The reader is referred to F. L. Mitchell, Jr.’s “The Muscle Energy Manual” to review the functions and relationships of the pelvis, sacrum and lumbar spine mechanics. It is the purpose of this author to guide you through a sequential examination, which was taught by Fred Mitchell, D. O. Sr. in the few tutorials he taught. To my knowledge, he was one of the first to describe the use of the Standing and Seated Flexion Tests to differentiate the diagnosis of Sacro-Iliac vs. Ilio-Sacral dysfunctions.

The **Standing Flexion Test** is performed by having the patient stand with the feet acetabular-distance apart, toes pointing the same direction when at ease. The operator places the pads of his thumbs on the inferior slope of the Posterior Superior Iliac Spines (PSIS), and asks the patient to bend forward (without bending knees) until he reaches the physiologic limit of flexion. The operator measures the degrees of permitted trunk flexion after he has noted whether one PSIS has moved more cephalad than the other. If so, this is called a positive standing flexion test.

One might ask why the side that moves the most is the restricted or positive side. The pelvis is functionally a part of the lower extremities, while the sacrum is a part of the spine and it should move freely cephalad with the rest of the spine. However, if there is a restriction in the joint, the sacrum will cause the pelvis to be “picked up” and move cephalad with the sacrum.

Fred Sr. also examined the lumbar (L) and thoracic (T) spine (up to about T4) for ERS dysfunctions while the patient was bent forward, and later compared standing with seated ERS dysfunctions. I mark L and T ERS dysfunctions with a short ink market the level of the spinous process.

The **Seated Flexion Test** is performed by having the patient sit on a level, low stool with feet flat on the floor, with the knees bent 90 degrees, and the feet shoulder-width apart. When the patient is asked to bend forward, he is asked to place his flexed elbows between his legs, and the operator monitors the PSIS to see if one side moves more cephalad than the other.

The interpretation of these tests differentiates whether the etiology is in the spine or in the ilium or lower extremities. If both PSIS move equally, that is a negative standing flexion test. A positive standing flexion test with a negative seated test is diagnosed as ilio-sacral, i.e. the problem is in the lower extremity. If there is a negative standing flexion test and a positive seated flexion test, it is diagnosed as sacro-iliac. If both the standing
and seated flexion tests are positive, there may be both sacro-iliac and ilio-sacral dysfunctions.

The patient now lies on his back so that the following structures may be evaluated:

**Medial malleoli:** the operator places thumbs under the inferior slopes of the MM, looking midway between the 2 sides with central vision, using peripheral vision to compare the two sides.

**Tibial tuberosities** may also be compared to determine if one higher than the other.

**Pubic Symphysis** heights are compared by rolling the middle fingers over the rim of the pubes. Which side is dysfunctional is determined by which side had the positive flexion test.

**Anterior Superior Iliac Spines** are compared for anterior-inferior position or posterior-superior position. One side may be rotated anterior & inferior, while the other side is the opposite. If you have had negative flexion tests, the Compression Test has been very helpful to me.

**Pelvic Compression Test:** I was taught this test when I was on the faculty at Kirksville, and I find it even more discriminatory than the Flexion Tests in determining SI restriction than the Flexion Tests. The operator places thenar eminences of each hand just caudad to the greater trochanters. In turn each hand checks SI motion by placing an oblique force toward the umbilicus, first taking out the slack of motion, then doing a short springing motion to determine if there is restriction. He then does the same on the opposite side and compares findings. This is helpful in determining whether the patient has a right anterior or left posterior innominate.

At this time I would usually continue the exam by evaluating rib cage function; however we shall continue with the prone examination.

The patient is asked to lie on his abdomen, with heels slightly rolled out. The operator stands on his dominant eye side of the table, and locates the inferior lateral angles of the sacrum by gently resting a palm over the coccygeal area, noting about where the caudad surface of the sacrum would be. The Inferior Lateral Angle of S-5 is evaluated for which one is caudad and posterior. This is easiest done by having thumbnails facing each other as you gently slide the thumbs anterior until you feel the sharp ridge of the ILA; note which side is caudad, then move the pads of the thumbs up over the posterior surface to determine which side is posterior. Posterior and “inferior” always occur together.
The Sacral Sulcus (SS) is next evaluated for depth by placing thumbs on the posterior surface of the Posterior Superior Iliac Spine (PSIS); then the operator simply bends the DIP of the thumb to get into the SS. This judgment is a “feeler” (as Fred used to say), so close your eyes to determine which side is deepest. (You may be able to see a variation also.)

Sacral diagnoses are made from the ILA and SS findings.

If the left SS is deep, and the ILA is posterior and inferior, it is a unilateral flexed sacrum. Some call it a shear. (There will be a separate description of the treatment for a flexed sacrum.)

If the left SS is deep and the right ILA is caudal and inferior, there is a sacral torsion; and the reverse is true with opposite side findings. However, you will not know whether it is a forward or backward torsion until you have examined and treated the lumbar dysfunction(s). Then the sacral findings need to be rechecked to see what the final diagnosis is. In my practice, and in that of Paul Kimberly, D. O., I rarely find that a sacral torsion remains to be treated if the sequence of treatment is treating the lumbers before re-evaluating the sacrum and making a final sacral diagnosis.

The patient is then asked to get up on elbows, with elbows under the shoulders, and level with each other. The operator now moves the tufts of his thumbs about 45 degrees medial and cephalad to be over the transverse process of L-5, snug against the spinous process. In turn he takes out the rotation slack on one side, then does a short springing; then compares with the opposite side to see which side will not rotate. The most common diagnosis for L-5 is restriction on right rotation, so the diagnosis would be FRSr. Each lumbar and thoracic vertebra is checked in the same way up to about T-4. T 1-3 can usually be examined and treated in the seated position.

Fred Mitchell, Sr. was adamant that all lumbers be treated before the sacrum was again diagnosed. Findings usually change, or disappear, after lumbers are corrected. It is only then that he thought it appropriate to treat the sacrum.

Then it is time to have the patient supine, check the position of the pelvis, and re-check the compression test after the pelvis is corrected.

There is a separate paper on the diagnosis and treatment of the Thoracic Spine.

Sara E. Sutton, D. O., FAAO

7/25/13