Pelvis

- Your first step is to put the line in place to represent the patient's base... the femurhead line.
- Draw this line by joining two dots placed at the highest point on each femur head.

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- With this in place you now have four goals to meet to complete the line analysis:

6

## 4 Goals:

71) PI and AS listing:

- These are determined by the heights of the innominates.


## Steps:

- Align the ruler with the femur-head line and
- roll it up to the top of each iliac crest, and draw a separate line above each one.
10


## Lines for lower ischium

- Invert the ruler, re-align it with the femur-head line and roll it down to the bottom of each ischium and draw separate lines on each.
- Draw a line across the lowest point on each ischium.
- The lines should be parallel to the femur head line
- Do not connect the dots!

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## Measuring what you've done

- Align the side edge of the ruler with one of the lines you just drew and measure the height of each innominate, recording it in the ischium or femur head.

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14

## OK, so what does that mean?

- "The 'PI' is high", i.e. the taller measurement is the PI side, while the shorter is the AS.
- In our example: 175 on the left, 170 on the right
- The Left is the "High" number, so it is the PI
- The Right is the "low" number, so it is the AS

16So, does everybody have a PI listing this way?

- No,
- The side listed is the side of the $L 5$ body rotation. If $L 5$ is not rotated, check the segments above.

17In Our example, the L5 is a body Right, so we'll list the right side

18Subscripts

- These help quantify the distortion
- They help you determine which component to focus on
- The subscript for the PI or AS portion is the difference between the two measurements.

19Goal \#2
Ex or In component
20 $\qquad$

21 $\qquad$
22 $\qquad$

## 2) Ex and In listing:

- align the "zero line" (center line perpendicular to leading edge) on your ruler with the femur head line

23 $\qquad$
24Center the ruler

- then roll the ruler until the edge is over the $S 1$ tubercle (or S2 if S1 is not visible).

25

26 $\qquad$

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28 $\qquad$ Mark the center of the pelvis

- Place a dot in the center of the symphysis. $\square$
$\qquad$ Measure the distortion
- Align your "zero line" with the line you just drew across the symphysis
- move the ruler until the zero scale intersects the dot.

31 $\qquad$

- Draw a line through the tubercle, and without moving the ruler, draw another line across the level of the pubic symphysis.
,Read and record the measurement
- it is the subscript for the In or Ex portion of the listing.
- The dot will be on the In side of the line ("dot the I")
- and the line will be on the Ex side of the symphysis.

33
343) Sacrum:

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## Landmarks

- Align the "zero line" on your ruler with the femur-head line and
- roll it to the outermost aspects of the sacrum:
- draw lines at these two locations.

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39 $\qquad$

## Measuring

- Align the "zero line" with the vertical centerline that was previously drawn
- roll it up until the zero scale intersects your two new lines.
- Read the measurements and record them near the most lateral aspects of each side of the sacrum.

40
41Interpreting the lines

- Here, "the wide side wins",
- i.e. the wide side has moved posteriorly.
- The difference between the two measurements is the subscript for the sacral listing.

42Sacral Inferiority

- Done by some folks to give more detail to the sacral listing

43When will this be invalid?

- If you wish to analyze the inferiority of the sacrum, first you need to see if the sacrum is consistent within itself.
- Begin this procedure by first drawing a "PLOTS" (Plane Line of the Sacrum).PLOTS Line
- To produce this line place dots where the superior articulating processes of S1 meet the ala of the sacrum.
- Join the two dots to form the PLOTS.

45
46 $\square$

## Sacral Foramen

- Next, place dots on the tops of each sacral foramen.
- Join the dots on adjacent foramina and compare them to the PLOTS.
- Do this by aligning the ruler with the PLOTS and rolling it down to compare with the foraminal lines you just drew.


## Interpretation:

- If they are not parallel, then the sacrum is inconsistent within itself, - and any inferiority should be ignored.Now what?
- If they are all parallel, then align your ruler with the femur head line,
- roll it up until it intersects the higher of the two PLOTS dots and
- draw a line over the lower one.
- Measure this distance (lower PLOTS dot to line you just drew)
- and use the measurement for the subscript of the "I" portion of the sacral listing

3-b) Coccyx:

- Observe the coccyx to see if there is deviation.
- List by the direction the tip of the coccyx is pointed.4) $M D / A D$ calculation:

51 $\square$ Measured Deficiency

- The MD (Measured Deficiency) is the amount of femur head "shortness" measured on the film with the patient standing
- Here' s how you do it:
- Align the ruler with either a grid-line or the lower edge of the film.

53 $\qquad$

54 $\qquad$

## - Roll it up until you intersect the higher of the two femur heads.

-Draw a line over the shorter of the two.

57 $\square$


## Measuring

- Next align your "zero line" with the femur head line and roll the ruler until the zero on that scale intersects the highest point on the femur head.
- Measure and record your "M.D." (measured deficiency).
- Calculate the appropriate A.D. (actual deficiency).
- You'll see this in it's own lecture
$\square$

