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(NUMSS)**

Osteopathic Manipulative Therapy To Sacroiliac Joint Dysfunction

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Course: DOCTOR OF OSTEOPATHY

Date: 01/01/2017

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1.Introduction

Sacroiliac joint syndrome is a significant source of pain in 15% to 30% of mechanical low back pain sufferers. Sacroiliac joint pain is defined as pain localized in the region of the sacroiliac joint, reproducible by stress and provocation tests of the sacroiliac joint, and reliably relieved by selective infiltration of the joint with a local anesthetic. The posterior sacral ramus of the spinal nerve is the main nerve that innervates the sacroiliac joint. Mechanical dysfunction of the sacroiliac joint results in more pain and decreased mobility. The symptoms are often described as pain over the posterior aspect of the joint. The pain varies in its degree of severity; it can be referred to the groin, over the greater trochanter, down the back of the thigh to the knee, and sometimes down the lateral or posterior calf to the ankle, foot and toes. Sacroiliac joint syndrome occurs when the sacroiliac ligaments are damaged or torn by age causing too much play in the joints. This causes an inflammation of the joint making it possible to disrupt. Degenerative changes need to be considered as well. Traumatic incidents such as motor vehicle accidents, falls landing on the buttocks, and cumulative injuries, such as lifting and running, are the most common causes. It occurs more frequently in older people. Sacroiliac Joint Syndrome is a condition that is difficult to diagnose and is often overlooked by therapists.

2. Structure and Function

The sacroiliac joint is the largest axial joint in the body, with an average surface area of 17.5 cm². There is wide variability in the adult SI joint, encompassing size, shape, and surface contour. Large disparities may even exist within the same individual. The Sacroiliac Joints are located on each side of the spine that are formed between the articular surfaces of the sacrum and the ilium bones and paired C-shaped or L-shaped joints capable of a small amount of movement (2–18 degrees, which is debatable at this time). It is a diarthrodial synovial joint. Only the anterior part is a true synovial joint. Multiple structures are involved in the support and movement of the sacroiliac joints.

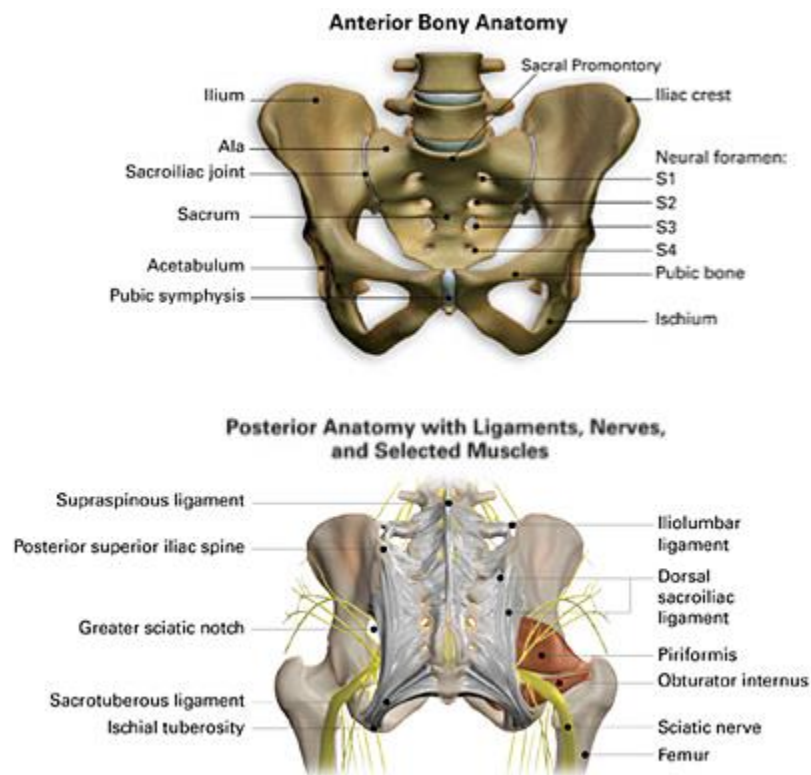
The ligaments which contribute to this synovial joint are;

- Anterior and Posterior Sacroiliac Ligament,
- Interosseus Sacroiliac Ligament,
- Sacrotuberous Ligament,
- Sacrospinous Ligament
- Iliolumbar Ligament.

The anterior ligament is not much of a ligament at all and in most cases is just a slight thickening of the anterior joint capsule. The anterior ligament is thin and not as well defined as the posterior sacroiliac ligaments.

The posterior sacroiliac (SI) ligaments can be further divided into short (intrinsic) and long (extrinsic). The dorsal interosseous ligaments are very strong ligaments. They are often stronger than bone, such that the pelvis may actually fracture before the ligament tears. The dorsal sacroiliac ligaments include both long and short ligaments. The long dorsal sacroiliac joint ligaments run in an oblique vertical direction while the short (interosseous) runs perpendicular

from just behind the articular surfaces of the sacrum to the ilium and functions to keep the sacroiliac joint from distracting or opening. The sacrotuberous and sacrospinous ligaments (also known as the extrinsic sacroiliac joint ligaments) limit the amount the sacrum flexes.



The joints are surrounded by some of the most powerful muscles of the body, but none of these have direct influence on joint motion. The main function within the pelvic girdle is to provide shock absorption for the spine and to transmit forces between the upper body and the lower limbs. The SI joint, like all lower extremity joints, provides a "self-locking" mechanism (where the joint occupies or attains its most congruent position, also called the close pack position) that helps with stability during the push-off phase of walking. The joint locks (or rather becomes close packed) on one side as weight is transferred from one leg to the other, and through the pelvis the body weight is transmitted from the sacrum to the hip bone.

The motions of the Sacroiliac Joint;

- Anterior innominate tilt of both hip bones on the sacrum (where the left and right move as a unit)

- Posterior innominate tilt of both hip bones on the sacrum (where the left and right move together as a unit)
- Anterior innominate tilt of one innominate bone while the opposite innominate bone tilts posteriorly on the sacrum (antagonistic innominate tilt) which occurs during gait
- Sacral flexion (or nutation) Motions of the sacrum occur simultaneous with motion of the ilium so you must be careful in the description of these as isolated motions.
- Sacral extension (or counter-nutation).

The Functions of the Sacroiliac Joint;

- Transmission and dissipation of trunk loads to the lower extremity
- Limiting x-axis rotation
- Facilitating parturition (giving birth)
- Various types of motions:
 - Gliding
 - Rotation
 - Tilting

3.Epidemiology/Etiology

It is often hard to determine exactly what caused the wear and tear to the joints. One of the most common causes of problems at the Sacroiliac joint is a trauma. The force from these kinds of injuries can strain the ligaments around the joint. Tearing of these ligaments leads to too much motion in the joint and over time it will lead to degenerative arthritis.

Pain can also be caused by an abnormality of the sacrum bone, which can be seen on X-rays. Pregnant women have a greater chance to develop sacroiliac joint syndrome. The ligaments of the sacroiliac joint loosen during pregnancy due to the hormone relaxin which permits the pelvic joints to widen during the birthing process. This stretching in ligaments results in changes to the sacroiliac joints, making them hypermobile. Symptoms of sacroiliac joint syndrome are often difficult to distinguish from other types of low back pain. This is why making a diagnosis of sacroiliac joint syndrome is very difficult.

4.Signs and Symptoms

Sacroiliac Joint pain refers to inflammation of one or both sides, and is one cause of unilateral low back pain. With sacroiliac joint dysfunction, the individual may experience pain in the low back, buttock or thigh, depending on the amount of inflammation. Common problems of the sacroiliac joint are often called sacroiliitis (also termed SI joint dysfunction; SIJD). Sacroiliac joint dysfunction generally refers to pain in the sacroiliac joint region that is caused by abnormal motion in the sacroiliac joint, either too much motion or too little motion. It typically results in inflammation of the SI joint, or sacroiliitis.

The following are signs and symptoms that may be associated with a sacroiliac joint problem;

- Mechanical SIJ dysfunction usually causes a dull unilateral low back pain.
- The pain is often a mild to moderate ache around the dimple or posterior superior iliac spine (PSIS) region.
- The pain may become worse and sharp while doing activities such as standing up from a seated position or lifting the knee towards the chest during stair climbing.
- Pain is typically on one side or the other (unilateral PSIS pain), but the pain can occasionally be bilateral.
- When the pain of SIJ dysfunction is severe (which is infrequent), there can be referred pain into the hip, groin, and occasionally down the leg, but rarely does the pain radiate below the knee.
- Pain can be referred from the SIJ down into the buttock or back of the thigh, and rarely to the foot.
- Low back pain and stiffness, often unilateral, that often increases with prolonged sitting or prolonged walking.
- Pain may occur during sexual intercourse; however, this is not specific to just sacroiliac joint problems

5.Diagnosis

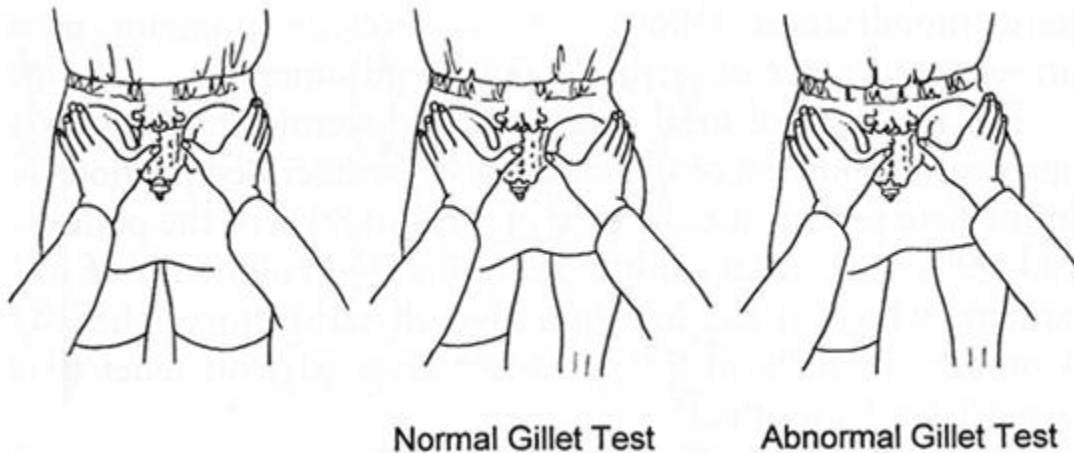
The current gold standard for diagnosis of sacroiliac joint dysfunction emanating within the joint is sacroiliac joint injection confirmed under fluoroscopy or CT-guidance using a local anesthetic solution. The diagnosis is confirmed when the patient reports a significant change in relief from pain and the diagnostic injection is performed on 2 separate visits. Published studies have used at least a 75 percent change in relief of pain before a response is considered positive and the sacroiliac joint deemed the source of pain.

Sacroiliac Joint Dysfunction is tested using provocative and non-provocative maneuvers by the Therapists. The diagnosis can be conclusive if at least one of these tests is positive.

5.a.Yeoman's test: The patient is prone with the knee flexed 90°. The examiner raises the flexed leg off the examining table, hyperextending the hip. This test places stress on the posterior structures and anterior sacroiliac ligaments. Pain suggests a positive test.



5.b.Gillet test: The examiner's thumbs are placed under the posterior superior iliac spine and S2. The patient is asked to stand on one leg while moving the opposite leg towards the chest. If the joint side that is flexed moves up, this is considered a positive test.



5.c.Faber Test: Patrick's test or FABER test (for Flexion, Abduction, and External Rotation) is performed to evaluate pathology of the hip joint or the sacroiliac joint. The test is performed by having the tested leg flexed and the thigh abducted and externally rotated. If pain is elicited on the ipsilateral side anteriorly, it is suggestive of a hip joint disorder on the same side. If pain is elicited on the contralateral side posteriorly around the sacroiliac joint, it is suggestive of pain mediated by dysfunction in that joint.



5.d.Sacroiliac Provocation: Test: The patient lies supine. The examiner exerts anterior pressure on the iliac wings with both hands. By crossing his or her hands, the examiner adds a lateral force to the compression. Pain is a sign of strained anterior sacroiliac ligaments.



5.e.Sacroiliac Compression Test: The patient is in the side lying and the examiner's hands are placed over the upper part of the iliac crest , pressing toward the floor. The movement causes forward pressure on the sacrum. An increased feeling of pressure in the sacroiliac joints indicates a possible sacroiliac lesion and / or a sprain of the posterior sacroiliac ligaments. A positive result is indicated by pain or replication of the patient's symptoms.



5.f.Thigh Thrust Test: With the patient supine, the hip is flexed to 90° (with bended knee) to stretch the posterior structures. By applying axial pressure along the length of the femur, the

femur is used as a lever to push the ilium posteriorly. One hand is placed beneath the sacrum to fixate its position while the other hand is used to apply a downward force to the femur. . This test places stress on the ipsilateral side sacroiliac joint and pain suggests a positive test.



6.Differential Medical Diagnosis

Sacroiliac joint syndrome is a controversial diagnosis, therefore pain and injury to the sacroiliac joint is commonly overlooked. This condition is often listed under the general term dysfunction, a term that serves as a collective term for different conditions.

The differential diagnosis should include

- Radicular Pain
- Piriformis Syndrome
- Ankylosing Spondylitis
- Lumbosacral Facet Syndrome
- Spondyloarthropathy
- Trochanteric Bursitis
- Hip Fracture
- Hip Overuse Syndrome

7.Osteopathic Manipulative Techniques and Sacroiliac Joint Dysfunction

Osteopathic structural exam and osteopathic manipulative treatment are valuable tools in diagnosing and treating Sacroiliac pain. Osteopathic manipulative therapy (OMT) incorporates diagnostic and therapeutic strategies that address body unity, homeostatic mechanisms and structure-function interrelationships. In regard to pain, osteopathic physicians take through

histories guided by palpatory examination to determine the quality, duration, and origin of this condition,

how it uniquely affects the individual, and whether segmental, reflex, or triggered pain phenomena coexist. Osteopathic manipulative medicine expands differential diagnoses by considering somatic dysfunction and treatment options by integrating specific aspects of complementary care into state-of-the-art pain management practices. Prescriptions formulated through an OMM algorithm integrate each osteopathic tenet with biopsychosocial and patient education models and medication, rehabilitation and manual medicine techniques proportionate to individual needs.

7.a.Forward Sacral Torsion: Patient lies on side with axis side down (left side if L/L torsion) with torso rotated so that he is face down (modified Sims position). Flex patient's hips until motion is felt at the lumbosacral junction Physician is seated behind the patient and drapes the patient's legs off the side of the table over the physician's cephalad leg (as shown in picture) so as to induce side bending and engage the sacral axis (left sacral oblique axis if L/L torsion). Cephalad hand monitors at the superior pole while the caudal hand guides side bending until the sacral base starts to rotate in the opposite direction (rotate to the right for L/L torsion) While continuing to monitor with the cephalad hand at the superior pole, ask the patient to lift his legs toward the ceiling against your equal counterforce for 3-5 seconds. Repeat 3-5 times, each time re-engaging a new restrictive barrier. Then retest for symmetry.



7.b.Backward Sacral Torsion: Patient lies on side with axis side down (left side if R/L torsion) with torso rotated so that he is face up. Grasp patient's inferior arm and pull through to further rotate his torso. Flex patient's hips until motion is felt at the lumbosacral junction Drop the patient's superior leg off the table to induce side bending and engage the axis (left sacral oblique axis if R/L torsion). While monitoring superior pole with cephalad hand, ask the patient to lift his

superior leg toward the ceiling against your equal counterforce for 3-5 seconds. Repeat 3-5 times, each time re-engaging a new restrictive barrier. Then retest for symmetry.



7.c.Unilateral Sacral Flexion: Monitor sacrum at the middle transverse axis, abduct left leg to about 15 degrees to disengage the sacroiliac joint. Internally rotate the hip to further gap the posterior sacroiliac joint. Heel of hand is on the left ILA, pressing anteriorly. Encourage inhalation, resist exhalation. Repeat for a total of 3-5 cycles. Retest



7.d.Unilateral Sacral Extension, Left: Monitor sacrum at the middle transverse axis, abduct to about 15 degrees to disengage the sacroiliac joint. Externally rotate the hip to further gap the

anterior sacroiliac joint. Heel of hand is at the left side of sacral base, pressing anteriorly (other hand may monitor on the PSIS). Encourage exhalation, resist inhalation. Repeat for a total of 3-5 cycles. Retest.



7.e.Bilateral Sacral Flexion: Abduct both legs to about 15 degrees to disengage the sacroiliac joint. Internally rotate both hips to further gap the posterior sacroiliac joint. Heel of hand is on the central portion of the apex of the sacrum, pressing anteriorly. Encourage inhalation to bring the sacral base posterior and superior (counternutation), resist exhalation. Repeat for a total of 3-5 cycles. Retest.



7.f.Bilateral Sacral Extension: Abduct both legs to about 15 degrees to disengage the sacroiliac joint. Externally rotate both hips to further gap the anterior sacroiliac joint. Heel of hand is on the central portion of the base of the sacrum, pressing anteriorly. Encourage exhalation to bring the sacral base anterior and inferior (nutation), resist inhalation. Repeat for a total of 3-5 cycles. Retest.



7.g.Superior Innominate Shear: Patient is supine with the feet off the end of the table. Physician places their thigh up to the contralateral foot (non-dysfunctional side) to stabilize the pelvis and then holds the patient's leg (dysfunctional side) just above the ankle. The leg is

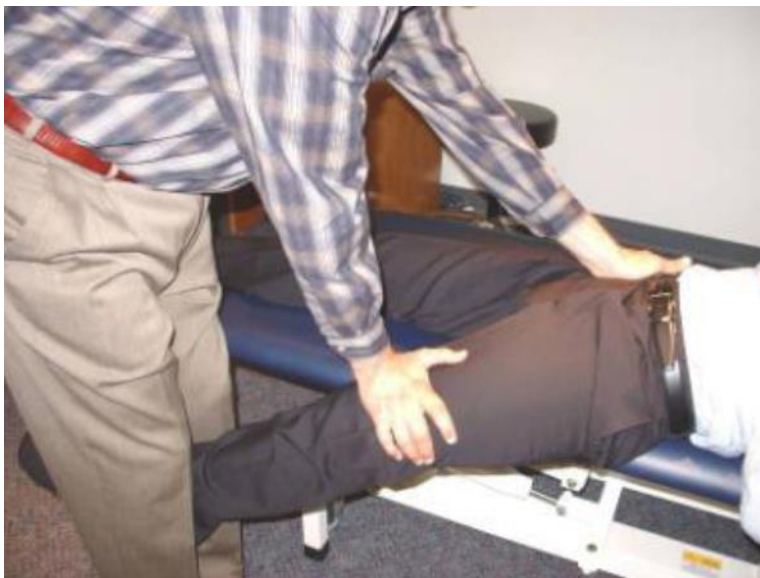
abducted to about 10-15° to loose-pack the SIJ. The hip is then internally rotated to close-pack the hip joint. The physician pulls on the leg while the patient performs a series of about three to four inhalation and exhalation efforts. During the last exhalation effort the patient is asked to cough while simultaneously the leg is pulled in a caudal direction. Assess that proper release is obtained



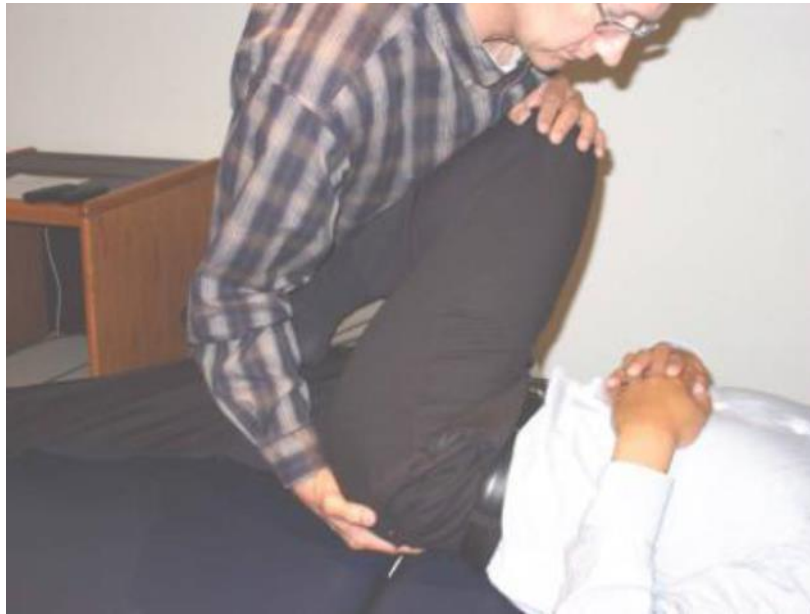
7.h.Inferior Innominate Shear: Patient is prone with the physician standing on the same side as the dysfunction. The patient's foot is placed between the physician's knees and then the patient's knee is stabilized with one hand while the other hand is placed on the patient's ipsilateral ischial tuberosity. The leg is abducted to about 10-15° to loose-pack the SIJ. A cephalad force is placed on the ipsilateral ischial tuberosity while the patient performs a series of deep inhalation and exhalation efforts. Additionally, the patient attempts to straighten the ipsilateral arm (that is holding on the table leg) which results in a caudal force through the trunk. Assess that proper release is obtained.



7.i.Superior Pubic Shear: Patient is supine with the physician standing on the side of the dysfunction. The pelvis is shifted to the edge of the table being sure to maintain stability. Physician's legs are utilized to hold the freely hanging leg. Physician places one hand on the opposite innominate to stabilize the pelvis while placing the other hand over the distal femur on the dysfunctional side. Mild hip extension stretch to the barrier is applied. The patient performs hip flexion muscle effort for three to five seconds. The physician takes-up the "slack" in the myofascial movement and repeats this process until proper release is obtained.



7.j.Inferior Pubic Share: Patient is supine with the physician standing on the opposite side of the dysfunction. The patient has the dysfunctional hip and knee flexed while the physician slightly internally rotates the hip rolling the pelvis to the opposite side. Physician places the middle and ring fingers around the PSIS and the heel of the hand to the ischial tuberosity. The pelvis is placed back on the table and a superior and medial force is applied against the ischial tuberosity. Physician resists three to five efforts of three to five second muscle effort for the patient to straighten the leg in a caudal direction. The physician takes-up the “slack” in the myofascial movement and repeats this process until proper release is obtained.



7.k.Superior or Inferior Pubic Shear: Patient is supine with the hips and knees flexed and feet flat on the table and together. Physician stands at the side of the table holding the patient's knees together. Physician resists the patient's attempt to abduct both knees for a three to five second period of time. Physician now places the forearm between the patient's knees. The patient adducts against the physician's counterforce two to three times for up to three to five seconds until release is felt at the pubic symphysis.



7.l.Anterior Innominate Rotation: Patient is supine with the physician standing on the opposite side of the dysfunction with the hip and knee flexed. Physician places the heel of the hand on the ischial tuberosity with the fingers monitoring motion at the SIJ. The dysfunctional innominate is taken to the barrier in flexion, external rotation, and abduction (engagement of the barrier and loose-packing the SIJ). Physician exerts a cephalward and lateral force on the ischial tuberosity while the physician resists three to five efforts of three to five second muscle effort for the patient to extend the leg against resistance. The physician takes-up the “slack” in the myofascial movement and repeats this process until proper release is obtained. This is similar to the treatment for inferior pubic shear excepting the loose-packing of the SIJ and cephalward and lateral force on the innominate.



7.m.Posterior Innominate Rotation: Patient is supine with the physician standing on the same side as the dysfunction. The patient’s sacrum is brought to the edge of the table. The patient’s leg

is placed between the physician's knees while the pelvis is supported with a hand placed over the contralateral innominate. Physician's other hand is placed over the distal femur above the patella to push the hip toward anterior rotation. Physician resists patient's effort to flex the hip through a series of contractions of three to five seconds. This treatment is similar to the superior pubic shear except that here the sacrum is the fixed point on the edge of the table versus the innominate. Assess that proper release is obtained.



7.n.Outflared Innominate Rotation: Patient is supine with the physician standing on the same side as the dysfunction. Physician flexes the hip and knee rolling the pelvis to the opposite side. Physician monitors the medial side of the PSIS and then the pelvis is brought back to the table to rest on the physician's monitoring hand. Physician's other hand adducts the femur to the internal rotation barrier while maintaining lateral traction on the PSIS. Patient attempts to abduct and externally rotate the hip with three to five muscle contractions for three to five seconds with the slack in the tissues taken up between the contraction intervals. Assess that proper release is obtained.



7.o.Inflared Innominate Rotation: Patient is supine with the physician standing on the same side as the dysfunction. The patient's hip and knee is flexed with the ipsilateral foot placed on the contralateral knee (below patella). Physician places one hand over the contralateral innominate to stabilize the pelvis and places the other hand over the medial side of the knee on the dysfunctional side, externally rotating the hip until a barrier is engaged. The physician resists three to five efforts of three to five second muscle contractions for the patient to internally rotate the leg against resistance, taking up the slack in the tissues between the contraction intervals. Assess that proper release is obtained.



8.Conclusion

Osteopathic Mobilization and Manipulative prescription seeks to discover and incorporate the factors needed to address the individual's unique response to pain. The emphasis in treating patients with persistent pain should be on improving function, decreasing peripheral nociception and central facilitation, and empowering the patient to move forward in resuming their activities of daily living. Applying Osteopathic principles as part of an effective treatment strategy with incorporating Osteopathic Manual Techniques for patients with chronic Sacroiliac Dysfunction related pain results in an individualized care plan combining nondrug treatment strategies helps to improve quality of life and break vicious cycle seen in the persistent pain.

9.References

http://www.foma.org/uploads/3/9/8/0/39809635/omt_for_low_back_pain_taow.pdf

Jones J. Muscle energy treatments: Sacral shears, sacral torsions. Presented at Touro University Nevada College of Osteopathic Medicine 2009. Henderson, NV.

Rennie P. Iliosacral (innominate) muscle energy pre-lab. Presented at Touro University Nevada College of Osteopathic Medicine 2009 by Claire Galin, DO. Henderson, NV.

Savarese R. OMT Review. 3rd edition. March 2003

http://osteopedia.iao.be/uploads/sacroiliac_joint_demo.pdf

Web The International Academy of Osteopathy – IAO: <http://www.osteopathie.eu>

https://www.researchgate.net/publication/7666144_Sacroiliac_Joint_Dysfunction

http://www.physio-pedia.com/Sacroiliac_joint_syndrome

<http://jaoa.org/article.aspx?articleid=2093183>

<http://emedicine.medscape.com/article/96054-treatment>

Foundations of Osteopathic Medicine Third Edition Anthony G. Chila

https://en.wikipedia.org/wiki/Sacroiliac_joint_dysfunction