Sacrum diagnosis – Sacrum

**Possible diagnoses**

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Deep Sulcus</th>
<th>Posterior-Inferior ILA</th>
<th>L5 Rotation</th>
<th>Spring/Sphinx Test</th>
<th>Seated Flexion Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right rotation on a right axis (R on R forward sacral torsion/rotation)</td>
<td>Left</td>
<td>Right</td>
<td>Right rotation = sacral rotation; Left rotation = sacral torsion</td>
<td>Negative</td>
<td>Positive on the left</td>
</tr>
<tr>
<td>Left rotation on a left axis (L on L forward sacral torsion/rotation)</td>
<td>Right</td>
<td>Left</td>
<td>Left rotation = sacral rotation; Right rotation = sacral torsion</td>
<td>Negative</td>
<td>Positive on the right</td>
</tr>
<tr>
<td>Right rotation on a left axis (R on L backward sacral torsion/rotation)</td>
<td>Right</td>
<td>Left</td>
<td>Right rotation = sacral rotation; Left rotation = sacral torsion</td>
<td>Positive</td>
<td>Positive on the right</td>
</tr>
<tr>
<td>Left rotation on a right axis (L on R backward sacral torsion/rotation)</td>
<td>Left</td>
<td>Right</td>
<td>Left rotation = sacral rotation; Right rotation = sacral torsion</td>
<td>Positive</td>
<td>Positive on the left</td>
</tr>
<tr>
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</tr>
<tr>
<td>Unilateral sacral flexion</td>
<td>Same side as the posterior-inferior ILA and seated flexion test</td>
<td>Same side as the deep sulcus and seated flexion test</td>
<td>N/A</td>
<td>Negative</td>
<td>Positive on the side of the deep sulcus and posterior-inferior ILA (+ sign in image is for seated flexion test)</td>
</tr>
<tr>
<td>Unilateral sacral extension</td>
<td>Same side as the posterior-inferior ILA and opposite to the seated flexion test</td>
<td>Same side as deep sulcus and opposite to the seated flexion test</td>
<td>N/A</td>
<td>Positive</td>
<td>Positive opposite to the side of the deep sulcus and posterior-inferior ILA (+ sign in image is for seated flexion test)</td>
</tr>
<tr>
<td>Bilateral sacral flexion</td>
<td>Both are deep</td>
<td>Both ILAs are posterior-inferior</td>
<td>N/A</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Bilateral sacral extension</td>
<td>No deep sulcus</td>
<td>No posterior-</td>
<td>N/A</td>
<td>Positive</td>
<td>Negative</td>
</tr>
</tbody>
</table>
(both are shallow)  inferior ILA (both are anterior-superior)

Figure 1 - Seated flexion test

Figure 2 - Spring test

Figure 1 - Sphinx test

Related Anatomy:

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**Brief description**: To diagnosis the sacrum, several key pieces of information are needed. It is important to find the deep sacral sulcus, posterior-inferior ILA, determine the rotation of L5 vertebra, perform the spring or sphinx test and the seated flexion test. With these pieces of information, you will be able to diagnosis the sacrum as either a sacral rotation or torsion, unilateral flexion or extension and bilateral sacral flexion or extension.

**Look (observation)**: Observe for any trauma or gait issues while the patient is walking.

**Feel (palpation)**: 

**Physician position**: Standing

**Patient position**: Prone (except for the seated flexion test where the patient is seated)

**Hand positioning**: You hand placement will vary based on what you are examining. Place your hands over the lumbosacral junction for the spring test, on the sacral sulci to determine the deep sulcus, on the ILAs bilaterally to determine the posterior-inferior ILA, and on both the sulci and ILAs for the sphinx test.

**Technique**:

1. Begin by finding the PSISs by following the iliac crests posteriorly.
2. From the PSISs, move slightly medial and superior (about 1cm) so that you are now in the sacral sulci.
3. Place pressure on the sulci and determine if there is a deep sulcus.
4. Now work your way down to the ILAs and determine if there is a posterior-inferior ILA.
5. Next, perform the spring test by first finding the lumbosacral junction Place the heel of your hand so that it is over the space between the sacral base and L5 vertebra (lumbosacral junction). Place your other and on top of the hand directly on the junction. Using the top hand, push down on the junction in order to perform the spring test. If there is spring, the test is negative and if you cannot spring, it is a positive test.
6. To perform the sphinx test, place each index finger in a sacral sulcus and place each thumb on an ILA. Now have the patient extend their lumbar spine by getting up on their forearms from the prone position. The test is negative if the sulci get deeper and ILAs become more posterior with lumbar extension. It is positive if this does not occur.
7. Finally, perform the seated flexion test by having the patient sit with their feet on the floor. Now find the PSISs and move slightly inferior to them. While keeping one finger below each PSIS, have the patient bend forward with their hands between their legs. Make sure you are eye level and observe which of your fingers move first and furthest. The side that moves first and furthest will be the side of the positive seated flexion test.
8. To put together all the information you have gathered, use the table provided.

**Move (motion testing)**:

**Active motion testing**: N/A

**Passive motion testing**:

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1. Test the motion of the sacrum with respiration by placing your hands over the sacrum. Your bottom hand should lay over the entire sacrum with the heel of your hand at the sacral base and fingers pointing towards the apex, then place you other hand over the bottom hand in the opposite direction.

2. Feel for the movement of the sacrum with inhalation and exhalation. During inhalation, the sacral base should move posteriorly and the apex should move anteriorly. During exhalation the sacral base will move anteriorly while the apex moves posteriorly.