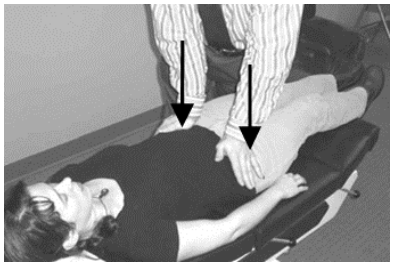
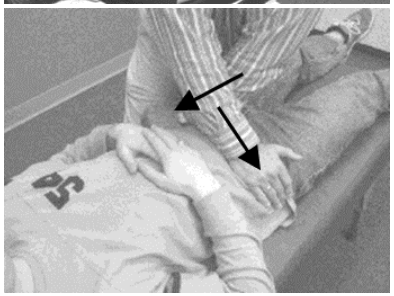
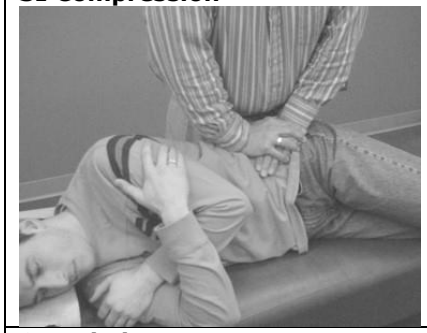
Laslett's Cluster/Cluster of 5 SI Tests

The following five tests can be performed and interpreted as a cluster. A positive likelihood ratio of 4.16 was calculated for a combination of three or more of the following tests: thigh thrust, SI distraction, SI compression, sacral thrust and Gaenslen's. When patients whose pain centralized or peripheralized with repetitive end range testing of the lumbar spine (based on McKenzie's assessment) were excluded, the positive likelihood ratio increased to potentially as high as 6.97. (Laslett 2005)

Test	Description	Interpretation	Reliability and Validity
Thigh Thrust 	With the patient supine, the patient's hip is flexed 90º and slightly adducted. The clinician then applies gradual downward pressure along the axis of the femur. If not painful, the clinician then adds a light thrust. The clinician may also place their hand underneath the sacrum, forming a ledge to accentuate the shear force across the SI joint.	Pain produced in the region of the sacroiliac joint suggests SI involvement. The test is thought to be most strongly positive for sacroiliac involvement if the pain provoked is localized to the area of the sacroiliac joint or the test reproduces the patient's familiar pain (Laslett 2005).	Sensitivity is reported to be 80% (Broadhurst 1998, Ostergaard 1994). A specificity of 100% was reported in one study (Broadhurst 1998) and 81% in another study on pregnant patients (Ostergaard 1994). The thigh thrust test had high inter-examiner agreement (0.70) and 99% specificity (Albert 2000)
SI Distraction  	With the patient supine, the clinician cups their hand over each ASIS either pressing directly P-A or crossing their arms and directing a downward and outward force.	A positive test either reproduces the patient's pain or is localized to either sacroiliac joint. A positive test suggests SI involvement.	A study of 48 patients with SIJ pain reported sensitivity= 69, specificity= 69, +LR= 2.20, -LR= 0.46 (Reinman 2016) One study using crossed arm pressure in patients with chronic low back pain reported Interexaminer reliability as *K*= 0.50. Other studies using posterior force on ASIS's in patients with low back pain found interexaminer reliability as *K*= 0.26-.069. (Cleland 2006)

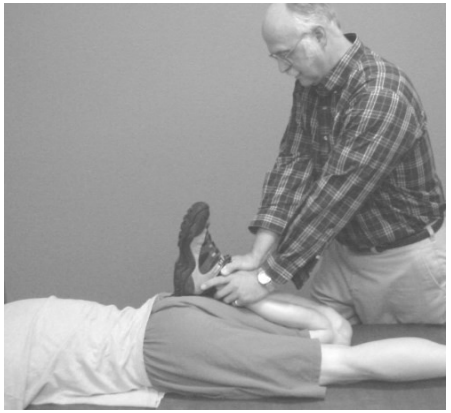
Test	Description	Interpretation	Reliability and Validity
SI Compression 	With the patient side lying with the hips and knees bent for stability, the clinician's hands are placed over the patient's ilium. Using body weight, a compressive force is then placed through the ilium directed towards the floor. It is important to maintain a broad contact and to stabilize the patient.	A positive test either reproduces the patient's pain or is localized to either sacroiliac joint. A positive suggests an SI involvement.	Studies have shown 7-19% sensitivity and 90-100% specificity (Rantanen 1989, Blower 1984, Russell 1981). In a study of 2269 pregnant women, the sacroiliac compression test scored among the highest in inter-examiner reliability with high kappa values (Albert 2000), but others have shown poor reliability.
Sacral Thrust 	With the patient prone, the clinician places the a hand on the sacrum at about the S2-3 level with fingers pointed up the spine. The other hand reinforces the contact hand. The clinician then leans onto the patient to take up any joint slack, and adds a light thrust posterior to anterior. Forces should be gradually applied at first before the thrust is added.	Pain in the region of the sacroiliac joint suggests SI involvement. The test is thought to be most strongly positive for sacroiliac involvement if the pain provoked is localized to the area of the SI joint or the test reproduces the patient's familiar pain (Laslett 2005).	Sensitivity has been reported for posterior pelvic pain to be 0.63 and specificity 0.75 with a PPV of 0.56, a NPV of 0.80, an LR+ of 2.5 and an LR- of 0.50 (Laslett 2005).
Gaenslen's Test 	With the patient supine near the edge of the table, the thigh of the side to be tested is suspended off the edge of the table. The patient is instructed to approximate the opposite knee to their chest and hold it with their hands in this position. The clinician stabilizes this knee while placing downward pressure on the knee of the leg off the edge of the table, creating end-range extension loading at the hip and SI joints.	The test is most strongly positive for SI involvement if the pain provoked is localized to the area of the sacroiliac joint or the test reproduces the patient's familiar low back or posterior pelvic pain (Laslett 2005).	

Other SI Tests

These tests may be included as part of an evaluation of a patient with low back or posterior pelvic pain. With the exception of the Active Straight Leg Raise (ASLR), these tests are less specific to the SI joints and may also be provocative for lumbar spine or hip lesions, therefore it is important to identify the location of symptoms that are provoked.

Although the ASLR has been tested primarily in pregnant or post-partum patients with posterior pelvic pain and has been found to be useful in that population, many clinicians use it routinely to help identify sacroiliac lesions in other patient population as well.

Test	Description	Interpretation	Reliability and Validity
Patrick's Test (FABER) 	With the patient supine, the leg being tested is placed in a figure-4 position with the heel resting just superior to the knee of the opposite leg. The Clinician exerts downward pressure on the thigh just above the knee, while stabilizing the opposite side ASIS (anterior superior iliac spine) with the other hand. Some practitioners have the patient place his/her hand over the ASIS for protection and comfort and exert additional stabilizing pressure over the patient's hand.	The test is most strongly positive for SI involvement if the pain provoked is localized to the area of the sacroiliac joint or the test reproduces the patient's familiar low back or posterior pelvic pain. (Albert 2000). Pain in the hip indicates a potential lesion of the hip joint.	Strednel (1997) and Deursen (1990) found the test to have poor reliability for sacroiliac lesions. For patients with hip pain, one study showed Patrick's test to have a *K*= 0.63 for intraexaminer reliability and another showed ICC= 0.90 for intraexaminer reliability for patients with suspected hip osteoarthritis. In a small study of patients with hip OA, interexaminer reliability was found to be *K*= 0.75 (Cleland 2016)
Hibb's 	Patient is prone. The clinician stabilizes the pelvis by placing one hand on the posterior ilium. The other hand grasps the patient's opposite ankle, flexes the knee to 90º, and internally rotates the hip.	The presence of pain elicited in the SI joint may be an indicator of a sacroiliac lesion. Pain elicited in the hip joint may indicate a hip lesion. Buttock pain may indicate sensitivity of the external rotators of the hip	Unknown
Yeoman's 	Patient is prone. The clinician stabilizes the SI joint with downward pressure and extends the leg at the hip with the knee flexed.	Local pain in the SI joint suggests an SI joint lesion. Lumbar pain suggests lumbar extension sensitivity or facet joint pathology. Pain or paresthesia in the anterior thigh suggests femoral nerve or upper lumbar nerve root irritation.	Unknown

Test	Description	Interpretation	Reliability and Validity
Nachlas 	Patient is prone. The clinician passively flexes the knee to 90° then approximates the heel of the foot to the ipsilateral buttock.	Local pain in the SI joint suggests an SI joint lesion. Lumbar pain suggests lumbar extension sensitivity or facet joint pathology. Pain or paresthesia in the anterior thigh suggests femoral nerve or upper lumbar nerve root irritation.	
Active Straight Leg Raise 	The supine patient is asked to raise one leg after the other to a height of between 5 and 20 centimeters. The examiner then asks if the patient notes any effort differences between the two legs or if they experience pain in the area of the SI joint. If the test has positive findings, the clinician then re-tests the patient with the pelvis stabilized. This can be achieved using an SI belt, providing manual compression, or by having the patient abdominally brace to achieve force closure of the SI joints and prevent motion.	The test is considered positive if there is familiar/localized pain or a subjective sense of difficulty raising a leg. The clinician should also watch for rotation of the pelvis which may signal difficulty in raising the leg. A positive test is consistent with Posterior Pelvic Pain syndrome (PPP syndrome) from pregnancy and suggests that the SI joint(s) may be the source of symptoms. Improvement with stabilization suggests a hypermobile SI joint	Sensitivity is reported to be 0.87 and specificity 0.94 for pelvic pain during pregnancy. It is thought, but not proven, to be sensitive and specific for sacroiliac instability. The test is also useful to track patient improvement (a *responsive* test). ASLR in pregnancy related posterior pelvic pain has a high test-retest reliability (ICC = 0.83). (Mens 2001)

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