Lower Back Evaluation Protocol; Finding the Sources of Back Pain

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This article outlines an exam sequence for assessment of the lower back. I believe the best results come when you really know what is wrong with the patient, and when your treatment is focused rather than general. Patients with a long-standing problem have layers of other problems that need to be unraveled.

I'll outline a step-by-step exam protocol here. You can use all or parts of this sequence. This is not a comprehensive low back exam. I describe functional examination tests, particularly tests most chiropractors are not that familiar with. I have left out many standard orthopedic tests that all of us know. I have referenced links to more detailed articles for each step.

Standing Exam

1. *Standing hip flexion:* This test is a variation on Gillet's basic marching test. Barbara Hungerford came up with this interpretation.[1,2] Start with the patient standing, with your left thumb on the right sacral base and your right thumb on the inferior aspect of the PSIS. Have the patient lift their bent left leg just a few inches up by flexing their left hip. Watch what happens to your thumbs. If the right thumb appears to move superior or rotate anterior, its means the right SI joint is unstable while bearing weight. Repeat, with your thumbs assessing the left SI while the patient lifts the right leg. While doing this, note how the patient moves. Can they stand easily on one leg or the other? Do they shift laterally as they lift one leg or the other? A positive test strongly indicates abnormal motor control. Positive findings on this test can lead you to the core stabilization muscles for rehab, or to various tendons and ligaments that are not functional, and may need deep-tissue work or instrument-assisted frictional massage.
2. *Visual postural exam:* Is the pelvis level? Are the greater trochanters level? Is there scoliosis?
3. *Standing scan:* You can quickly scan the spine while the patient is standing. This is a very light, gentle palpation, just moving down the spine, first on one side and then on the other. Use your intuitive "listening" skills, seeing what area attracts you, and feel for abnormal tissue tensions that are on the surface.[3] You are not really motion palpating, just assessing what the surface has to tell you.
4. *Low back range of motion:* Does flexion hurt the lower back, increase leg pain or peripheralize leg symptoms? This could indicate discogenic pain or SI pain, and

gives you a beginning of a McKenzie-like positional assessment. Does extension or oblique extension (Kemp's) cause low back pain, or cause or increased leg pain? Both extension and Kemp's can indicate a facet jamming, or can be positive for SI or discogenic pain. None of these tests is diagnostic in and of itself, but all of them are quick, add to your information database, and give you a reality check; something to go back to after the adjustment to see if you have made substantial change.

Sitting Exam

5. *Sitting lumbar motion palpation:* This is for motion deficit and for tenderness.[4] With the patient sitting, you sit behind them. You can do basic motion palpation of the lumbar spine in this position. I prefer to combine motion assessment with tenderness assessment. If you've followed the literature, you know that examination for tenderness is a more reproducible finding than motion testing for fixation. So, combine tenderness testing with motion testing for increased accuracy. As you motion test the R L5 facet into combined extension with left lateral flexion, does this cause discomfort? If so, test the same facet in the opposite direction, into flexion with left lateral flexion. Does this cause the same discomfort? You usually will feel that the more stuck direction also increases the tenderness – the patient's experience of discomfort to pressure directly over the facet you are testing. Slightly change your active hand position in testing flexion vs. testing extension. For extension testing, you are slightly superior to the facet, pushing anterior-inferior. For flexion testing, you are slightly inferior to the facet, pushing anterior-superior as you test into flexion. If you are looking for tenderness, you need to push with moderate force toward the barrier.
6. *Sitting coccyx evaluation for tenderness:*[5] Have the patient bend forward while sitting, and slide your index finger further forward in the midline. As they come back out of flexion, the coccyx will become more apparent to your finger. Check both the tip of the coccyx and the sacrococcygeal junction for tenderness. As the coccyx is almost always stuck forward, it's hard to get a sense of motion from the outside. Tenderness here can indicate coccygeal subluxation and dural tension. Move your active hand slightly laterally, on one side and then the other, to test for abnormal tensions and tenderness of the sacrotuberous (ST) ligaments. The ST ligaments are under increased tension in the sitting position.

Supine Tests

7. *Positional assessment of ASISs and leg length:* The patient lies supine. You can visually check both their leg length and the positioning of their ASISs. Look particularly for saggital rotation, for unleveling of the pelvis.
8. *Motion testing the sacroiliac joints for mobility and for listings:*[6] You can motion test the SI in several ways in this position. First, push through the ASIS with the palm of your hand, in line with the posterior SI joint. Stand on the right side of the patient and push with your right hand to test the patient's left SI, and then use your left hand to test the right SI. The push is posterior medial. You can get a

sense of hypo- or hypermobility with this test. Note that you are attempting to feel for motion at the sacroiliac joint, several inches away from your pushing hand; this is a skill that takes awhile to develop. You also can test for internal or external flare patterns here.[7] Next, look for a vertical shearing pattern, an upslip/downslip,[6] whereby all of the landmarks are shifted vertically. If you have indications of upslip/downslip, you'll need to complete this assessment with the patient prone.

9. *My favorite SI motion test:*[8] Another passive mobility test starts with the patient supine in a bent-leg position, with both feet flat on the table. I illustrated this in my recent article on SI instability. You slip your arm under the bent leg on the side you are standing on and rest your hand on the top of the opposite knee. Use your whole body, shifting toward the patient's feet, using the leverage of the patient's bent knee on the side you are standing to open the joint. You need to switch sides of the table to test the opposite side properly. I like this test because it effectively levers open the SI joint. Your positive findings will be hypo- or hypermobility on either side.
10. *Marching test:* Supine single-leg lift, with knees bent;[2] this is a variation of the active straight-leg raise. While the patient is supine with both legs bent and standing, have them lift their left foot off the table 10 centimeters. The doctor and the patient simultaneously monitor for motion at both ASISs. As the patient lifts the bent left leg up, watch the L ASIS for saggital rotation in a posterior direction. Watch the whole pelvis for torque, with the right pelvis lifting slightly off the table. Next, test the opposite side, having the patient lift the right leg. This is basically a force closure test: Can the patient activate the muscles that stabilize the pelvis? As a follow-up exam, you can have the patient fire their core and see if they can perform this bent-leg lift more easily. Once they are truly stable, they will automatically fire their core muscles when they lift their leg, and won't need consciously to contract the musculature to stabilize themselves. I like that patients can monitor themselves. Along with the standing hip-flexion test, it gives you a good picture of functional core stability.
11. *Supine palpation of sacrum for tenderness:* The supine position is a surprisingly good position for palpating the SI joints for tenderness. Reach under with one hand and palpate four basic locations. Assess for tenderness at the upper right sacral base, the lower right sacral apex, the upper left sacral base and the lower left sacral apex.
12. *Anterior structures:* Using palpation and muscle length assessment, you can assess for abnormal tone of psoas and for hamstring or iliotibial band tightness here. Check the anterior muscles and fascia. This is a good point to check the inguinal ligaments, hip joint and groin.

Prone Tests

13. *Prone palpation of pelvic landmarks:* Use pressure over the same four sacral points noted in #10 above, while the patient is prone. Here, you are feeling for both tenderness and restriction. You'll also assess whether the sacrum and ischial tuberosities are level.

14. *Prone tendon and ligament palpation:*[9] Use firm pressure to assess whether the ligaments and tendons of the pelvis are tender or have abnormal tissue texture. Check the gluteus maximus and medius and piriformis origins in this position, as well as the iliolumbar ligaments and quadratus lumborum.
15. *Midline tenderness:*[10] Check for tenderness in the midline, in the interspinous spaces. If the patient has a substantial lumbar lordosis, you may need a bolster under their belly or blocks under the ASISs to accurately assess this. Firm digital pressure works well if there is significant inflammation here. This can indicate axial discogenic pain or dural tension.

Sidelying Exam

16. *Pelvic ligament palpation:*[9] Have the patient lying on their side, ideally with a bolster under their bent top leg. Their bottom leg is straight. Assess the lower sacroiliac and sacrotuberous ligaments with firm pressure for tenderness and laxity or abnormal tissue texture. This position opens up the lower pelvis, so it's ideal for evaluation of the sacrotuberous ligaments, and for assessment of the piriformis and quadratus femoris.

These 16 steps can be done relatively quickly and give you a great overview. If you can identify and differentiate sacroiliac, lumbar facet joint dysfunction, and midline/discogenic pain generators, know what tendons and ligaments are not working, and know who needs stabilization training, you will have a good sense of what the patient needs. The patient has the right to more than one problem, which may show up simultaneously or sequentially.

Note: The references below are primarily links to my previous *Dynamic Chiropractic* articles, in which I further describe the individual aspects of this exam protocol.

References

1. **www.amta.com.au/research.htm**; this site contains Barbara Hungerford's original research articles.
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8. **www.chiroweb.com/archives/24/21/09.html**. “Sacroiliac Instability: An Overview.” *Dynamic Chiropractic*, Oct. 12, 2006.
9. **www.chiroweb.com/archives/23/14/10.html**. “Sacroiliac Revisited: The Importance of Ligamentous Integrity.” *Dynamic Chiropractic*, July 2, 2005.
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