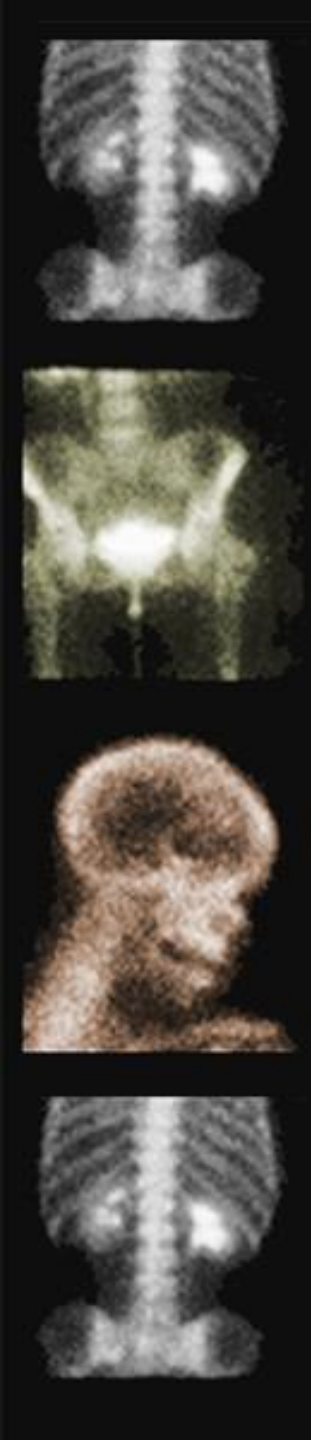


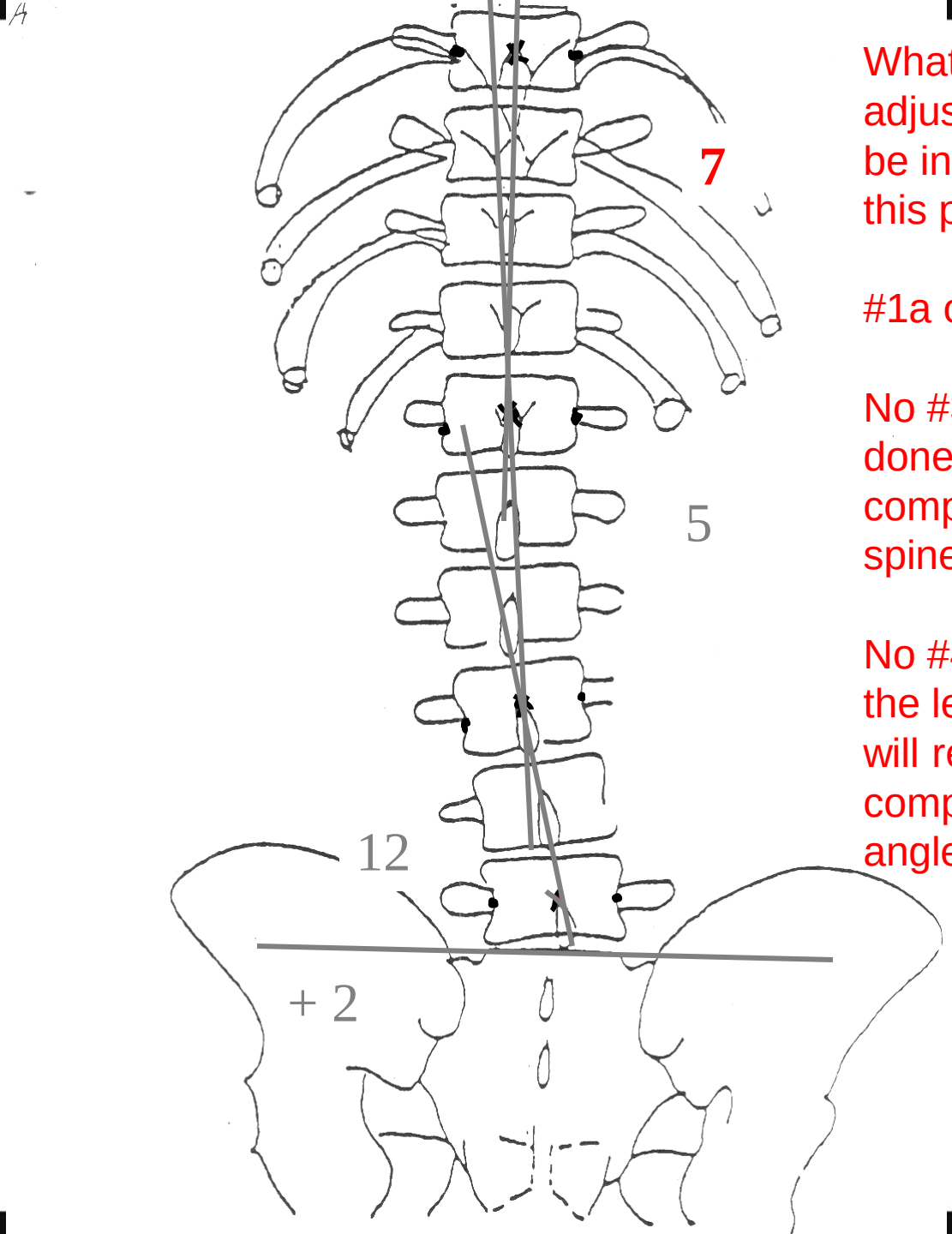
What lumbar adjustments would be indicated on this patient?

Would you perform a #3 on the right?

Should you or should you not perform the #4 lumbo-dorsal adjustment after correcting the LS & SBL?

Answers on the next slide.



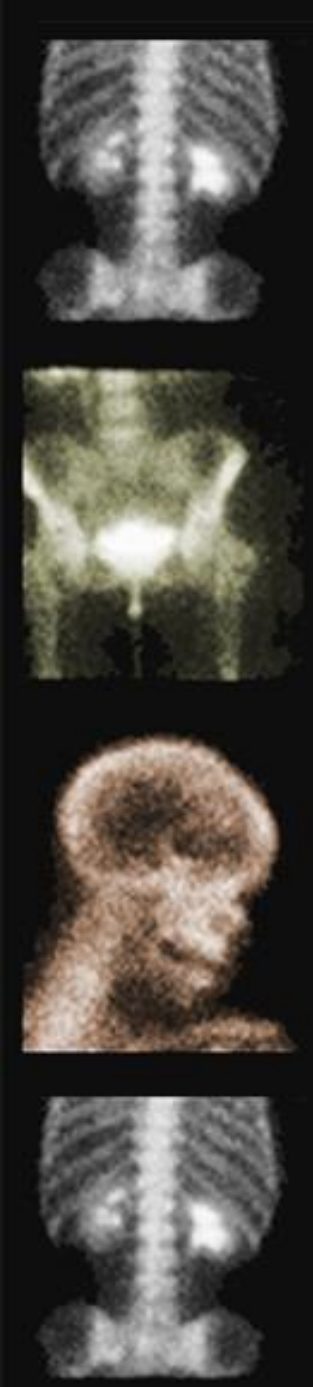


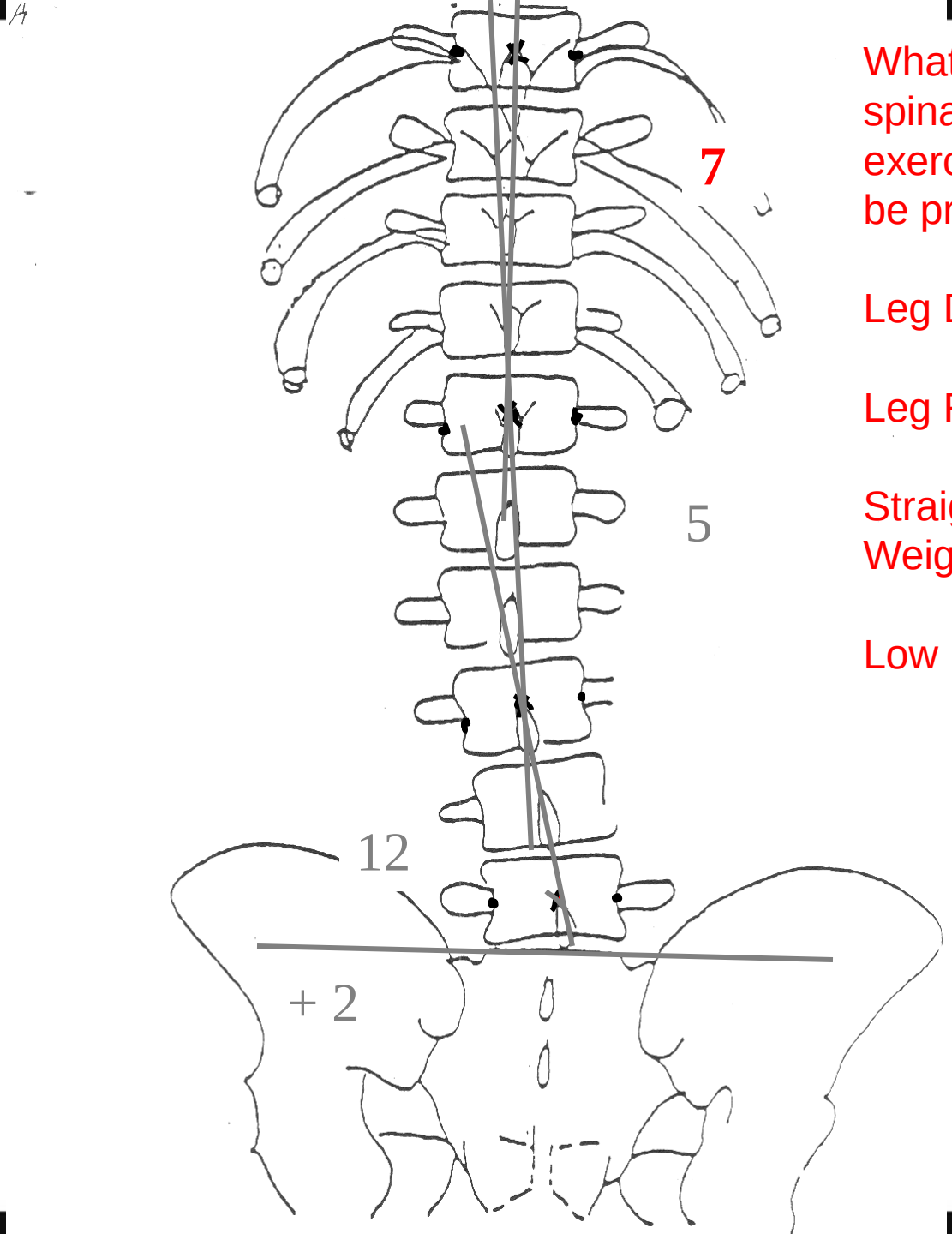
What lumbar adjustments would be indicated on this patient?

#1a on the left

No #3 (this is only done on an un-compensated spine)

No #4! Correcting the left LS angle will reduce the compensatory LD angle.





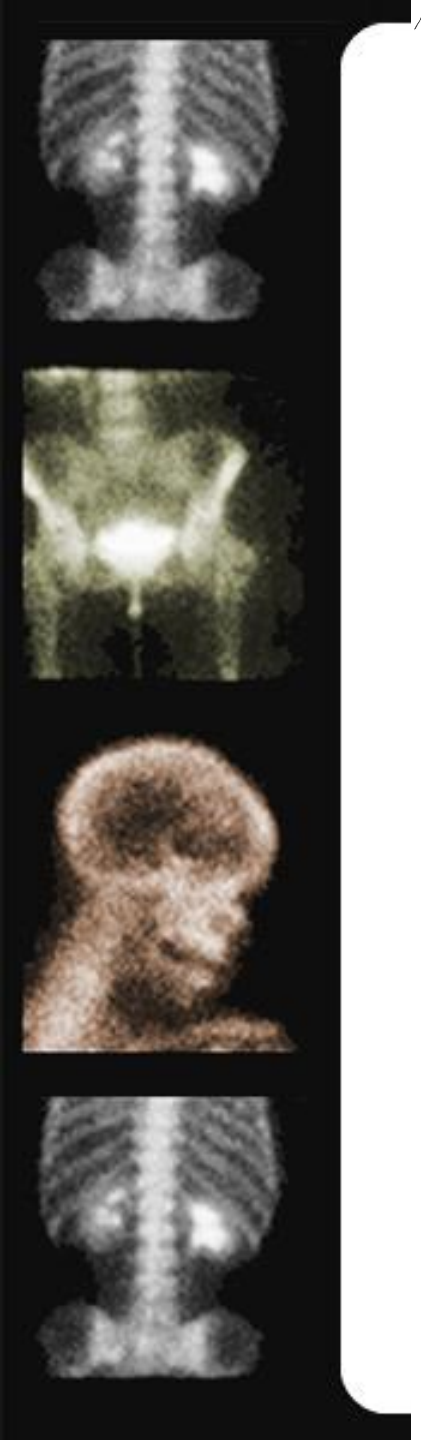
What specific spinal isometric exercises should be prescribed?

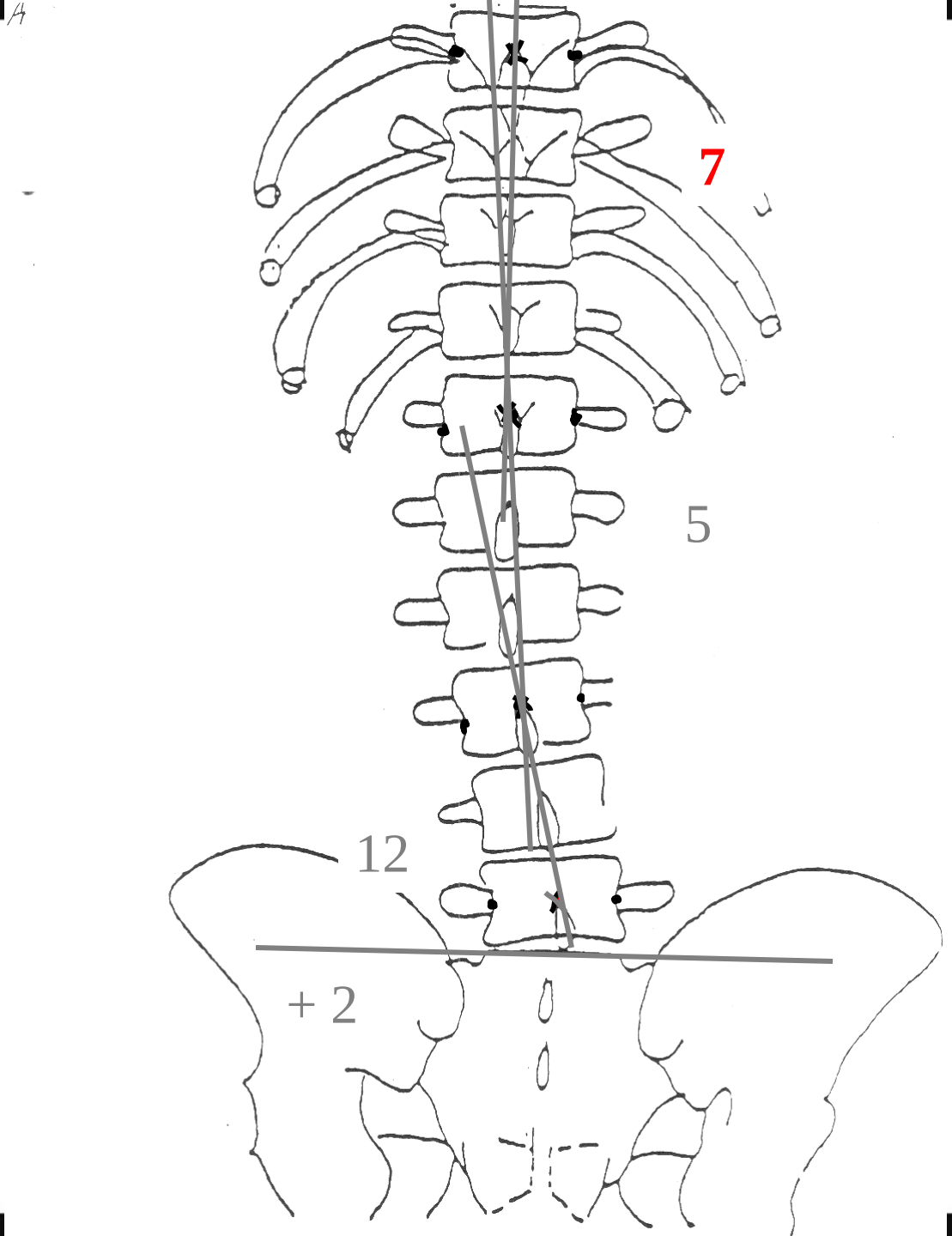
Leg Drag?

Leg Raise?

Straight Leg Weighting?

Low Back Ball?





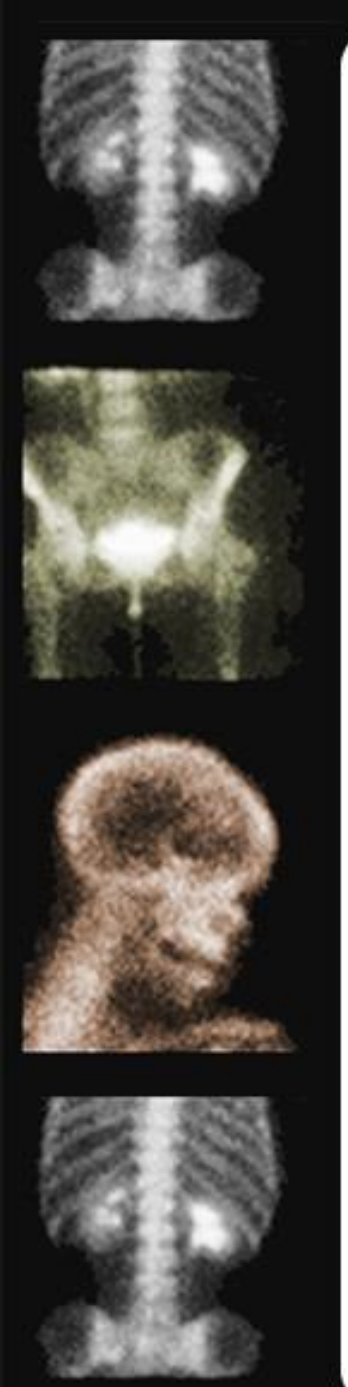
What specific spinal isometric exercises should be prescribed?

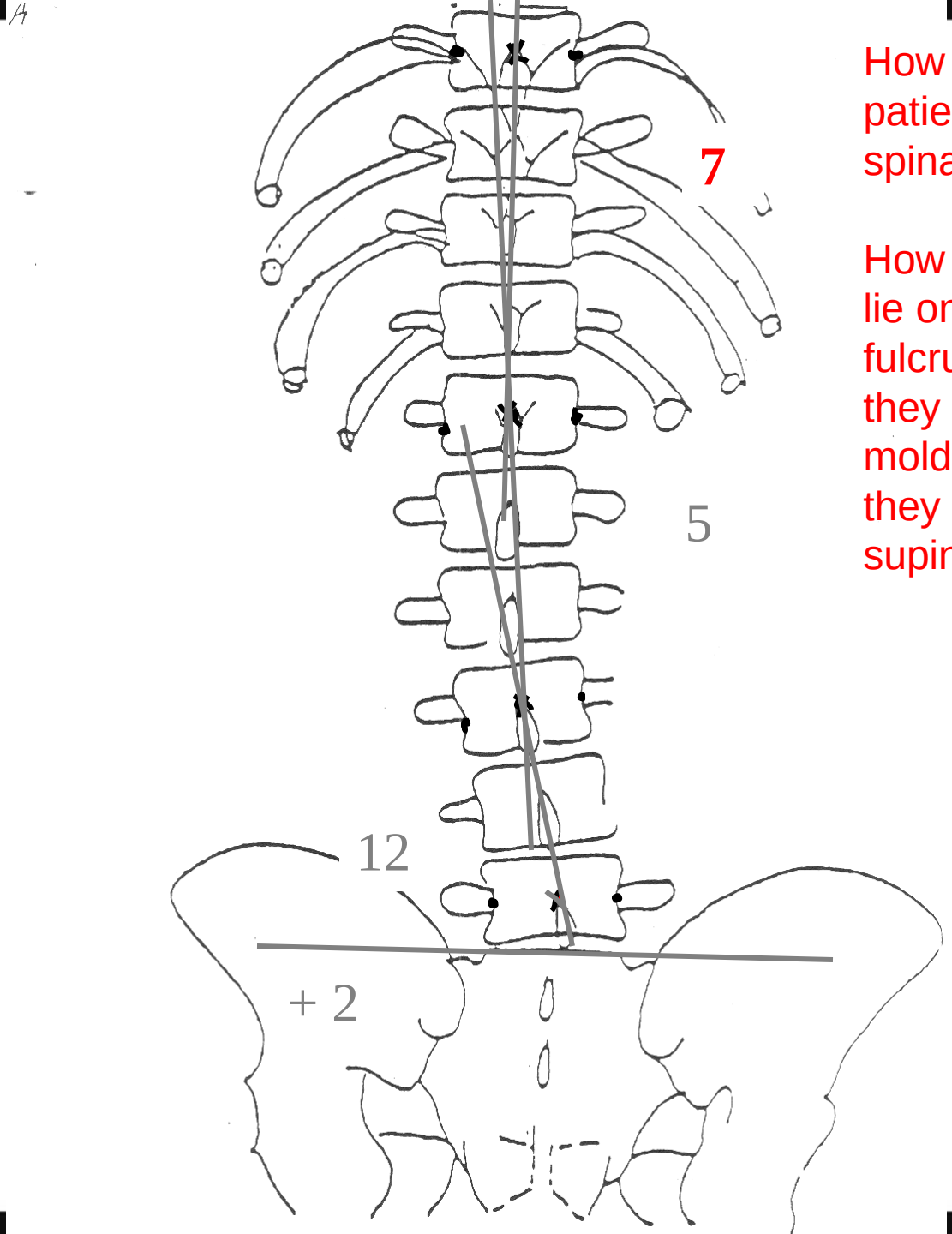
Leg Drag to the LEFT, with a lumbar support

Leg Raise on the LEFT (patient lying on their right side)

Straight Leg Weighting - LEFT

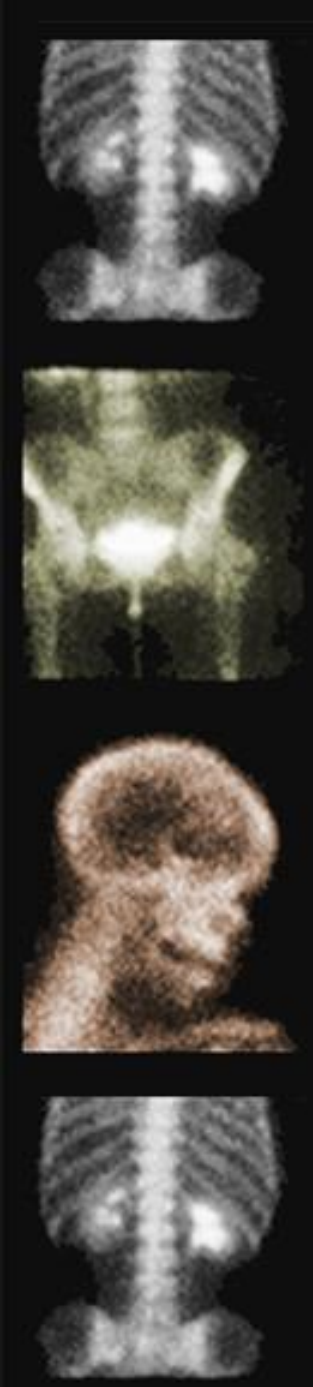
Low Back Ball – turning to the RIGHT

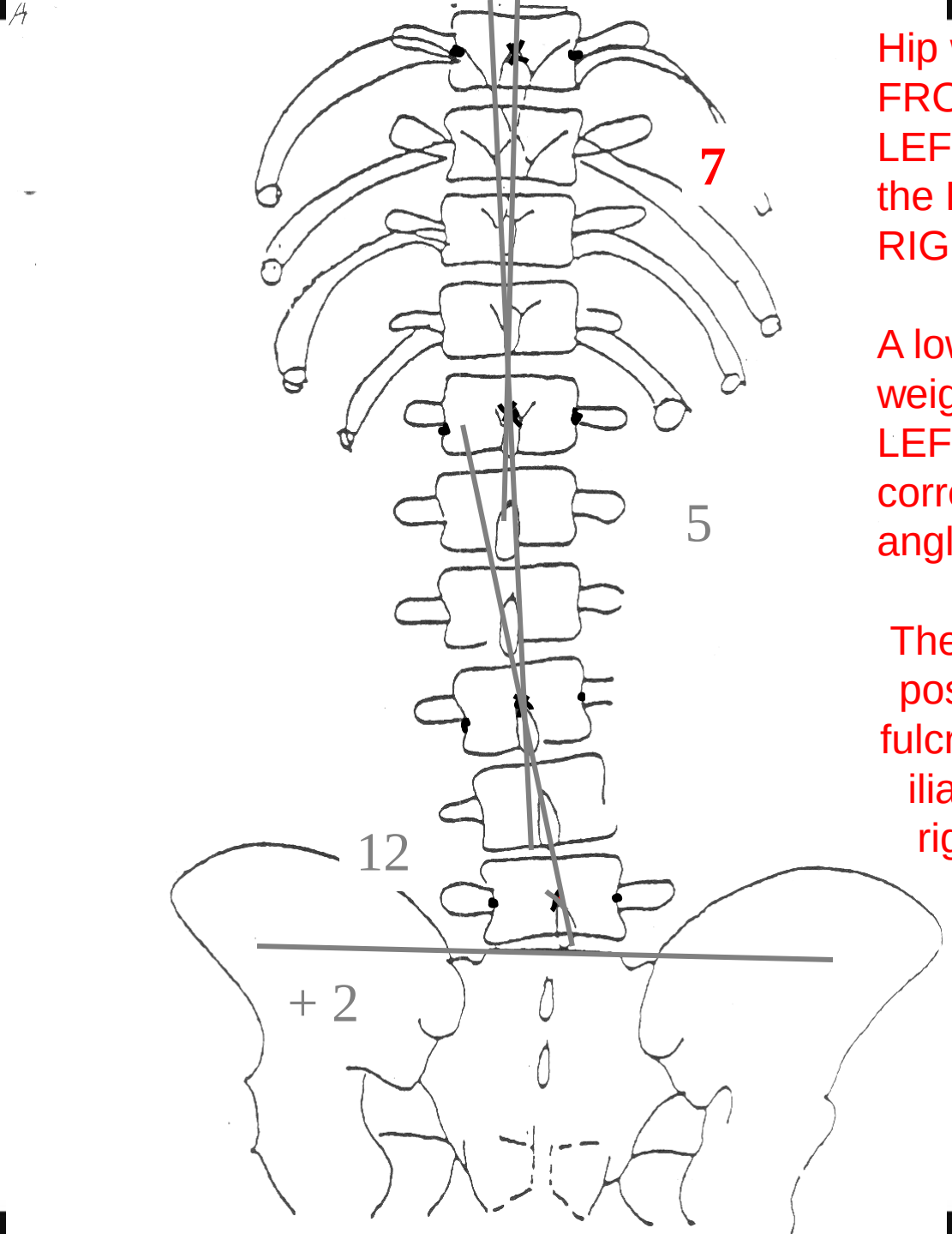




How should this patient wear their spinal weights?

How should they lie on their spinal fulcrums when they do spinal molding? Should they be prone or supine?

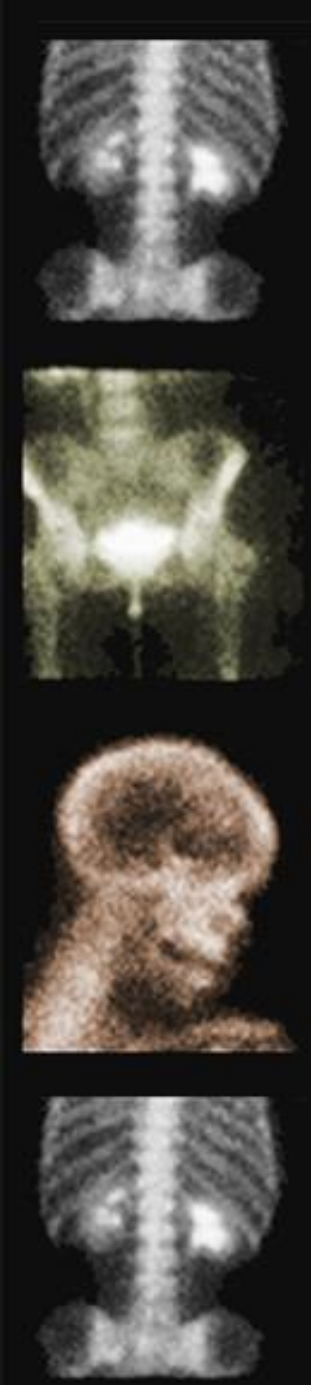


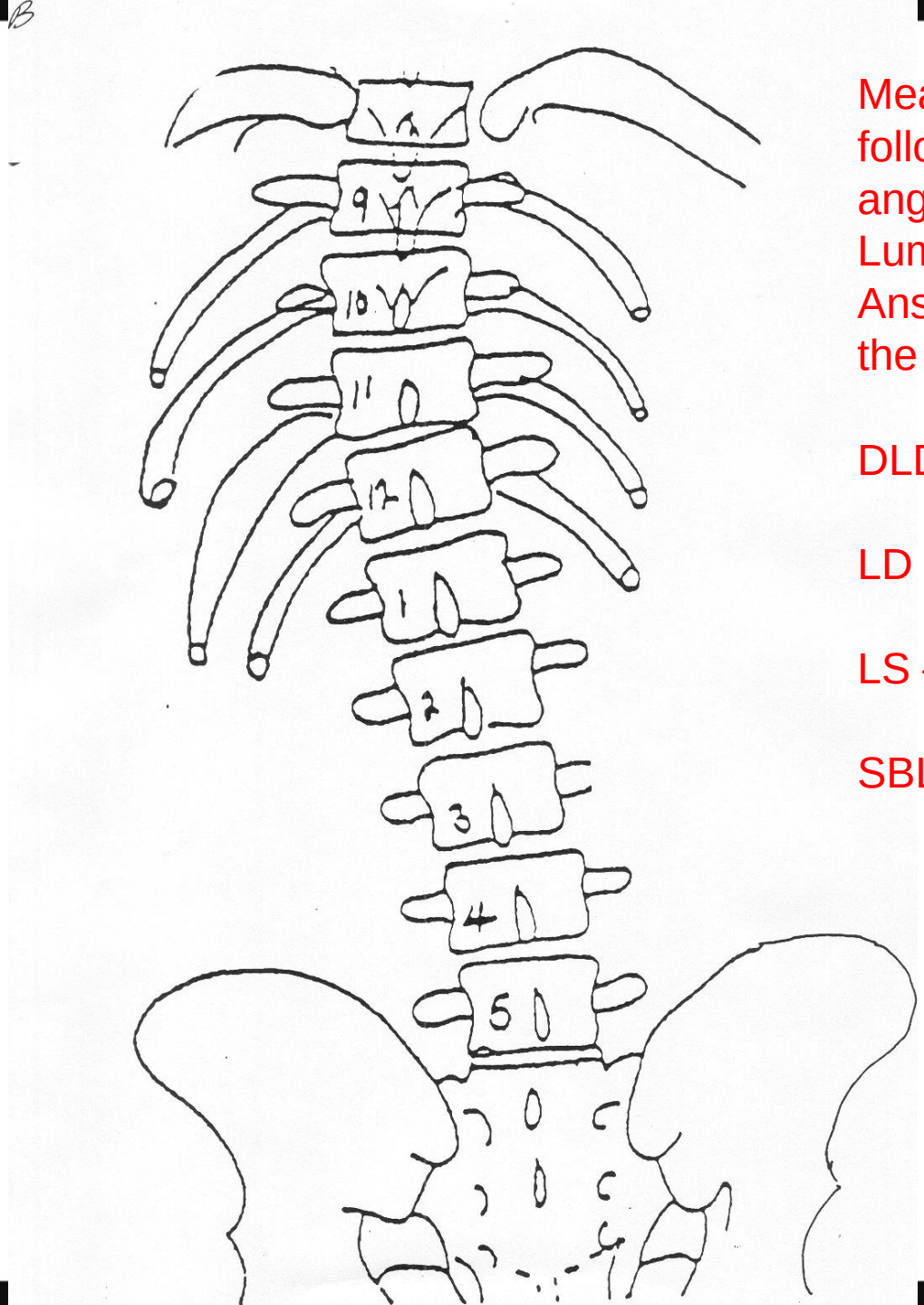


Hip weights on the FRONT of the LEFT hip, and on the BACK of the RIGHT hip.

A low shoulder weight on the LEFT side will correct the LS angle.

The patient should position the spinal fulcrums on the left iliac crest and the right femur head, while lying PRONE.





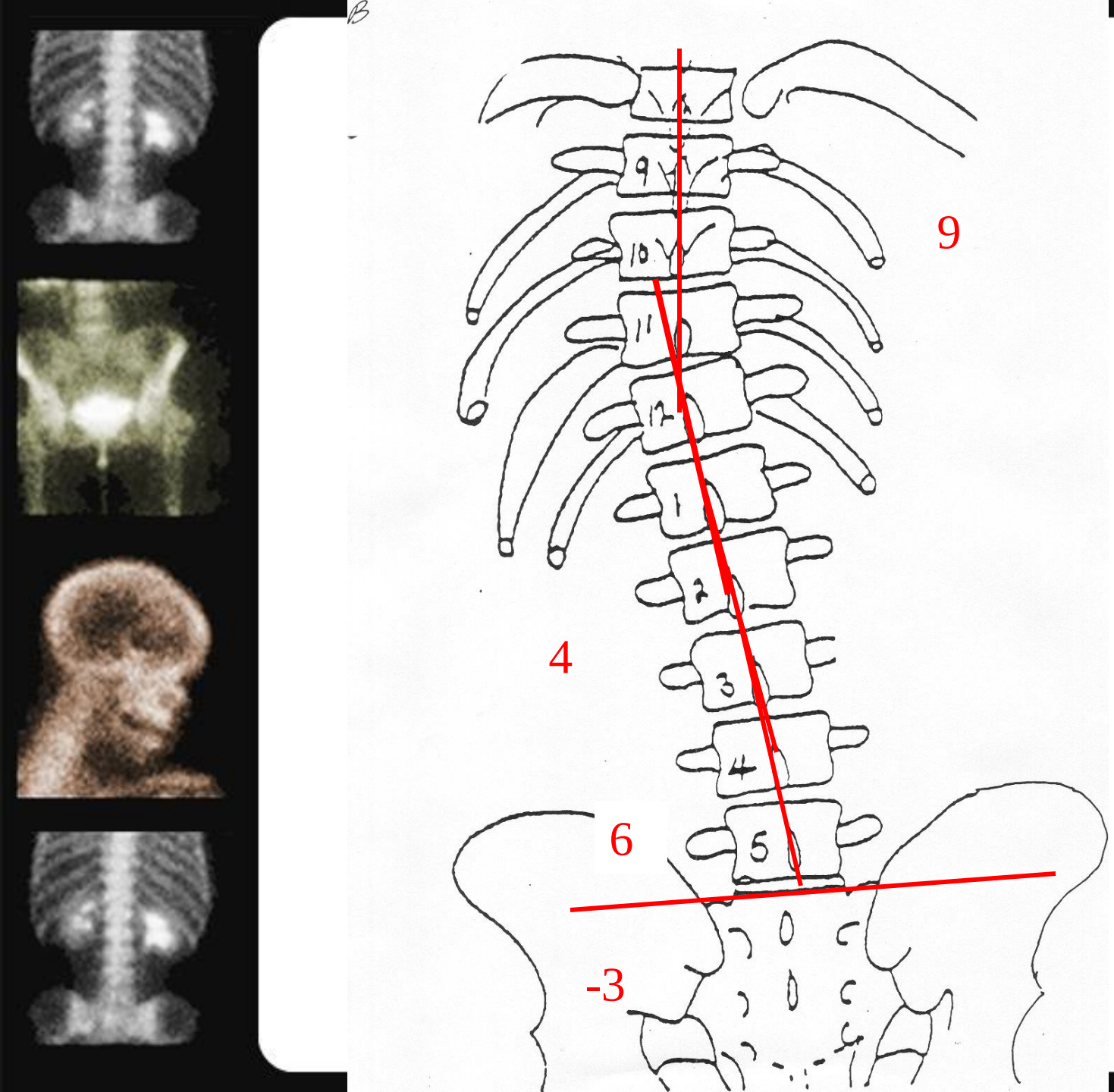
Measure the following four angles on this A-P Lumbar view. Answers are on the following slide.

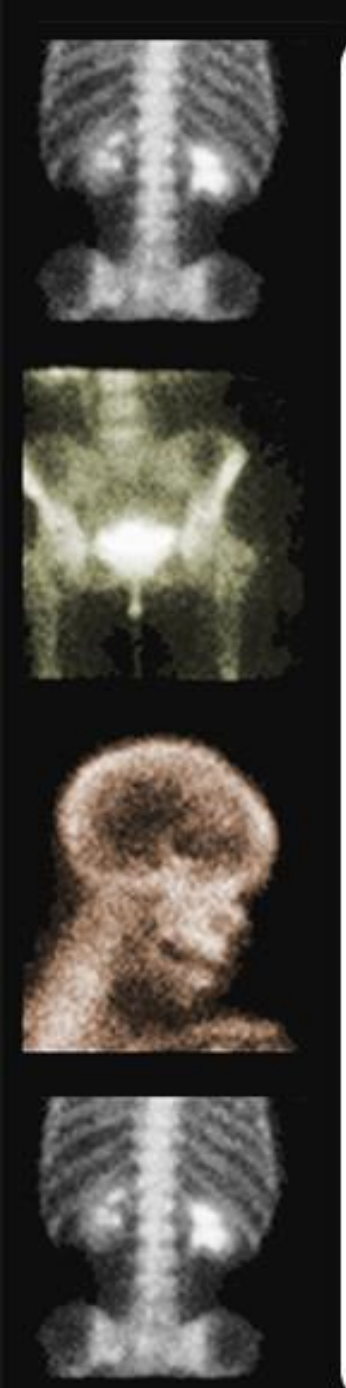
DLD – T8 & T12

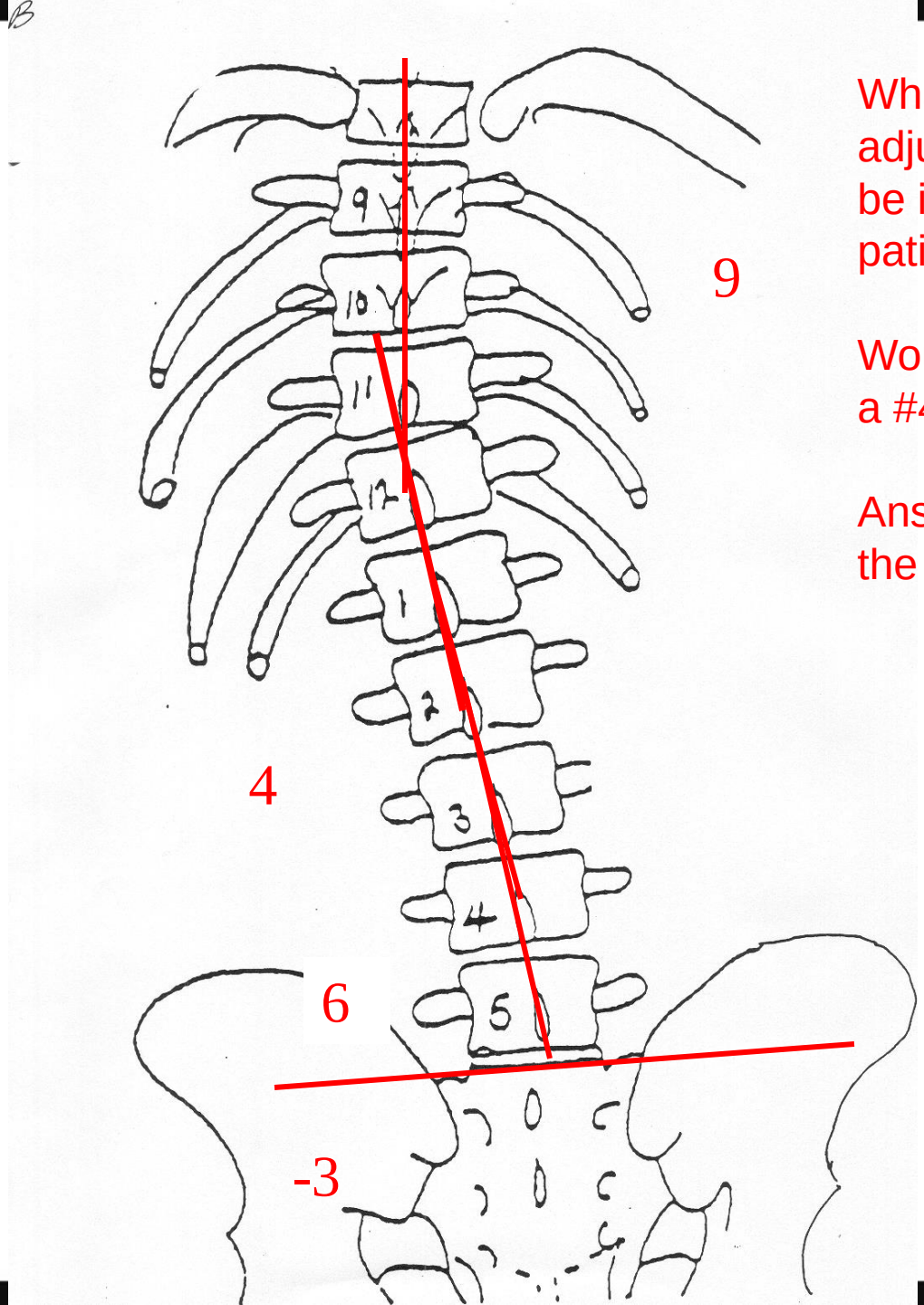
LD – T12 & L3

LS – L3 & L5

SBL


9
4
6
-3

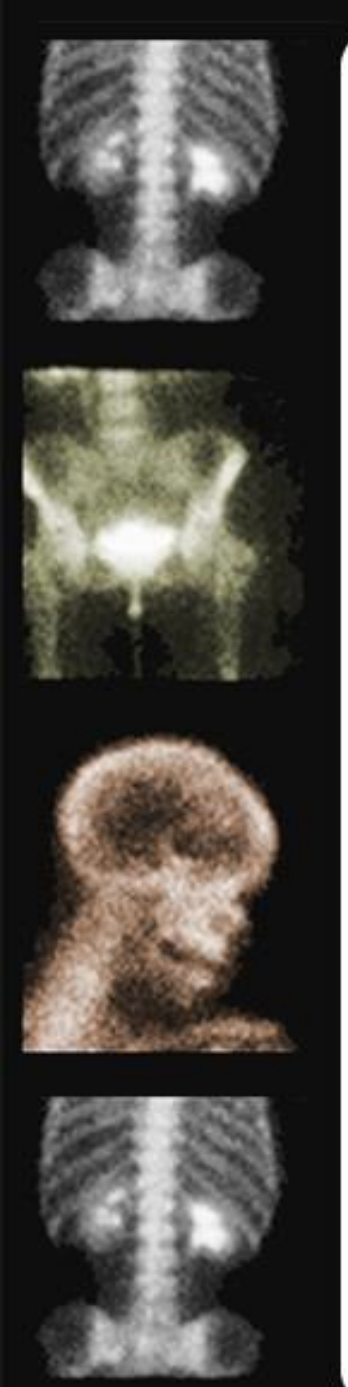


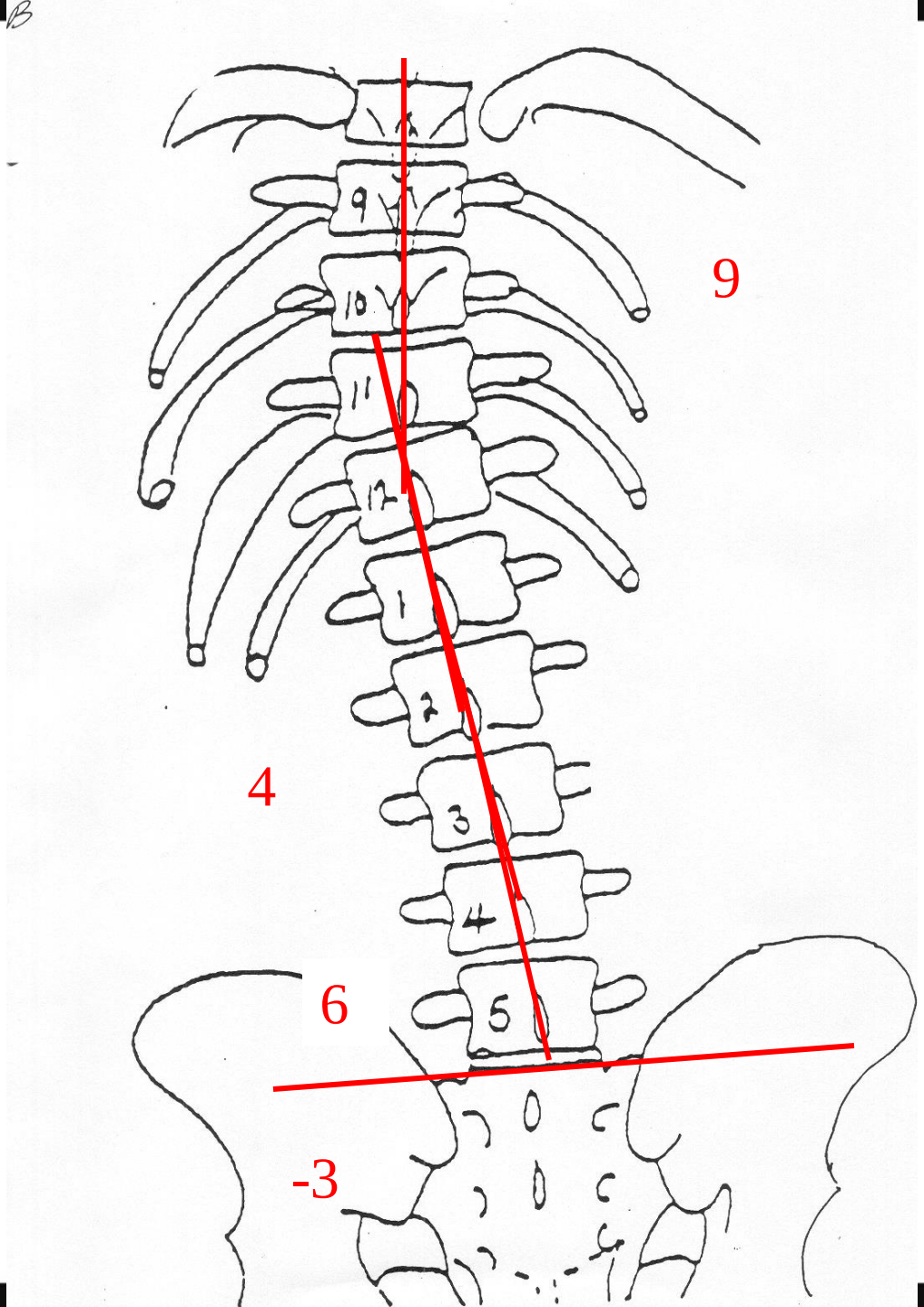


What lumbar adjustments would be indicated in this patient?

Would you perform a #4?

Answers are on the next slide.





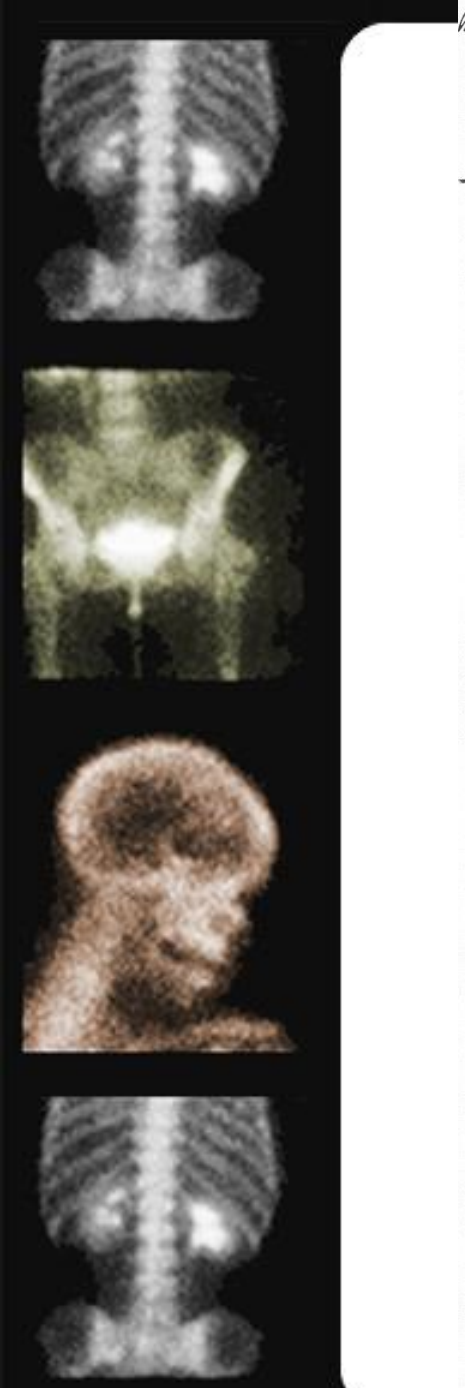
What lumbar adjustments would be indicated in this patient?

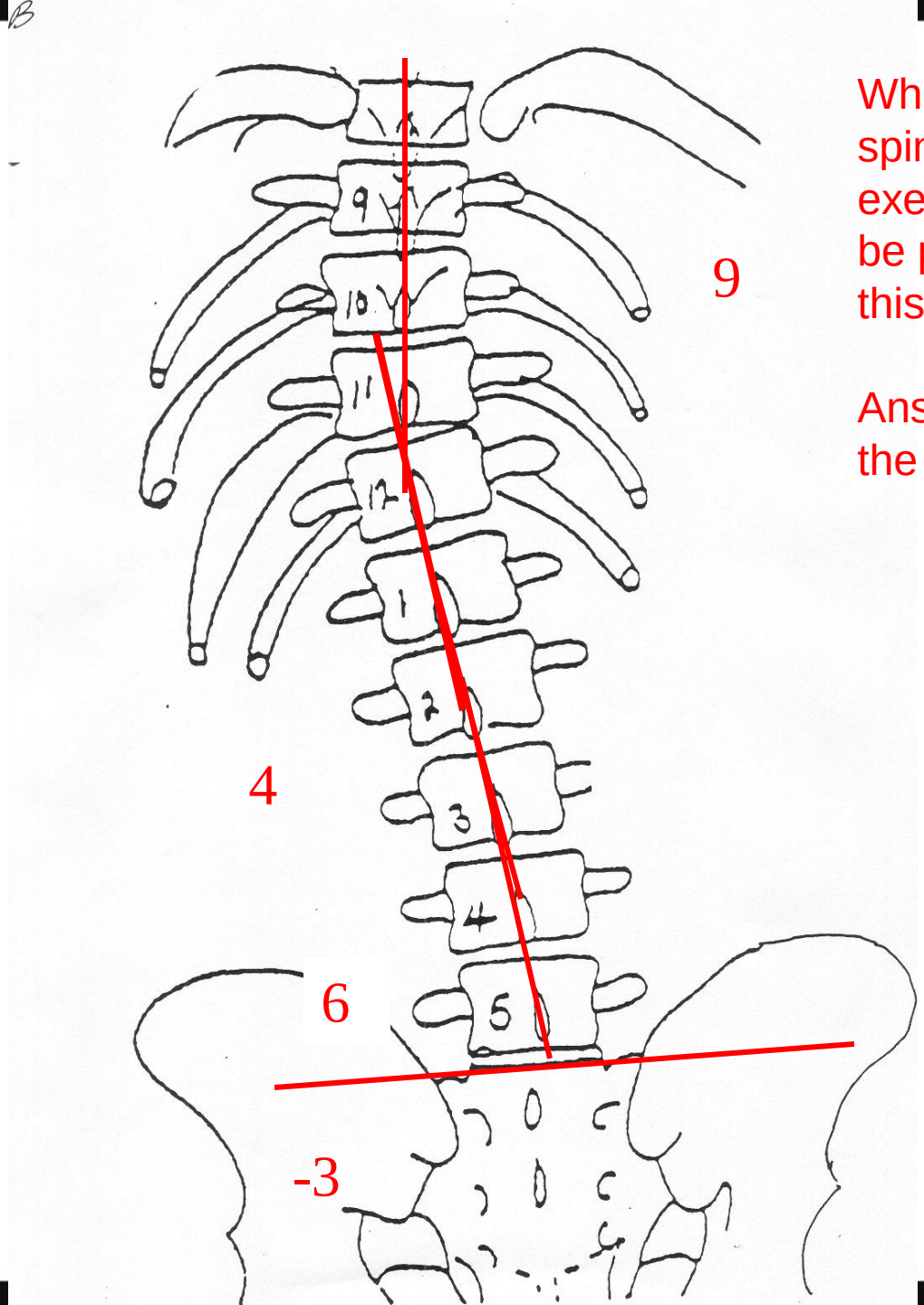
#1 on the left

#3a on the right

Yes, the #4 would be performed in this case, as the LS/LD angles are non-compensated.

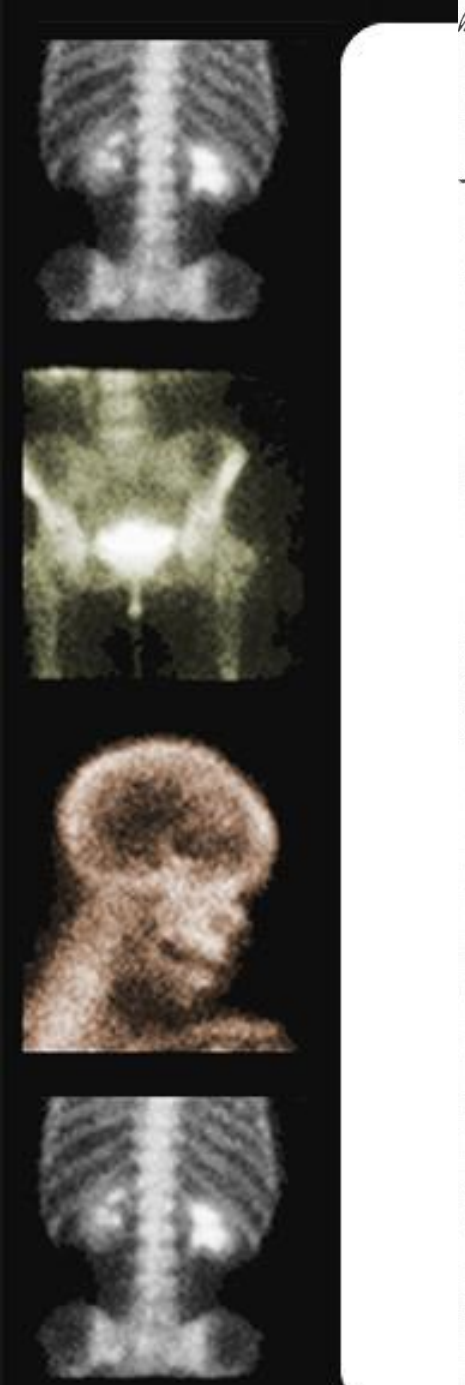
The effectiveness of the #4 adjustment can be enhanced with a pelvic drop & patient prone, in a manner similar to the #5a.

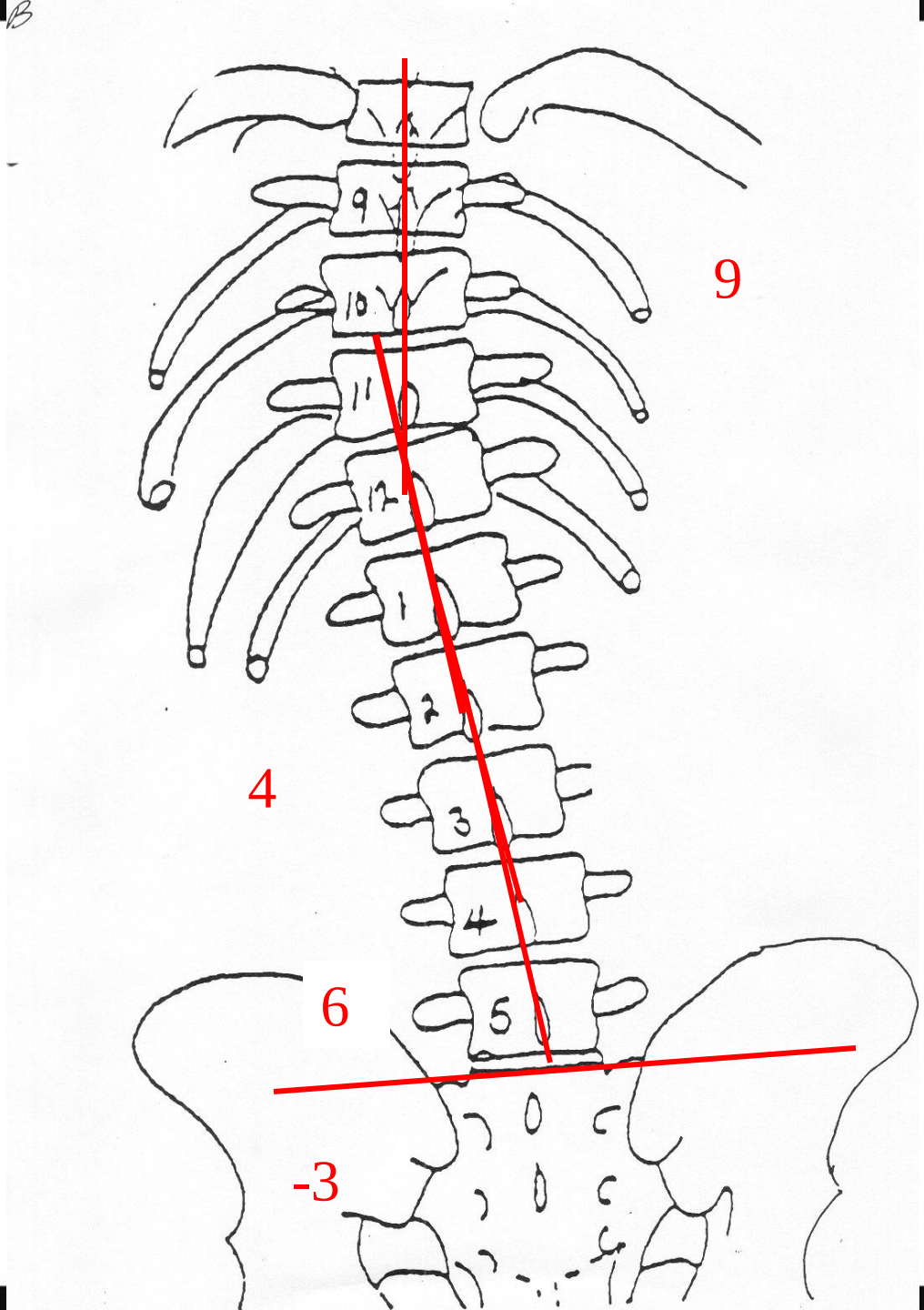




What specific spinal isometric exercises should be prescribed for this patient?

Answers are on the next slide.



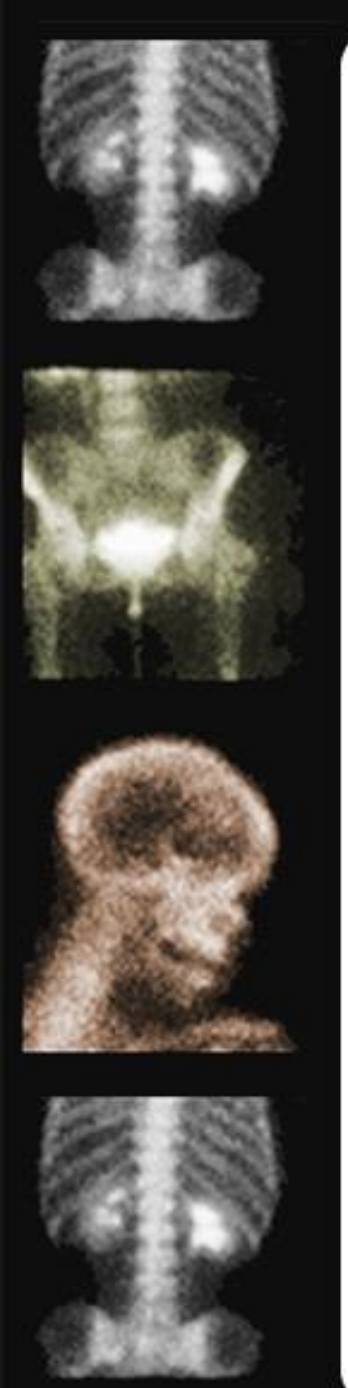


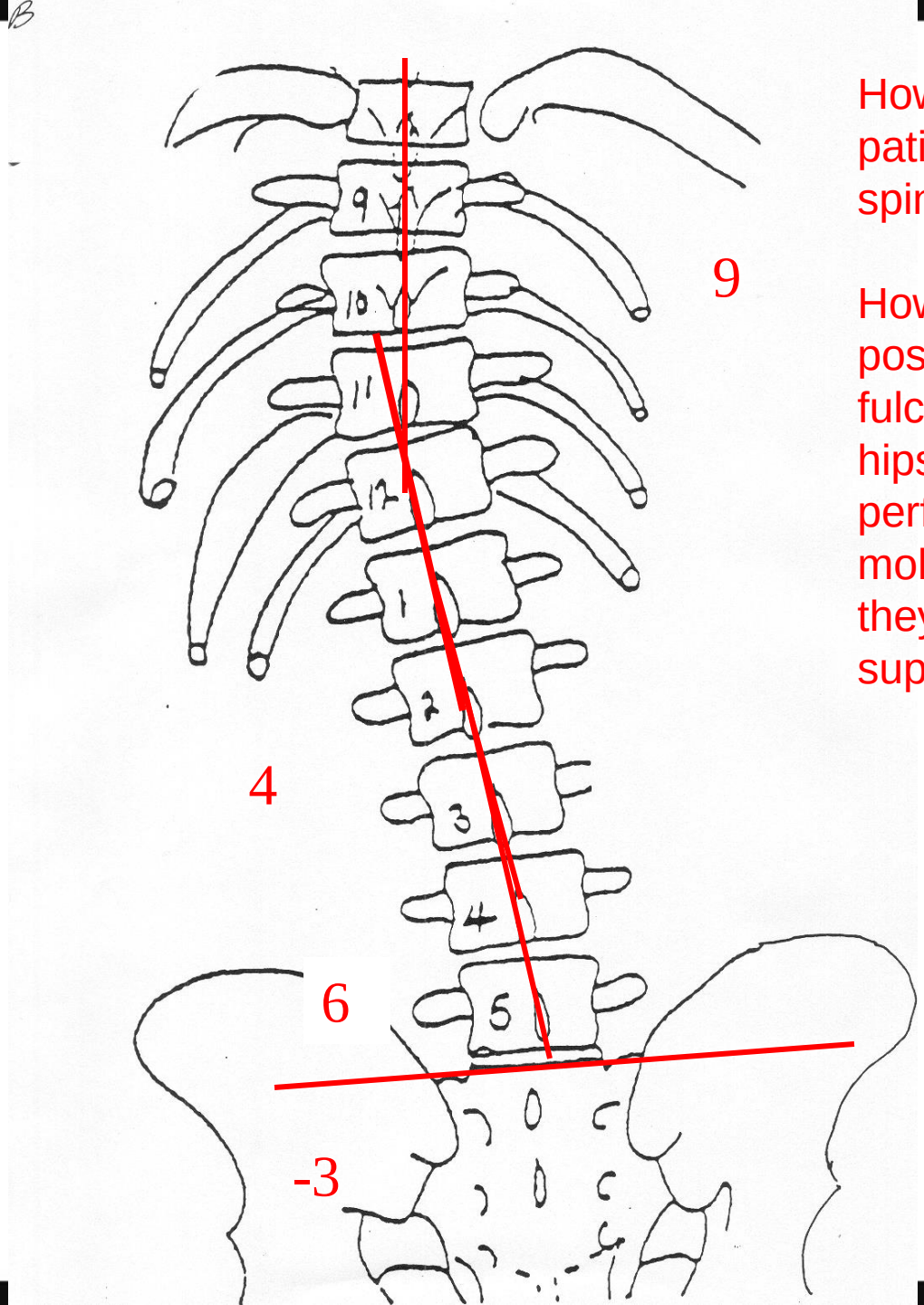
What specific spinal isometric exercises should be prescribed for this patient?

The Leg Drag can be done on the RIGHT with no fulcrum (this is an un-compensated spine).

Leg Raise on the LEFT (pt lying on right side).

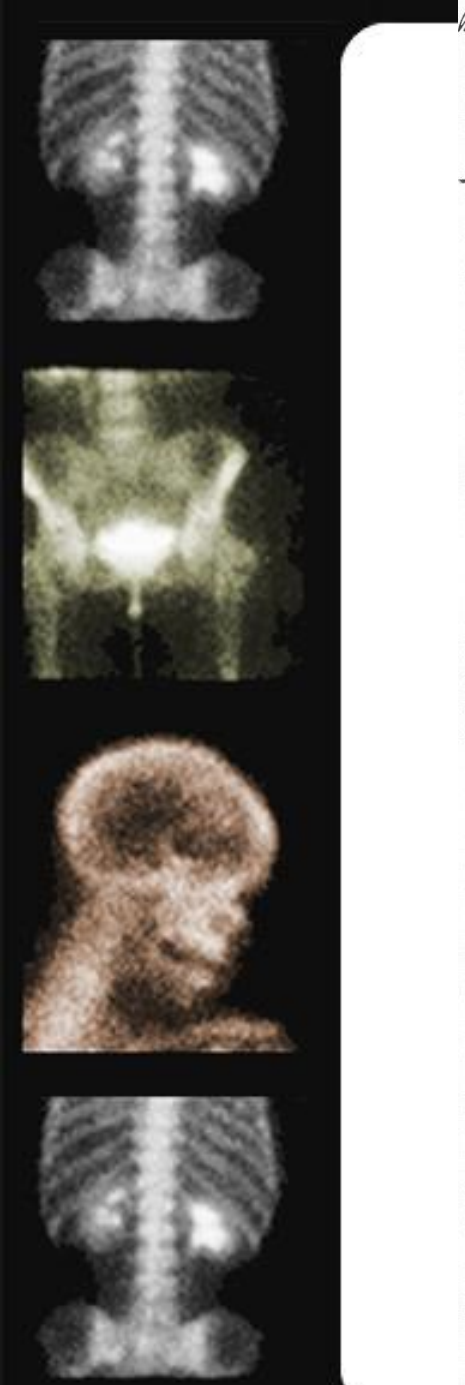
LB Ball exercise on the right.

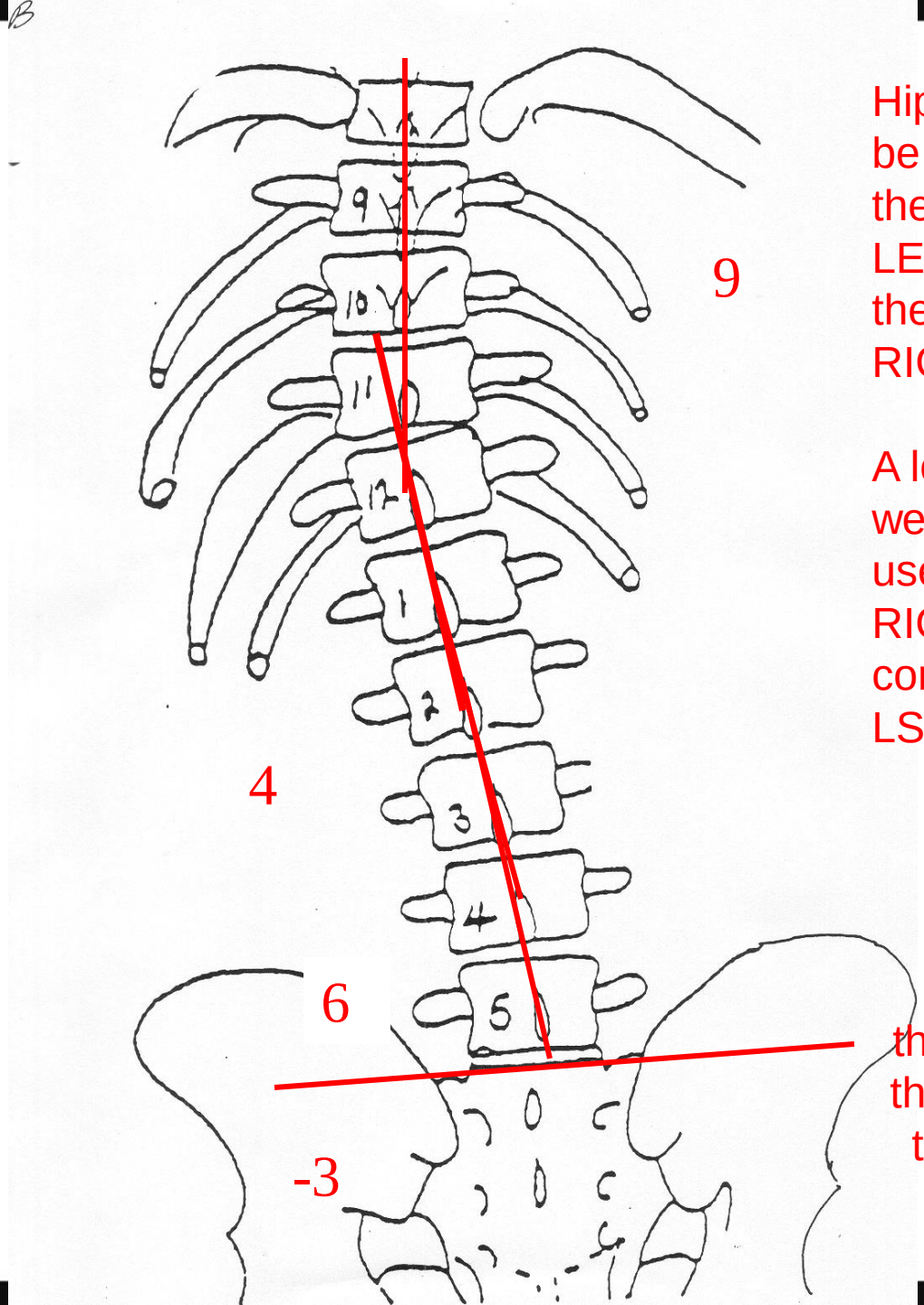




How should this patient wear their spinal weights?

How should they position the fulcrums on their hips when they perform spinal molding? Should they be prone or supine?

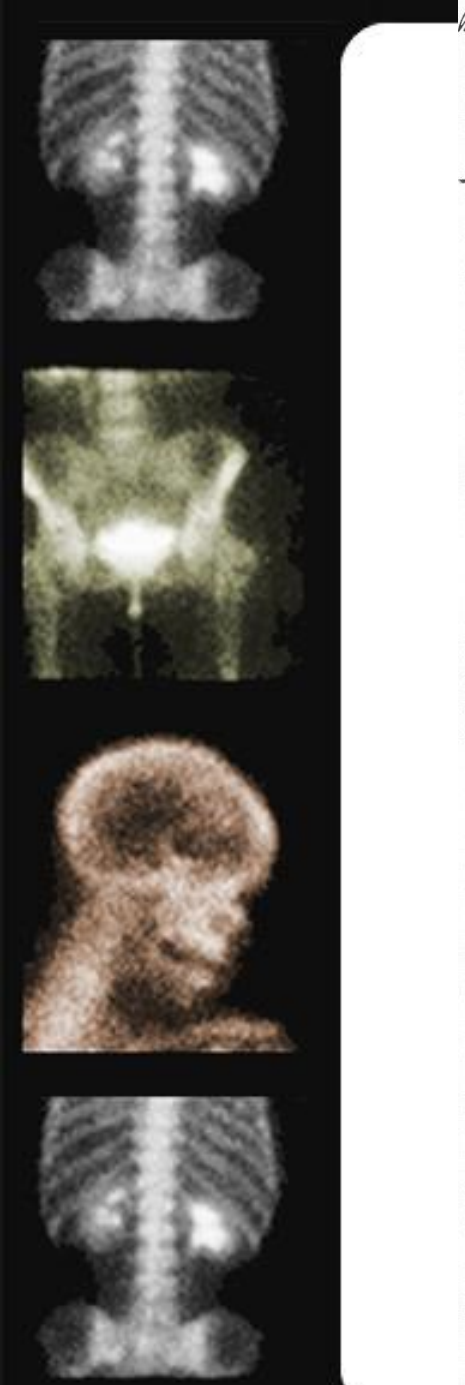


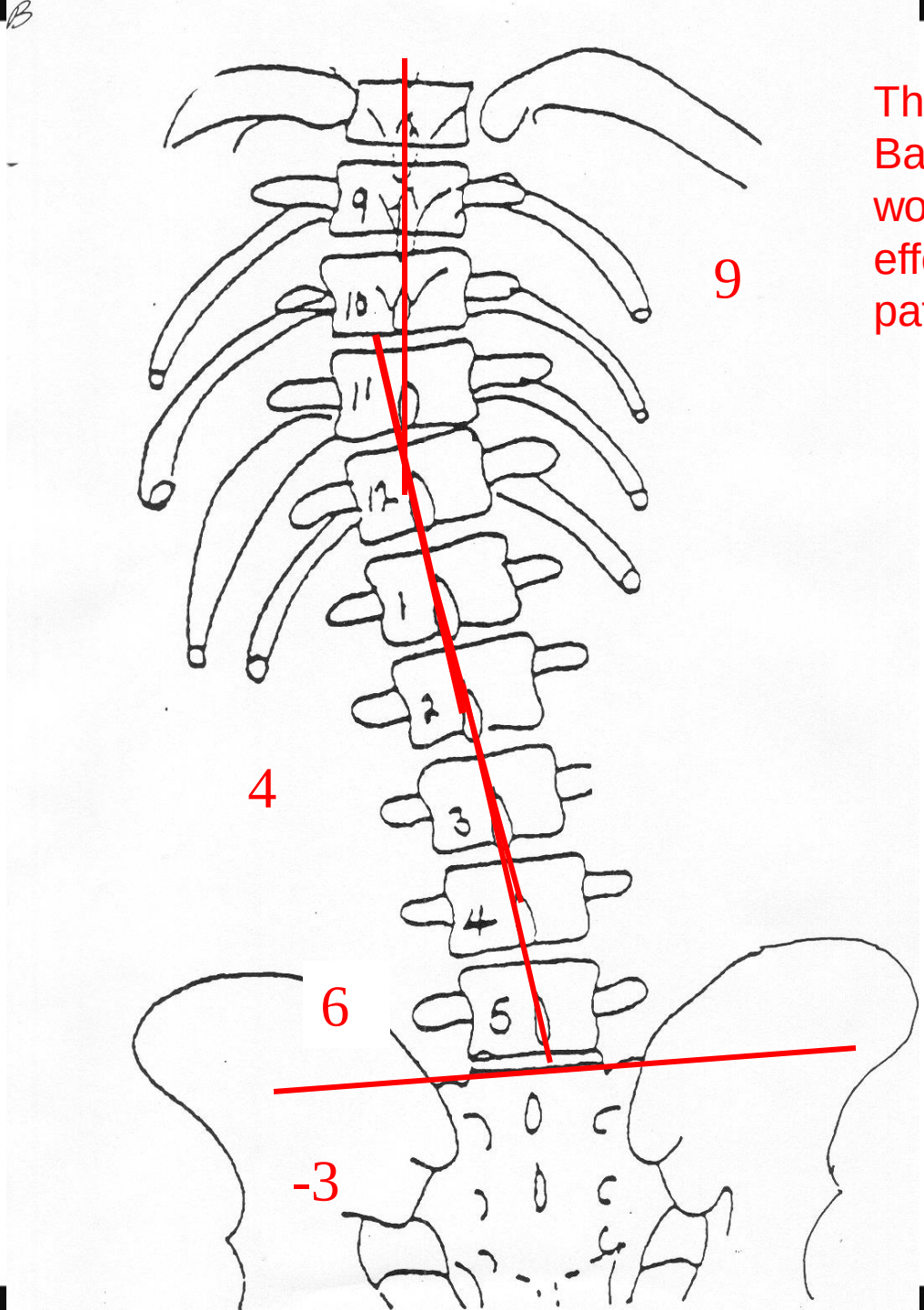


Hip weights should be positioned on the BACK of the LEFT hip, and on the FRONT of the RIGHT hip.

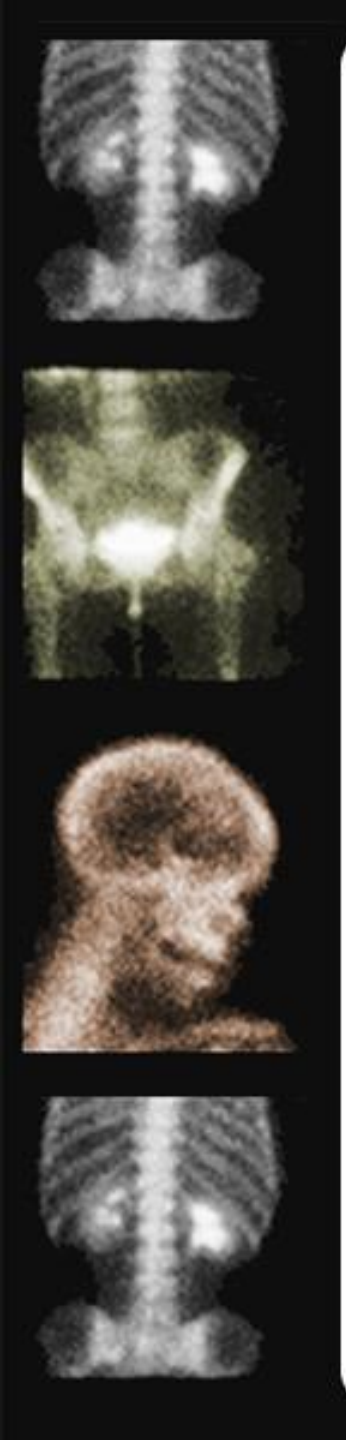
A low shoulder weight can be used on the RIGHT side to correct the LD & LS angles.

The spinal fulcrums will be positioned under the iliac crest on the left, and under the femur head on the right, with the patient SUPINE.



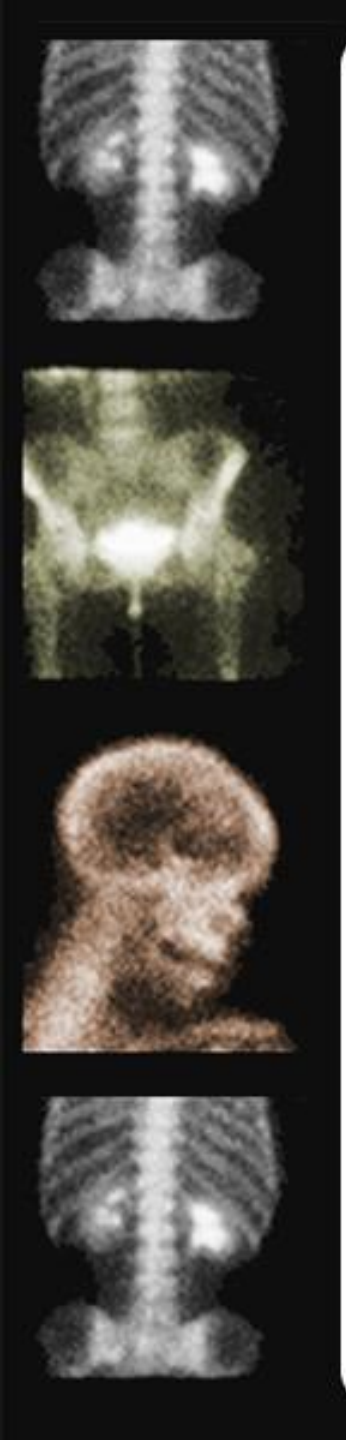


The new QL Low Back exercise would also be very effective with this patient.



Lumbar & Pelvic Adjusting Overview

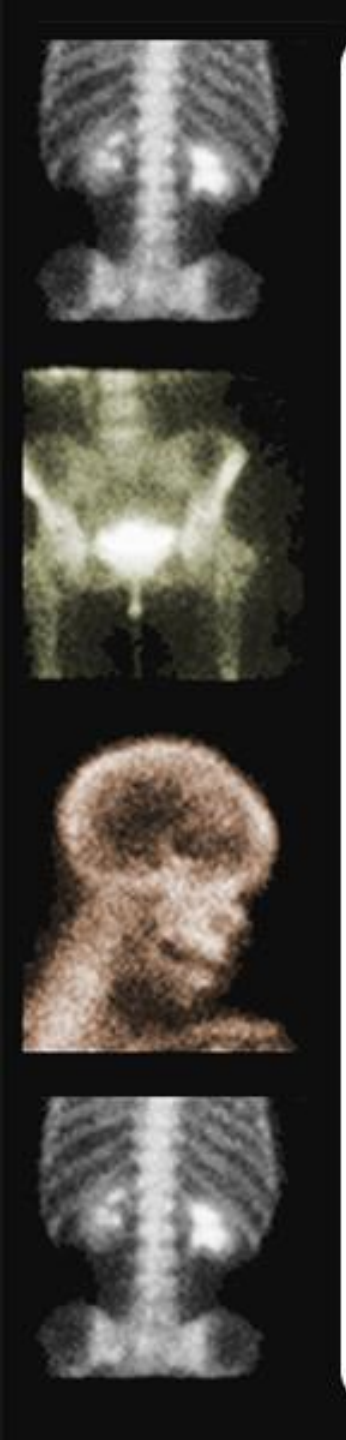
Adjustment	Purpose	LOC	SCP	Caveats
#1	Acute LS, Posterior SB	Down the femur	Sacral base	Do not twist the spine
#1A	Acute LS, Anterior SB	Down the femur	S-3 tubercle	Do not twist the spine
#2	Correct L5 Retro/Spondy	P-A, I-S	Apex (retro), S3 (spondy)	Correct C-spine first
#2A	Lumbar retro	P-A	Inferior aspect of spinous process	Correct C-spine first
#3	Obtuse LS, Posterior SB	I-S, to Lumbar Stress V	Sacral notch	Uncompensated spines ONLY
#4	Acute LD angle	I-S, L-M	Inferior to LSV	Uncompensated/ Over-compensated spines ONLY
#5	L5 retro	P-A, slight I-S, as pt exhales	L5 spinous	Correct C-spine first
#5A	L5 retro, if L5 is tender	P-A, slight S-I, as pt exhales	Sacral apex	Contraindicated w/spondy
#12 Move	DLD/LD angles	P-A, slight I-S, as pt exhales	Spinous & transverse	Laterally flex the pelvis & legs for the LD/DLD angles
Sacral apex	Sacral Base Line	P-A, I-S	Sacral apex, bilateral	



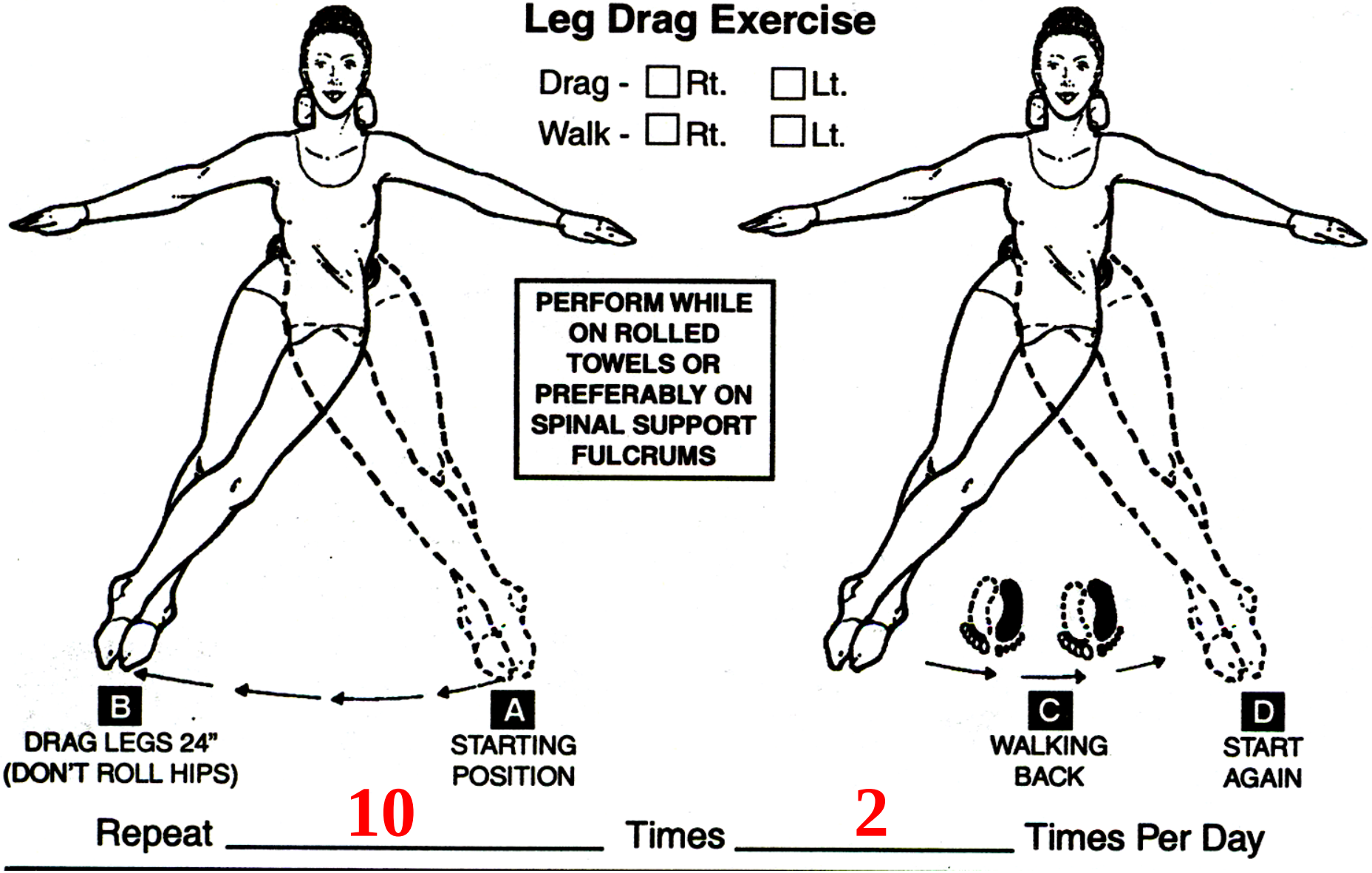
Diaphragm Pump

The doctor stands on the side of the LD or DLD angle.

A slow compression force is used as the patient inhales. This force is released quickly right as the patient begins to exhale. Increased force is utilized during each repetitive inhalation.
This is repeated until the area becomes mobile.
When the spine is pre-stressed to the maximum, have the patient take a small breath and apply a quick adjustive force.



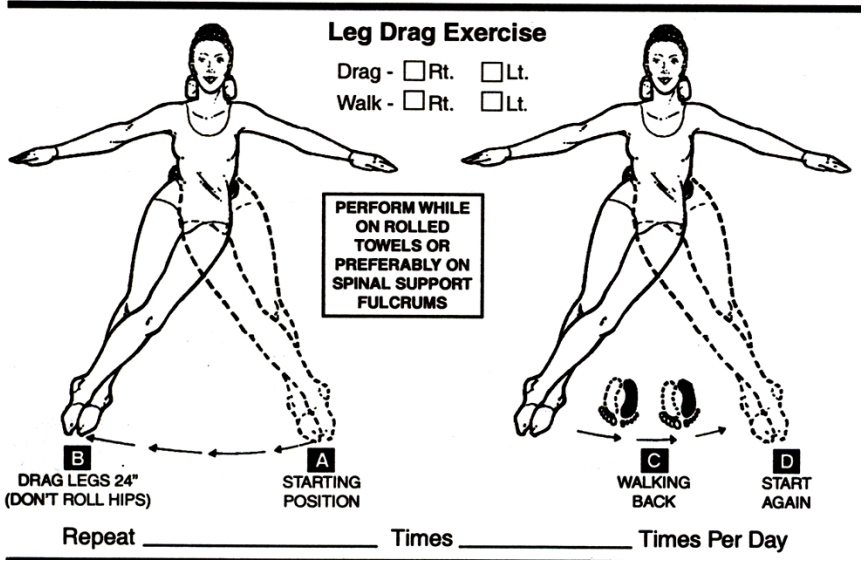
Specific Spinal Isometric Exercises for the Low Back

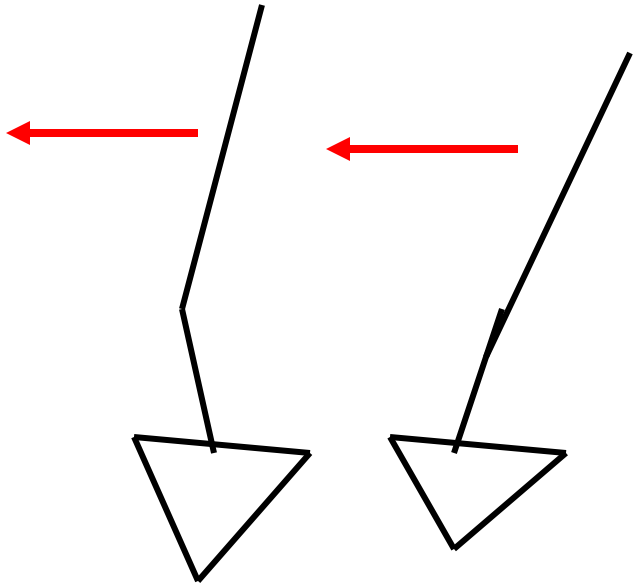


LUMBO DORSAL EXERCISE This exercise works the Quadratus Lumborum muscle on the side opposite the Lumbo-Dorsal angle.

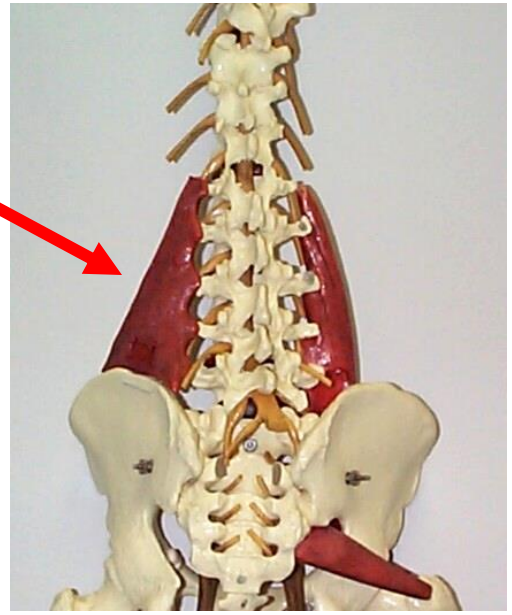
Leg Drag Exercise

- This exercise will help balance out the hips by strengthening the quadratus lumborum muscle. Chiropractors refer to the angle made by your spine and the high hip as your Lumbo-Dorsal (LD) angle; “lumbar” refers to your low back, and “dorsal” is the word chiropractors use for the middle of your back.
- This exercise helps to correct your LD angle.
- This exercise will be performed lying down, with a support under the neck. Most patients will have a support under the low back as well, but not everyone! Your doctor will instruct you on this.
- Place your arms outstretched along the floor to brace your upper torso & hips. Cross your ankles (alternate left over right, and right over left), and drag your legs one direction along the floor for only about a foot or two – do not let your hips roll off the floor! Then, walk your feet back over to the other side. Extend, cross the other leg on top, and repeat.
- This exercise will be done ten times, twice daily.





This works the Quadratus Lumborum muscle, which is the primary muscle responsible for lateral flexion of the lower trunk.



If the lumbar spine is compensated, use a rolled up towel as a fulcrum. If it is uncompensated, do not use the fulcrum.

The legs should only be moved 12 inches to one side to 12 inches to the other side. The hips should not roll and should remain flat on the floor or bed.

This exercise is done for the LD Angle. If there is NO LD Angle, the patient should NOT do this exercise.

QL Low Back Exercise (NEW EXERCISE**)**

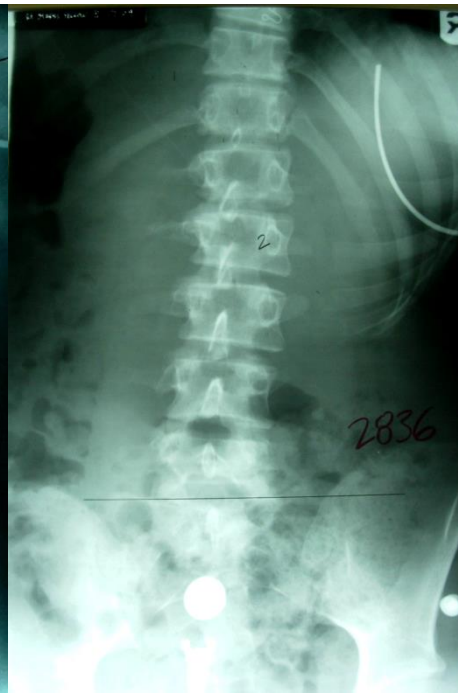
Practice this by lying with the side of the Lumbar Cobb Angle against the wall.
Use a Neck roll but NO Low Back roll.
Cross the ankle on the side of the anterior hip over the other ankle.
Block the posterior hip High and the anterior hip low.
Fold your arms over your chest.
Push the legs against the wall. The legs should NOT move!
Hold for 10 seconds, 10 times, twice a day.

You should feel the low back muscles tighten on the side you are pushing towards.

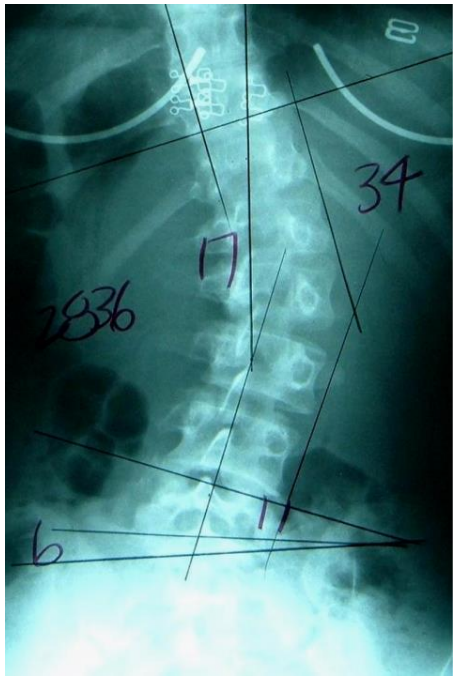
Once you feel these muscles working, you can do it on the bed, without the wall.

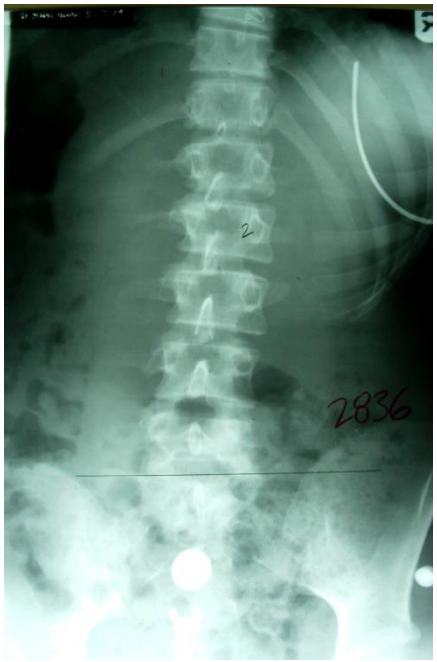
<u>Lateral Strap Exercise For a Cobb Angle</u> (**New Exercise**)

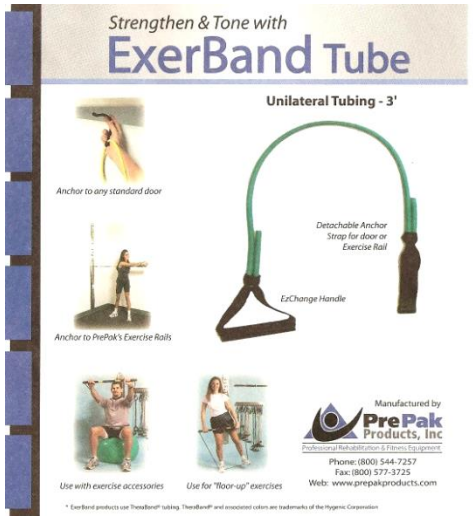
Anchor the strap under your foot (standing) or under a chair (sitting) and behind and over shoulder.
Lean away from the strap.
Hold for 60 seconds, 10 times.
Do this Sitting, bending opposite the side of the Lumbar Cobb Angle.
Standing, bending opposite the side of the Thoracic Cobb Angle.



Lateral Strap Exercise For a Cobb Angle





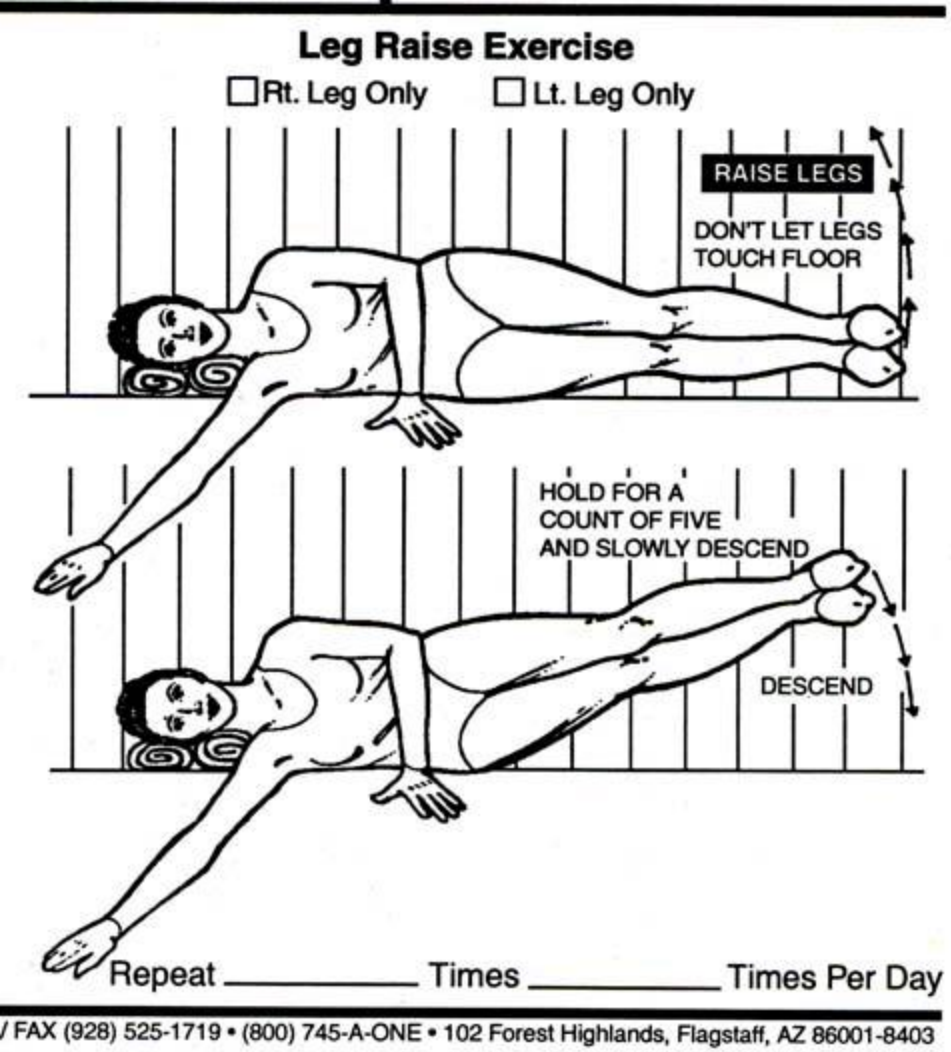


Use the BLACK Tubing.

Works Great on the VIBE

Just one more that I wanted to send you.
I'm loving the results. **Dr. Tim Ciolkosz**

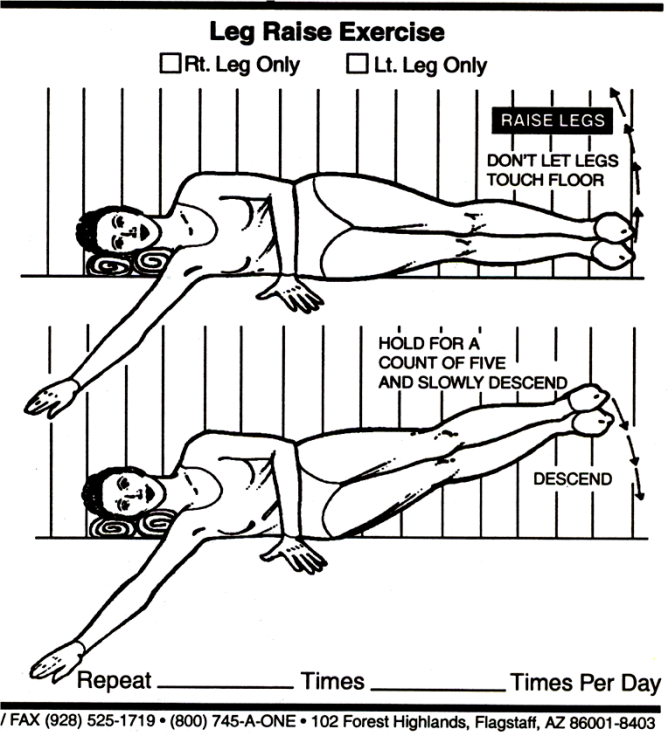
Right lateral bend with strap over left shoulder, pt holding with both hands at mid-sternum , pivoting at T7/8

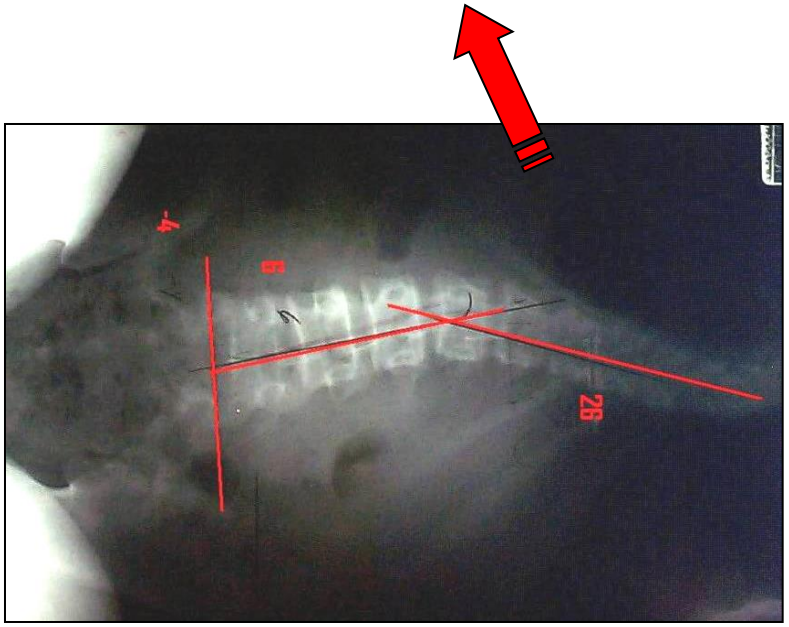


Leg Raise Exercise

A similar exercise to the Leg Drag Exercise, this exercise is performed while lying on your side.

It is extremely effective in patients (such as scoliosis patients) whose lumbar spines function as one unit (i.e., no LD angle).

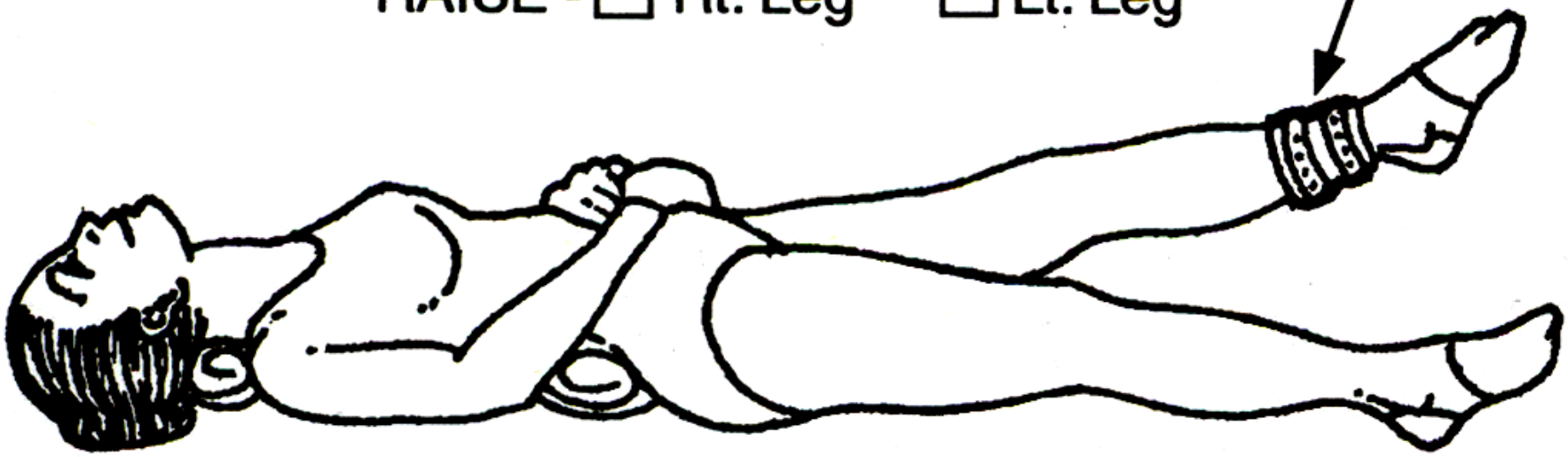




The Leg Raise exercise is extremely effective with scoliosis patients (resulting as it does in a reciprocal lever arm influence upon the thoracic spine), when the LS & LD spinal units function as one, and the pivot point is found at or above T12 transitioning into the DLD angle. In this example, the patient would lie on their right side and raise their legs up towards their left side. This is due to the fact that when the lumbar pivot point is at T12 or above (rather than below it, at L3), the Leg Raise functions differently and activates different muscle groups (most likely the latissimus dorsi & serratus rather than the quadratus lumborum).

Straight Leg Weighting Exercise

RAISE - ☐ Rt. Leg ☐ Lt. Leg



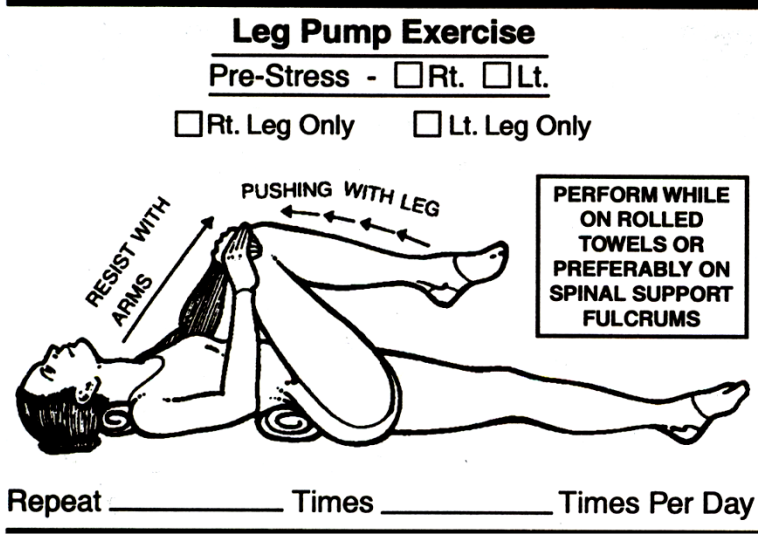
Repeat 10 Times 2 Times Per Day

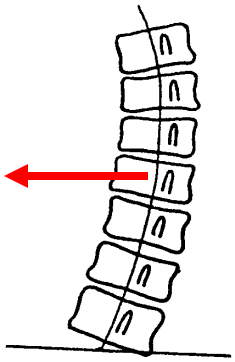
LEG LIFT EXERCISE

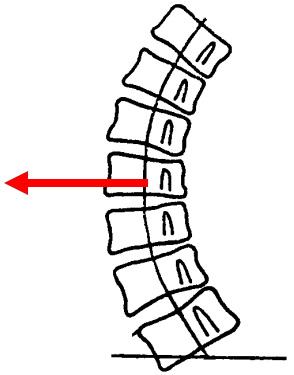
This works the Psoas muscle and pulls the spinouses into position.

Straight Leg Weighting Exercise

- The psoas (pronounced SO-az) muscle is very important in keeping your low back and hips in proper alignment. It is the muscle we use when we march and lift our knees up.
- One way to strengthen this muscle is by wrapping a weight (about 3 lbs.) around one ankle while lying on your back (with spinal supports), and lifting that leg about 6” off the ground. Your doctor will tell you which leg to lift.
- Hold this for 10 seconds, 10 times, 2/day.



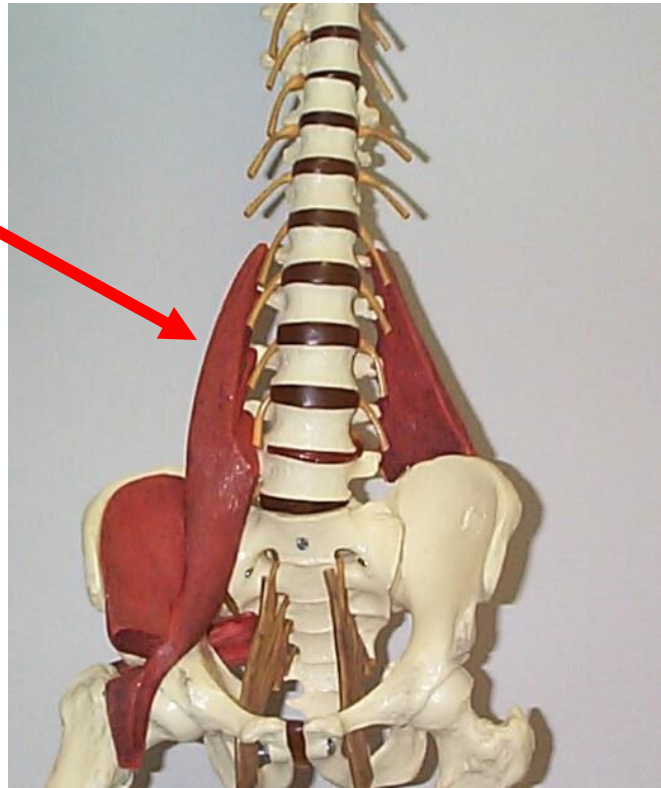




This exercises the Psoas muscle, which runs ipsilaterally from the spinouses of the lumbar spine to the lesser trochanter of the femur.

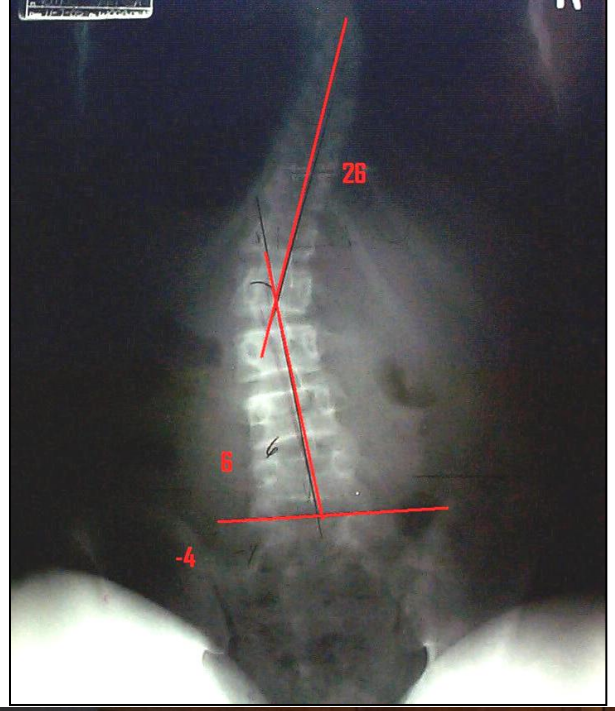
It will rotate the spinouses towards the side being exercised.

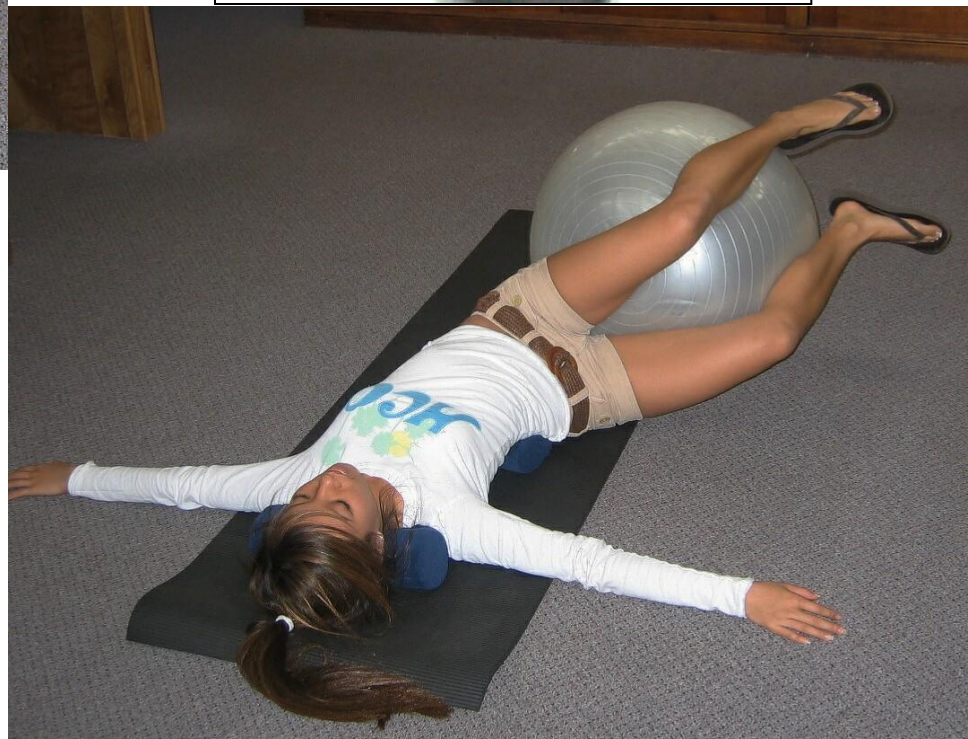
A rolled up towel or fulcrum should be placed in the low back.



Psoas Trigger Point Therapy

2” and medial and 2” inferior to the Anterior Superior Iliac Crest





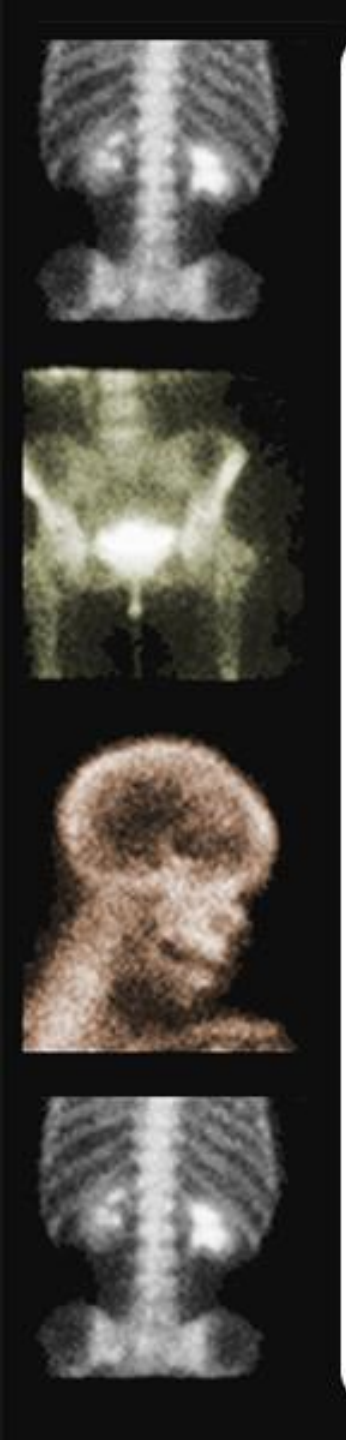
Low Back Ball Exercise

- **The purpose of this exercise is to de-rotate the low back and pelvis.**
- **Lie on your back <u>with the neck and low back supports.</u>**
- **Grab and hold the ball with your feet and thighs.**
- **Slowly lower the feet to the right towards the floor.**
- **Bring the feet back up to the starting position.**
- **<u>Do not go beyond the starting position.</u>**

Do this 100 times / once a day.

Low Back Ball Exercise

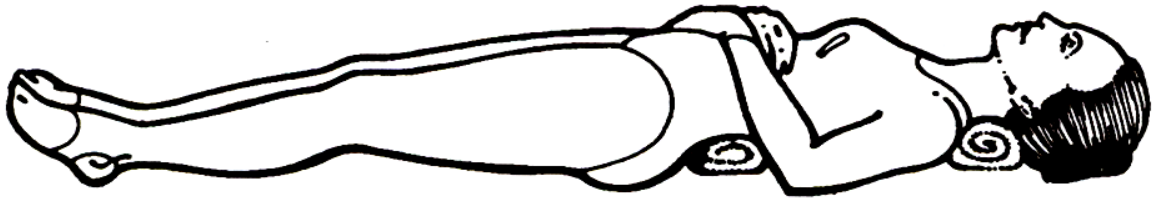
- This exercise requires the use of a therapeutic ball to assist the patient in working the muscles responsible for rotating the torso (serratus, obliques, etc.). It is primarily for scoliosis rehabilitation.
- First, lie down on your back on the floor with your spinal supports under your neck and low back. Grab and hold the ball with your thighs and feet. Slowly lower your feet away from the sideways curve in your low back (for example, if the scoliosis curves to the left in the low back, you will lower your feet to the right). Then, bring your feet back up to the starting position, ***but not any further.***
- This exercise should be done 100 times, once a day.



Spinal Molding Protocols

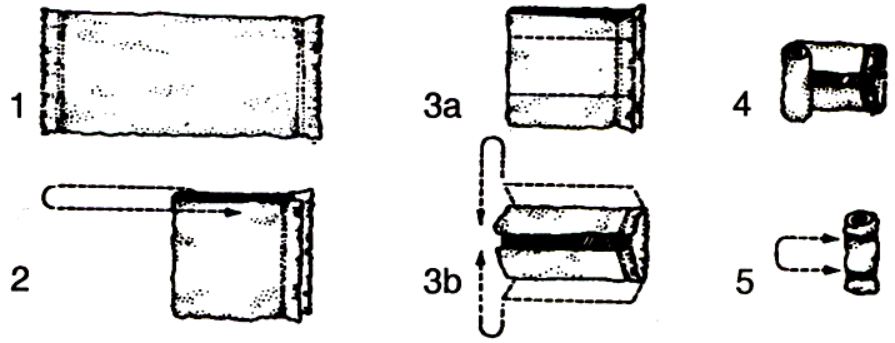
Lying On Spinal Supports

(For a minimum of 20 to 30 minutes)

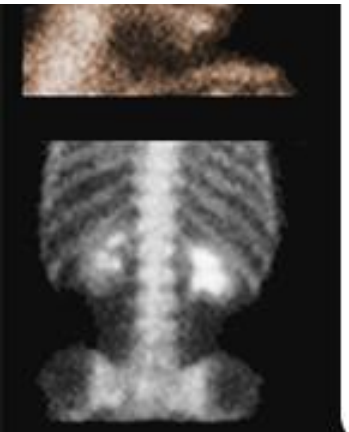


At Night – In Bed – Before Sleep

To do this exercise you will need two ordinary bath towels rolled up in a particular manner; one to place under the neck and one to place in the small of the back. **(In some cases special support blocks may be prescribed.)** The towel rolls should be 3½" to 4" in diameter. First fold the towel in half, then fold the sides in toward the center so that they nearly touch. Now, firmly roll the towel along the center line. When rolled, it should be a firm roll with a slight depression in the center. Place rubber bands around the ends to keep them rolled tightly. Re-roll your towels when needed and keep them next to your pillow. (You may want to take the lower back towel on long automobile or airplane trips and use it to help keep stress off the lower back.) Now you are ready to begin!



The knowledgeable patient today recognizes one unalterable fact about heath care. There are no miracles. There is only discipline!

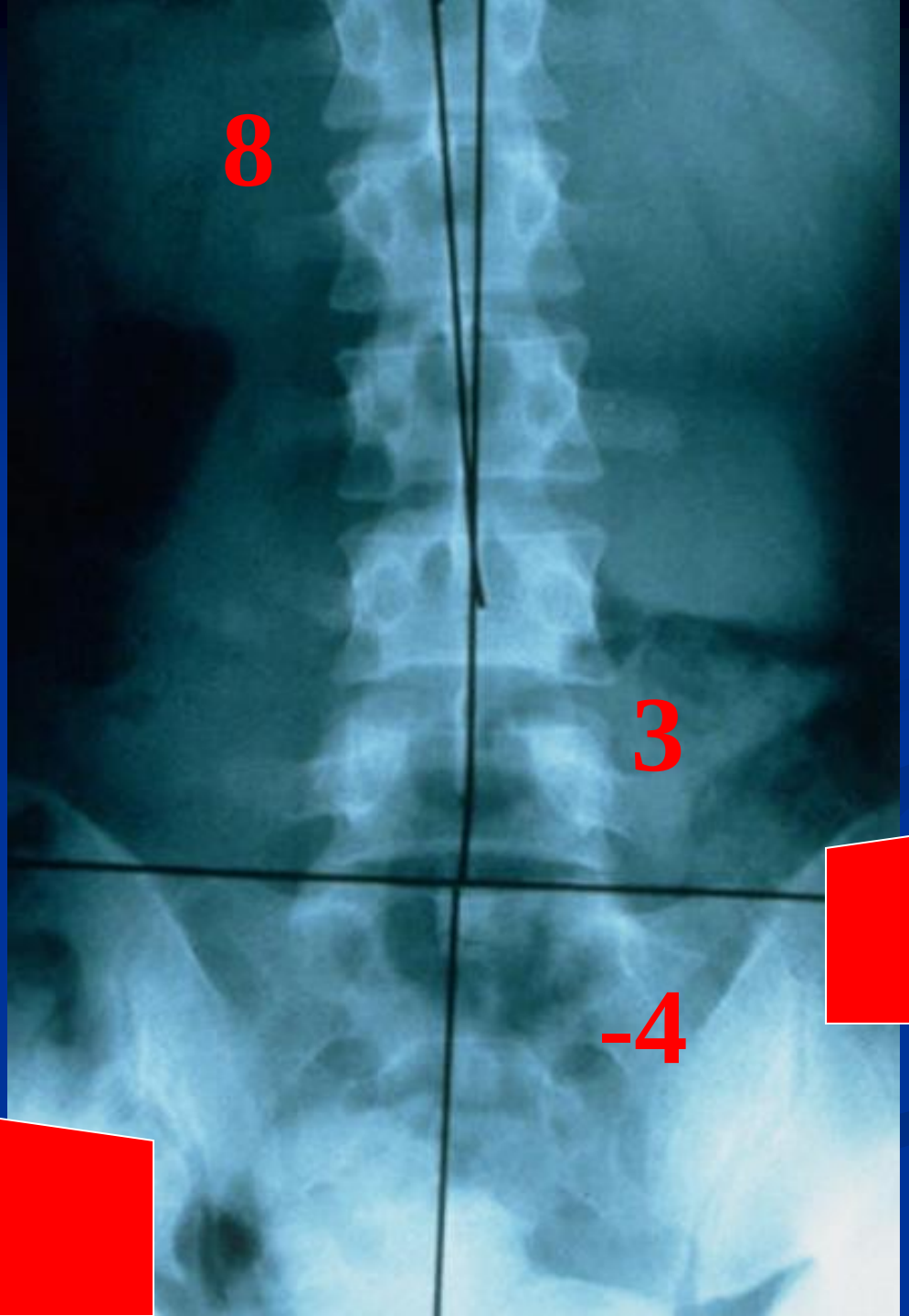


SPINAL MOLDING

at Night after Specific Spinal Isometric Exercises!

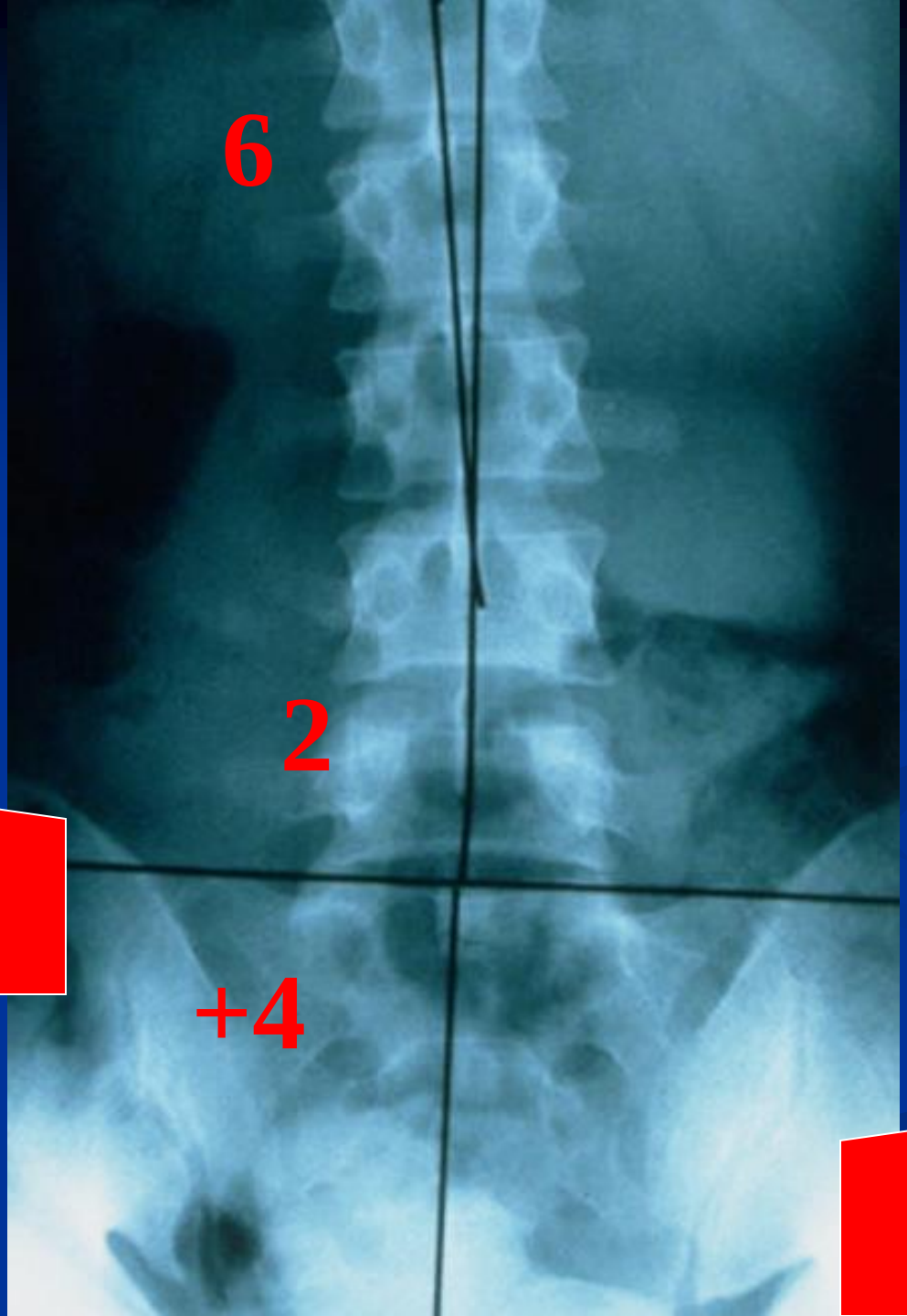
SUPINE

Posterior hip on LS side



PRONE

Anterior hip on LS side



Supine Blocking

Anterior Hip, Block Low

Posterior Hip, Block High

Leg on Posterior Hip side, Bent Out

Spinal Blocking

- The sacral apex is blocked for a retrolithesis or a spondylolithesis.