

Pathology of the Sacroiliac Joint, its Effect on Normal Gait, and its Correction.

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Abstract

When the sacrum is loaded and the pelvis is symmetrical, the primary and secondary loading forces are in balance. Any increase in posterior pelvic rotation will increase tension on the sacrotuberous ligament and increase friction and stability in the sacroiliac joints. Dysfunction may occur when the line of gravity shifts anterior to the acetabula, causing an anterior rotation of both innominates on the sacrum on an acetabular axis. This decreases tension on the sacrotuberous ligament decreasing friction in the sacroiliac joints. The force couple is disabled and the innominates will move cephalad and laterally on the sacrum moving on an acetabular axis and subluxating at the S3 segment. This may give the appearance of a multifactorial etiology or mimic the symptoms of a herniated nucleus pulposus and has many various effects on normal gait. As dysfunction of the sacroiliac joints (SIJD) is essentially always a pathological release of the self-bracing position with anterior pelvic rotation, correction of SIJD is simply manual restoration of the innominate bones caudad and medially on the sacrum back to the position of self-bracing. Correction of this subluxation will give immediate relief to at least three out of four people with low back pain.

Key Words: low back pain, sacroiliac joint, abnormal gait

Introduction

Details of the mechanics of low back pain have been difficult to obtain, many clinical tests have not been validated and treatment is in many respects unsatisfactory. Inappropriate conclusions from clinical examination may result in inappropriate treatment, which at best prolongs the symptoms and at worst increases pain and disability. White (1982) remarked "It may well be that idiopathic backache will be found to be caused by some condition that is a subtle variation from normal. Otherwise, we probably would have found the cause already. If back pain were caused by a highly unusual condition, then fewer people would suffer from this disorder." If a primary nondiscogenic etiology of low back pain exists, it is probably a subtle, commonly overlooked, reversible biomechanical condition that may affect many types of tissues. It may mimic or cause disc dysfunction and it may not be identified with currently applied methodology. (DonTigny 1990A) If this etiology does indeed exist then the same basic treatment should help basically all cases of idiopathic low back pain.

McConnell and Teall (1906) described the condition in which the ilium is forward, the ischium backwards, and the innominatum thrown downward on the sacrum, "causing an apparent lengthening of the limb which will be noticed by comparing the heels" when the patient is supine. Chamberlain (1930) was able to diagnose what was called a "sacroiliac slip" (rotation of the innominate bone with more or less fixation) and sacroiliac relaxation by using stereoscopic roentgenograms and special positioning techniques. He also found that "the patient's acute sacroiliac symptoms have almost invariably been on the side of the high pubis" when the patient is standing.

An analysis of the biomechanics of the sacroiliac joints has the potential to identify such a condition, make testing more appropriate and treatment more effective. The purpose of this paper is to describe the pathomechanics of the sacroiliac joints, their effects on various structures and tissues, and the adverse effects on normal gait.

Biomechanics

When moving from supine to erect the sacrum is loaded with the superincumbent weight. Primary loading is to the posterior interosseous ligaments and secondary loading is to the sacrotuberous ligaments. The secondary loading overcomes and balances the primary loading (Fig. 1).

LOADING FORCES

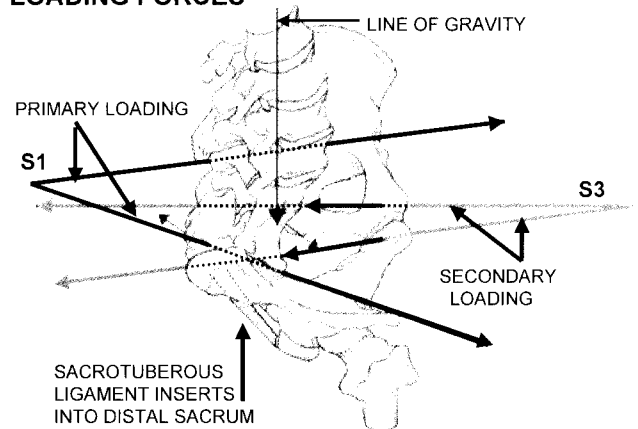


Fig. 1. The secondary loading at S3 must exceed the primary loading force at S1. Note the direction of the pull of the sacrotuberous ligament as it inserts into the distal sacrum to provide the necessary leverage to lock the joint.

The secondary loading is at the S3 sacral segments of the sacroiliac joints and pulls both S1 sacral segments back

against the corresponding S1 ilial segments to brace and stabilize the joints. Vleeming (1990) referred to this as force closure and self-bracing. Vleeming also found that posterior rotation of the innominate bones on an acetabular axis increases tension on the sacrotuberous ligaments and increases friction and self-bracing in the joints. This balance of primary and secondary loading is critical and dependent upon the line of gravity being posterior to the acetabula. The balance of loading forces creates two interdependent force couples with force-dependent axes of rotation. (DonTigny 1994A)

Pathomechanics

As stability is dependent upon the line of gravity being posterior to the acetabular axis any shift anterior in the line of gravity anterior to the acetabular axis can destabilize the pelvis. That shift causes both innominate bones to rotate anteriorly on the sacrum on an acetabular axis, loosens the

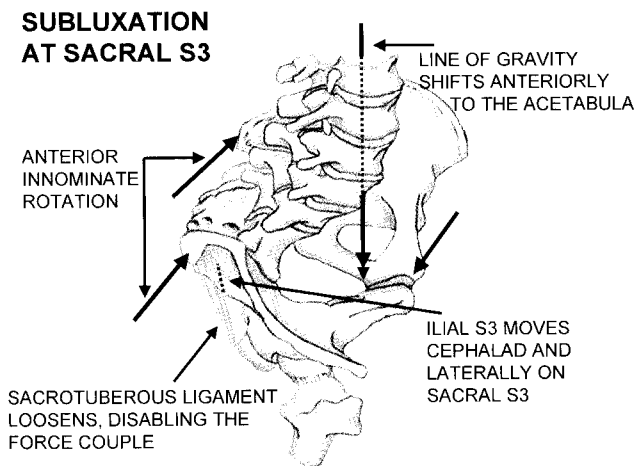
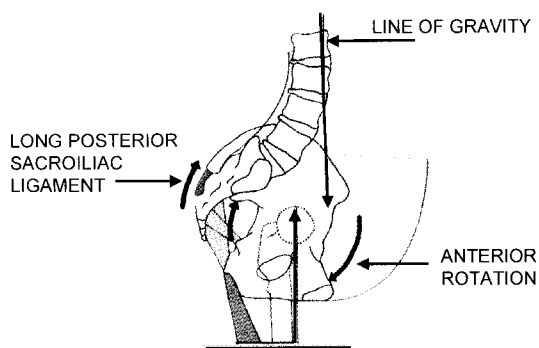


Fig. 2. All that is necessary for dysfunction is an anterior shift in the line of gravity. This causes anterior pelvic rotation on an acetabular axis that loosens the sacrotuberous ligament, disabling the force couple and causing a pathological release of self-bracing.

INSIDIOUS ONSET

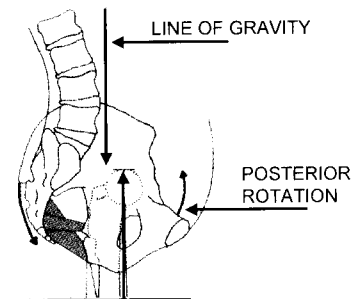


SLOW ONSET OF SIJD WITH EXCESS WEIGHT ON THE FRONT OF THE PELVIS CAUSING ANTERIOR INNOMINATE ROTATION

Fig. 3. Excess weight, slowly building up on the anterior pelvis will cause a slow migration of the line of gravity, resulting in an insidious onset of dysfunction. The long posterior sacroiliac ligament will undergo a slow loss of visco elasticity.

sacrotuberous ligaments, decreases friction, and disables the force couple and the force-dependent axis of rotation. (Fig. 2) The innominate bones are caused to move cephalad and laterally on the sacrum also on an acetabular axis and subluxate at the S3 segment in a pathological release of self-bracing.

COMPENSATION POSTURE



HYPEREXTENSION POSTURE KEEPS LINE OF GRAVITY BEHIND THE ACETABULA TO BALANCE VISCERAL PROTRUSION AND MAINTAIN THE SELF-BRACING POSITION

Fig. 4. A hyperextension posture will balance the visceral protrusion and help to maintain the self-bracing position in the absence of anterior pelvic support from the abdominal muscles.

SUDDEN ONSET

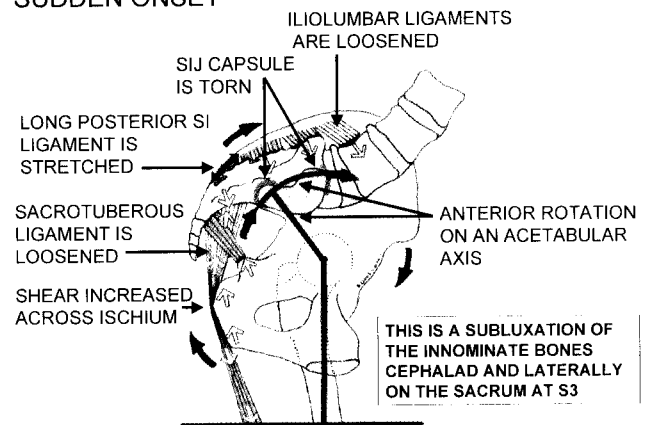


Fig. 5. Lifting, bending or lowering may bring on a sudden onset of low back pain, which may vary in severity and affect many different structures.

An innocuous onset of SIJD may occur with a slow build-up of weight on the anterior pelvis, such as with a visceral protrusion or with pregnancy. (Fig. 3, 4) Onset may be rapid as when lifting, bending or lowering. In the absence of active support from the abdominal muscles a sudden pathological release of self-bracing may occur. (Fig. 5) (DonTigny 1990,1999, 2000) SIJD can be prevented simply by maintaining the sacroiliac joint in the self-bracing position with active support of the anterior pelvis with the abdominal muscles when leaning forward to perform any task. (Fig. 6)

When subluxation occurs the ilial convexity rotates anteriorly up and out of the sacral concavity, spreading the joints slightly and causing the pelvis to flare or spread

PREVENTION OF DYSFUNCTION

STRONG ABDOMINALS CAN MAINTAIN SELF-BRACING WHEN LEANING FORWARD BY MAINTAINING THE RELATIONSHIP BETWEEN THE SACRUM AND THE INNOMINATES.

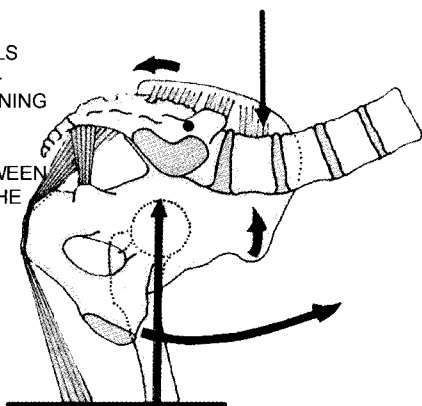


Fig. 6. Back pain can be prevented when leaning forward to perform some task by holding strong support on the anterior pelvis with the abdominal muscles in order to maintain the relationship between the innominate and the sacrum.

slightly. This dysfunction has been X-rayed (DonTigny 1979) and measured (DonTigny, 1990B) before and after correction.

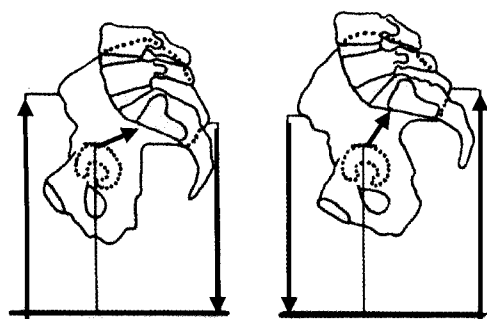
There are four variations of this dysfunction: (DonTigny 1999, 2000)

1. Unilateral, which is asymmetrical
2. Bilateral, which is symmetrical and more common
3. Bilateral oblique, which is also asymmetrical
4. Bilateral with a secondary shift at the S1 segment, also asymmetrical.

Changes In Apparent Leg Length

As the sacroiliac joints always move anteriorly and up over the acetabula with this dysfunction, the leg length will appear to be longer when the patient is supine or the crest height will be higher when the patient is standing. (Fig. 7) The patient with the unilateral dysfunction will appear to

CHANGE IN APPARENT LEG LENGTH



POSTERIOR ROTATION ANTERIOR ROTATION
NOTE HOW THE SIJ RISES RELATIVE TO THE ACETABULA ALTERING THE APPARENT LEG LENGTH AND MAKING THEM APPEAR LONGER THAN NORMAL

Fig. 7. With anterior rotation, the relationship between the sacroiliac joints and the acetabula change, making the leg(s) to appear to be longer when the patient is standing. This also causes the longer leg to appear to shorten in the long-sitting position.

have a high iliac crest on the painful side when standing and the leg on that side will appear to be longer than the other when comparing leg length at the malleoli when the patient is supine.

With bilateral dysfunction, both innominate will rotate the same amount causing both crests to be higher than previously and both legs to be longer when supine. With a bilateral oblique dysfunction, caused when leaning forward and obliquely, as in the unilateral dysfunction, one crest will be higher than the other when standing and one leg will appear longer when supine.

Bilateral SIJD with the secondary shift is of special interest. This occurs only with and after a bilateral dysfunction and is frequently mistaken for a so-called anterior dysfunction on one side or a posterior dysfunction on the other, or an upslip. In reality, following SIJD, when the innominate is up on S3 sacral and down on S1 sacral, on heel strike the S1 sacral segment will slip vertically downward on S1 ilial (or S1 ilial will slip upward at S1 sacral). This will cause the leg on the more painful side to appear shorter when the patient is supine and the crest to be lower on that side when the patient is standing. After bilateral SIJD the ilial convexity at S1 seeks the sacral concavity at S1 and in essence corrects itself. The primary subluxation at the S3 segment acts as a pathological axis of rotation to allow this because of the variation in the sacral angles at S1 and S3 and because there is still some movement available at S1. Certainly this looks like an anterior dysfunction on one side and posterior on the other or an upslip of the entire innominate, but it is corrected in the same manner as the bilateral dysfunction. In essence, this secondary shift at S1 is clinically insignificant and must be treated as a simple anterior dysfunction. It is possible to manipulate the S1 segment up or down, changing the leg length without getting a correction at the S3 segment.

Strains and Sprains

The innominate movement cephalad and laterally on the sacrum injures principally the long and short posterior sacroiliac ligaments. (Shuman 1953, Hackett 1961, DonTigny 1994 and Vleeming 1995) With this rotation, tension is decreased on the iliolumbar, and the sacrotuberous ligaments. The gluteus maximus, the piriformis and the iliacus all have origins on both the sacrum and the ilia. All of these muscles will undergo strains with the separation of these dual origins.

These sprains and strains manifest in three basic painful points (Fig. 8);

1. The attachment of the short posterior SI ligament to the medial aspect of the posterior superior iliac spine. (PSIS)
2. The attachment of the long posterior SI ligament to the distal aspect of the PSIS and the separation of the sacral origin of the gluteus maximus from the ilial origin in this area.

- The separation of the sacral origin of the piriformis from its ilial origin at the superior margin of the greater sciatic notch, deep to the PSIS at the posterior inferior iliac spine.(PIIS)

PRIMARY PAINFUL POINTS

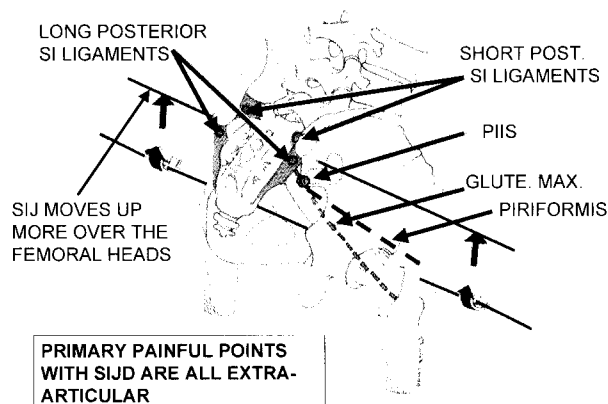


Fig. 8. Although many trigger points may manifest with SIJD depending on severity, there are several primary points in essentially all cases. These are medial and distal to the PSIS in the long and short posterior SI ligaments, lateral and distal to the PSIS at the separation of the dual origins of the gluteus maximus (note line of separation), and deep adjacent to the sacrum the PIIS, which is the location of the primary subluxation and the separation of the dual origins of the piriformis muscle (note line of separation). These points are all extra-articular and will not be diagnostic injections into the SIJ.

All of these points are extra articular and will not be reached by anesthetic injected into the capsule of the sacroiliac joint.

Secondary effects of Sacroiliac Joint Dysfunction

The sudden onset may also strain the biceps femoris and cause pain and tightness down the thigh and into the lateral capsule of the knee and the head of the fibula. This may result in abnormal patellar tracking and may cause a subluxation of the head of the fibula.

Muscle Inhibition

Dorman found an inhibition of the gluteus medius when the pelvis is held in anterior rotation. (Dorman 1995) Dananberg (1993) found an inhibition of the peroneus longus with SIJD resulting in a functional hallux limitus. The hip flexors will be inhibited when the pelvis is held in anterior rotation.

Baer's Point

Baer's sacroiliac point has been described as being on a line from the umbilicus to the anterior superior iliac spine, two inches from the umbilicus. (Mennell 1952) This pain can be immediately relieved with correction (DonTigny 2000) or by injection (Norman 1968).

Pain at this point may be mistaken for appendicitis, ovarian pain, endometriosis or other pelvic pain. Wilson (1967) called attention to the fact that "unusual radiation from the lower three lumbar vertebral joints has led to the unnecessary removal of pelvic organs in the female and to coccygectomy."

Vertebral Instability

With anterior rotation of the pelvis at S3, the innominates move cephalad toward the iliolumbar ligaments, decreasing normal tension in those ligaments and thus destabilizing L4,5-S1 and increasing shear and torsion shear to the discs. Thus sacroiliac dysfunction may have a bearing on disc disease. (DonTigny 1994, Pool- Goudzwaard 1998)

Neurological Symptoms

Tears in the capsules of the SIJs may cause leakage of the synovial fluid to the lumbosacral plexus, to the root of the fifth lumbar nerve and into the body of the psoas muscle and cause neurological symptoms. (Fortin 1995) These rents may also be associated with the formation of local cysts.

When the innominates rotate downward relative to the spine, the nerve roots may be stretched. When the nerve roots are stretched it is postulated that compression deformity results and that because the dorsal roots are more susceptible to stretch than the ventral roots, paresthesias and changes in sensation may occur. Total mechanical block occurs at 15% elongation of a nerve. (Sunderland 1971)

As the sciatic nerve exits just below the piriformis muscle and often penetrates it, any pain or spasm in this muscle from the separation of its dual origin could cause a sciatic nerve irritation.

Pelvic Pain

The asymmetric pelvis will distort the pelvic floor. Travell and Simons (1992) pointed out that pelvic floor tension results in symptoms that may be diagnosed as coccygodynia, levator ani syndrome, proctalgia fugax, or tension myalgia of the pelvic floor. Pain may also be referred into the groin and testicles, mimicking a local lesion or inflammation. Following my workshop in Montreal a physical therapist from Hong Kong, who taught incontinence training there, emailed the author and told him that after correction of the SIJ the patients frequently no longer needed the training.

Changes in Normal Gait

With bilateral SIJD the spine is lordotic and the pelvis is tilted anteriorly. The anterior tilt interferes with the hip flexors and so the patient will compensate by externally rotating the hips and bring the legs forward with the thigh

adductors.

With the unilateral subluxation, the patient will ambulate with an apparent long leg on the more painful side. With the bilateral dysfunction and secondary slip at the S1 segment the patient will ambulate with a short leg on the more painful side. Because of the instability of the iliolumbar ligaments any vibrational tissue creep will cause the spine to shift laterally toward the apparent short leg. Heel lifts are unnecessary and may be contra indicated as they only level the sacral base without correcting the dysfunction. First correct the SIJ and then reassess.

Dorman (1995) found weakness in the gluteus medius with anterior rotation of the innominate. An abductor weakness will destabilize the pelvis, shorten the step and cause premature loading at initial contact on the contra lateral side. Dananberg (1993) found an inhibition of the peroneus longus that precipitated a functional hallux limitus and treated it with orthoses, which restored some stabilization to the sacrotuberous ligament. Van Wingerden (1997) found that the peroneus longus contributes up to 18% of the stability of the sacrotuberous ligament through the kinetic chain.

Correction and Prevention of the Dysfunction

As with any dislocation/subluxation, the first priority of treatment is correction of the lesion. As SIJD is essentially always a pathological release of the position of self-bracing with an anterior rotation of the innominates, correction is simply the restoration of the self-bracing position. The same basic procedure will reverse or stabilize all of the described pathology. This procedure is done manually simply by rotating the innominate bones so as to cause them to move caudad and medially on the sacrum and watching the malleoli as the legs to appear to shorten. (DonTigny 1990, 1993, 1994B, 1997, 1999(200)) Stabilization of the unstable pelvis is by lumbosacral support, proliferant injections (Shuman 1953, Hackett 1961, Ongley 1987) or surgical fixation. (Smith-Petersen 1926, Moore 1995, Keating 1997, Lippitt 1997)

Correction of the subluxation should always be done prior to all invasive procedures. Proliferant injections may fail if the joint is not first corrected and also, it is thought, if the ligaments are unduly damaged and/or lax.

Suggestions for Continuing Care

First, correct the joint. If necessary, control pain with local injections of anesthetic and steroid (not into the joint capsule). Instruct the patient in self-correction.

See the patient the next day and have them demonstrate what they think are the proper exercises. Often what was instructed is not what the patient understands to do. If progress continues, no further care is needed. If the pain continues to recur after 1-2 weeks, a lumbosacral support

may be useful. If it is put on while the patient is lying down on the opened support and after a correction has been made, the support will hold the joint in the corrected position.

If improvement is continuous, no further treatment is necessary, however, after using the support for a month, if instability continues, then begin prolotherapy into the long and short posterior sacroiliac ligaments. Only use prolotherapy while the SIJ is in the corrected position.

Do not use prolotherapy for the iliolumbar ligaments until after the sacroiliac joint is stable and pain free. Correction of the SIJ will usually re-stabilize the SIJs, but I believe that indiscriminate prolotherapy into the iliolumbar and other non-involved sacroiliac ligaments may tighten the ligaments, and hold the joint in an uncorrected position and prevent correction

Results

The skilled practitioner can have at least 85-90% of all cases of low back pain essentially free of pain after complete correction. It does not matter if the pain is acute or chronic, moderate or severe or in women during or after pregnancy.

Using information from a 1990 article by the author, Shaw (1992), orthopedic surgeon at the Topeka Back and Neck Center, did a study of 1000 consecutive patients with low back pain and found that 98% of them had this dysfunction. His surgery rate (herniated discs) dropped to 0.2%. His results were so stunning that few believed him, but if you do what he did you will likely get similar results.

Conclusion

A commonly overlooked dysfunction of the sacroiliac joints is the likely mechanism of idiopathic low back pain syndrome. This is a measurable, reversible, biomechanical lesion that is easily corrected and preventable with proper exercise and it is all corrected with the same basic maneuver. It may give the impression of a multifactorial etiology and mimic the herniated intervertebral disc.

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ADDENDUM

The DonTigny Low Back Pain Management Program

A guide for the understanding, relief and prevention of low back pain caused by dysfunction, injury or instability of the sacroiliac joints is presented. This article is intended as an educational tool to enhance patient understanding and compliance for successful results.

This is the only program developed specifically to give immediate relief of common low back pain in most cases.

The first 15 slides of this program are presented, showing the correction of the sacroiliac subluxation.

The DonTigny Home Exercise Program for the Immediate Relief of Common Low Back Pain

This program is specifically designed for the correction of a commonly overlooked partial dislocation (or subluxation) of the sacroiliac joint and for the prevention of its recurrence.

Slide 1

The Nature of the Correction

The corrective procedure is not a vertebral manipulation. No high or low speed manipulative thrust is necessary or indicated. No jerking or popping or twisting is necessary or desirable. Correction is achieved by specifically applied traction on the properly positioned joint or by a precise manual rotation of the innominates posteriorly on the sacrum.

Slide 2

WARNING

- Although these exercises are very safe, if you are experiencing any numbness or weakness, or loss of bowel or bladder control, see your physician before proceeding.

Slide 3

Correction With an Assistant

- Initially, it will be a little easier to correct the joint with the help of an assistant.
- The patient should then be instructed in the various methods of self correction and prevention.

Slide 4

Manual Correction of the Dysfunction

- Any of several similar methods can be used to restore the SIJ to its normal position.
- Traction at about 45 degrees of passive straight leg raising.
- Direct posterior rotation, either knee to axilla (arm pit) or simply by grasping the innominate bone and rotating it so as to cause the back of the pelvic bone to move down and in on the back of the sacrum.
- Or by using isometric or muscle energy techniques.

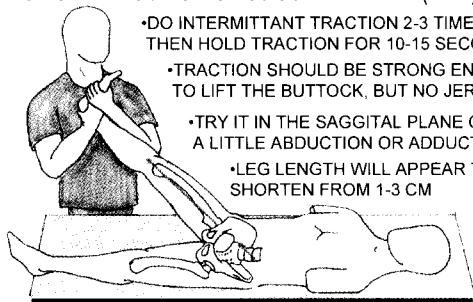
Slide 5

Correction And Confirmation

- It does not matter if one leg appears to be longer or shorter on the more painful side or if the legs appear to be of equal length, they will always appear to shorten with correction of the SIJs to the self-bracing position.
- If there is no history of a congenital leg length difference, polio or serious leg fracture the legs will appear to be of equal length after correction.

Slide 6

•TRACTION REDUCTION OF S3 SUBLUXATION (SIJD)



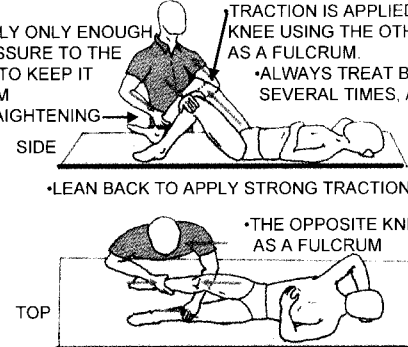
- DO INTERMITTANT TRACTION 2-3 TIMES THEN HOLD TRACTION FOR 10-15 SECONDS
- TRACTION SHOULD BE STRONG ENOUGH TO LIFT THE BUTTOCK, BUT NO JERKING
- TRY IT IN THE SAGGITAL PLANE OR IN A LITTLE ABDUCTION OR ADDUCTION
- LEG LENGTH WILL APPEAR TO SHORTEN FROM 1-3 CM

•ALWAYS REPEAT THE PROCEDURE ON THE OTHER LEG, ALTERNATING LEGS, RIGHT, LEFT, RIGHT, LEFT, AT LEAST 4-5 TIMES ON EACH SIDE.

•DONTIGNY ©

Slide 7

•THE EZ FIX ALTERNATE CORRECTION




- APPLY ONLY ENOUGH PRESSURE TO THE LEG TO KEEP IT FROM STRAIGHTENING
- TRACTION IS APPLIED BEHIND THE KNEE USING THE OTHER KNEE AS A FULCRUM.
- ALWAYS TREAT BOTH SIDES SEVERAL TIMES, ALTERNATING
- LEAN BACK TO APPLY STRONG TRACTION
- THE OPPOSITE KNEE IS USED AS A FULCRUM

•THIS IS AN EXCEPTIONALLY NICE PROCEDURE, EASY TO APPLY STRONG TRACTION AND VERY WELL TOLERATED.

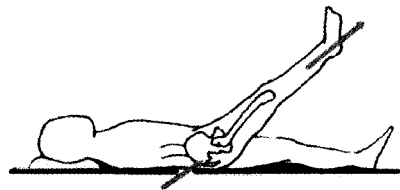
Slide 8

•CAUTION

- YOU CAN NOT CORRECT THIS DYSFUNCTION PULLING THE LEG IN LINE WITH THE BODY!



- THIS WILL CHANGE THE PAIN, BUT NOT CORRECT THE BILATERAL SUBLUXATION AS S3.



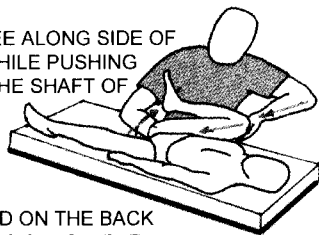
- TRACTION MUST BE APPLIED WITH THE LEG AT ABOUT 45-50 DEGREES OF ELEVATION WITH THE BODY.

•DONTIGNY ©

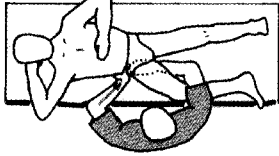
Slide 9

•MORE ALTERNATE METHODS

- FLEX THE KNEE ALONG SIDE OF THE CHEST WHILE PUSHING CAUDAD ON THE SHAFT OF THE FEMUR.



- PLACE ONE HAND ON THE BACK PART OF THE ILIAC CREST, THE OTHER UNDER THE ISCHIAL TUBEROSITY



- MOBILIZE TO CAUSE THE BACK OF THE INNOMINATE TO MOVE CAUDAD AND MEDIALY ON THE BACK OF THE SACRUM.

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Slide 10

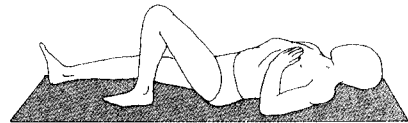
Patient Self-Management

- The patient must be instructed in self-correction in the event of occasional recurrence.
- Correction may be by a direct stretch or a muscle energy technique.
- The correction may be done using any of several methods. One may be more effective than the others.

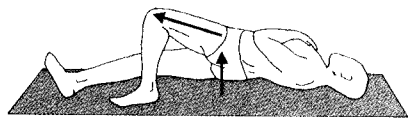
Slide 11

•SELF-CORRECTION

THIS IS A SIMPLE AND EFFECTIVE METHOD OF SELF-CORRECTION



- LIE SUPINE WITH ONE HIP AND KNEE FLEXED



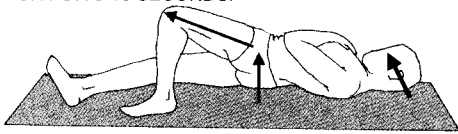
- PUSH THE KNEE FORWARD, LIFTING THE BUTTOCK ON THAT SIDE (CONTINUED ON NEXT SLIDE)

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Slide 12

•SELF-CORRECTION (2)

•CONTINUE TO PUSH WITH YOUR KNEE AND THEN LIFT YOUR HEAD AND SHOULDERS TO TIGHTEN YOUR ABDOMINAL MUSCLES HOLDING BOTH THE LEG PUSH AND ABDOMINAL CRUNCH FOR 8-10 SECONDS.



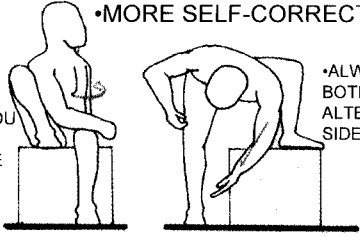
•REPEAT ON THE OTHER SIDE. DO EACH SIDE 4-5 TIMES, ALTERNATING SIDES EACH TIME.

•CORRECTION IS ENHANCED AS THE BACK OF THE PELVIS MOVES DOWN WITH THE LEG PUSH AND THE FRONT OF THE PELVIS MOVE UP WITH THE ABDOMINAL CRUNCH.

Slide 13


•MORE SELF-CORRECTION

•YOU CAN STRETCH IN WHATEVER POSITION YOU HAPPEN TO BE IN AT THE TIME.




•ALWAYS DO BOTH SIDES, ALTERNATING SIDES EACH TIME

•STRETCH AS HARD AS YOU CAN FOR 8-10 SECONDS

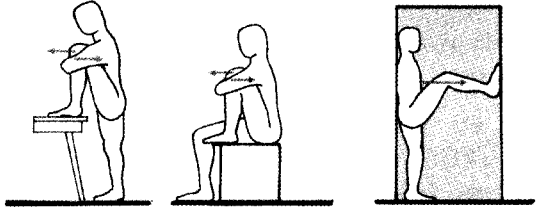


Slide 14

•CORRECTIONS USING MUSCLE ENERGY



•PUSH AS HARD AS YOU CAN AGAINST FIRM RESISTANCE



•HOLD THE CONTRACTION FOR AT LEAST 5-10 SECONDS

DONTIGNY©

Slide 15

SYMPHYSIS PUBIS DYSFUNCTION UPDATE CONFERENCE

A Multidisciplinary Conference for all those treating women with symphysis pubis dysfunction.

Date : Saturday 1st October 2005 **Venue:** Thames Valley University, Slough Campus

SPEAKERS:

Lucy Townsend, Chartered Physiotherapist

Debra Bick, Professor of Midwifery

Malcolm Griffiths, Consultant Obstetrician and Gynaecologist

Jancis Shepherd, Senior Midwifery Lecturer

Quentin Shaw, Osteopath

Maggie Wainwright, Practice Development Midwife

Nicole Tudor-Williams, Chartered Physiotherapist

AIM OF THE DAY:

To review up to date management and treatment of SPD

For applications:

Contact Sarah Fishburn on 01235 820921
or visit the website at www.pelvicpartnership.org.uk

Invoicing Details:

Fiona Tankard, The Pelvic Partnership, 26 Manor Green,
Harwell, Oxon OX11 0DQ