42. Evaluation and treatment of the most common patterns of sacroiliac joint dysfunction

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INTRODUCTION

The sacroiliac joint (SIJ) has been implicated as a source of low back pain by many clinicians and researchers, including Lee (1989, 1992) and Vleeming and Mooney (1992). There is an interdisciplinary interest in the role of the SIJ and low back pain and its functional relation to the musculoskeletal system (Vleeming et al 1992, 1995). The SIJ may cause pain due to disease, inflammation, or movement dysfunction. Movement dysfunction may exist as hypermobility or hypomobility. According to Porterfield and DeRosa (1991), the normal SIJ functions as a triplane shock absorber and transfers upper body weight into the pelvis and lower extremities, and participates in the absorption of the force of heel strike. If the SIJ is hypomobile, it cannot effectively absorb stress from activities of daily living, and other structures may be overstressed, thus contributing to musculoskeletal pain and dysfunction. Examples are low back pain and hip pain. Ligamentous and capsular pain may be present if one or more of the pelvic bones has moved beyond the normal range of motion and became stuck, thus perpetuating soft tissue pain. Treatment can often produce dramatic results in a short period of time by passively restoring normal motion. In this example, the hypomobility is transient and is appropriately referred to as apparent hypomobility. True hypomobility or status hypomobility is much more resistant to treatment and at times non-responsive. Often, degenerative changes or disease has occurred over time, and thus normal mobility cannot be restored. Mild forms of true hypermobility can be managed readily, whereas moderate and severe forms are quite challenging. Other authors have addressed true hypermobility and instability within this book.

Apparent hypermobility and apparent hypomobility often coexist. Mobility testing of the pelvis reveals one direction of decreased mobility, whereas testing in the opposite direction reveals increased mobility. This is quite common, and treatment directed at restoring normal movement in the direction of hypomobility usually also restores normal movement in the direction of the apparent hypermobility. This chapter addresses common patterns of apparent hypomobility and apparent hypermobility.

It is an established fact that the SIJ has a small amount of functional motion, as does the symphysis pubis (Vleeming et al 1992). There may be a greater than normal amount of motion due to trauma, repetitive overload, inflammation, hormonal laxity, or heredity. Bernard (1992) has demonstrated through fluoroscopy that the SIJ does move with manually applied loads such as those utilized in evaluation and treatment. What has not been established is whether or not manual clinical tests and treatments specifically affect *only* the SIJ. It may be that mobility is evaluated and treated manually as part of the integrated system of the spine, pelvis, and hip. The SIJ is part of this system, and it does not function in an isolated fashion. Mobility tests that attempt to isolate actual joint play may yield useful information about the system; however, we cannot say with certainty that mobility tests exclusively isolate *only* the SIJ.

For several reasons, specific joint mobility tests (also called spring tests) may yield information about perceived movement that may be greater than the actual movement that occurs. The bony landmarks used are at a distance to the joint and may thus amplify perceived motion. The spring test may be applied in one plane and yet may produce triplane motion in the joint, and the kinesthetic information may therefore seem amplified. A spring test may induce simultaneous motion at both SIJs and the symphysis pubis. A small degree of cartilage and bone deformation may also occur. Last, in spite of our best efforts to isolate the joint, the test might actually incorporate the lumbopelvic–hip region. These reasons do not detract from the clinical utility of the spring tests, as they evaluate an important and often overlooked aspect of joint function, which is joint play. This will be addressed later.

PALPATION OF LUMBOPELVIC LANDMARKS

Even though it is part of a standard lumbopelvic evaluation, accurate palpation of lumbopelvic landmarks in standing and sitting can at times be difficult owing to muscular response to gravity. In standing, the pelvic posture can be influenced by biomechanical dysfunction above and below the pelvis. Palpation of the landmarks in supine and prone lying may yield more accurate information about the isolated lumbopelvic structure as the influence of the upper and lower body is reduced. A higher inter- and intrarater agreement has been observed with supine and prone palpation as part of an evaluation protocol (Ellis et al 1989). An abbreviated evaluation that addresses bony palpation is presented in Fig. 42.1. Evaluation should also include palpation of all soft tissues, especially muscles and ligaments. A distinction needs to be made between *positional dysfunction* and *movement dysfunction*. Positional dysfunction describes how it is positioned; movement dysfunction describes how it cannot move. Evaluation and treatment that rely on position alone are at best speculative. Movement testing is presented below.

The client should lie in a symmetric posture. Record findings on only one side of the body and check the appropriate side. When findings are symmetrical place an = sign in front of the first box.

Side of body:	☐ Right	☐ Left
Supine palpation		
Leg length	☐ Long	☐ Short
ASISs	☐ Anterior	☐ Posterior
ASISs	☐ Superior	☐ Inferior
ASISs	☐ Medial	☐ Lateral
Anterior iliac shelves (The anterior iliac shelf is the 5 cm portion of the ilium above the ASIS)	☐ Superior	☐ Inferior
Pubic bones (entire length)	☐ Anterior	☐ Posterior
Prone palpation		
PSISs	☐ Anterior	☐ Posterior
Posterior iliac shelf (The posterior iliac shelf is the superior portion of the ilium that is midway between the midline of the spine and the most lateral pelvis)	☐ Superior	☐ Inferior
Ischial tuberosity	☐ Superior	☐ Inferior
Sacral palpation bilaterally at S1, S2, S3, S4 and S5	☐ Anterior	☐ Posterior
Sacral inferior lateral angles	☐ Superior	☐ Inferior
L5 position	☐ Rotates left	☐ Rotates right
L5 response to prone press-up	☐ Rotates left	☐ Rotates right
Sitting palpation		
L5 in flexion	☐ Rotates left	☐ Rotates right
L5 in extension	☐ Rotates left	☐ Rotates right
L5 in neutral	☐ Rotates left	☐ Rotates right

Fig. 42.1 Bony position palpation of the pelvis and L5.

PELVIC MOBILITY AND JOINT SPRING TESTS

Mobility tests can be general or specific. For example, an anteriorly directed force on the left of the sacrum at the level of the joint (S1, S2, and S3) induces a right rotational force and is a joint spring test. In contrast, right active lumbar and pelvic rotation is a general mobility test. Both types of test are important in evaluating clients with suspected SIJ dysfunction. The specific joint spring tests give more information about joint and ligament function. The general mobility tests will give more information about whole patterns of motion influenced by several joints and several muscle groups. The following gross motion tests are presented in the literature and are in fairly common use: the standing trunk flexion test, standing hip flexion (Gillet's) test, sitting flexion test, and long sit test (Potter & Rothstein 1985). These gross motion tests implicate faulty motion of the pelvis as a unit but are not very specific; however, they are often utilized to evaluate purported faulty 'sacroiliac joint motion'. The SIJ is within the pelvis, and a more appropriate description might be 'faulty lumbopelvic–hip' motion. These tests are useful screening tests but cannot provide the same information as the spring tests.

It is nearly impossible to perform a joint spring test in standing. It is much easier to perform isolated joint spring tests with the client supine and prone. As the SIJ functions as a shock absorber, the spring tests might be able qualitatively to assess that function. The use of the term 'spring' seems very appropriate when testing the quality of pelvic joint play as there is a very discernable elastic feel in loading the pelvic joints, in imparting the actual spring test, and in the quality of recoil.

Walker (1992) asks a relevant question with regards to motion testing:

> Is the motion present adequate in total range to be detected by observation and manual palpation, as extensively described by several clinicians? The minimal range of motion present in probably most of the population casts doubt on whether therapists can detect 1 to 3 degrees or 1 to 3 mm of motion occurring specifically at the SIJ. Perhaps the term *play* (joint play) should be used when referring to the SIJ, as *motion* implies quantity of motion similar to other synovial joints, which does not appear to be the case.

The SIJ does not exist in isolation with regard to anatomy and function. Perhaps more important than the fact that motion occurs within the SIJ is the concept that it occurs *through* the SIJ. Proper function of pelvic articulations requires the ability to translate forces through these articulations and to dissipate forces via viscoelastic properties. Articular spring tests are useful in evaluating these important properties of pelvic joint function.

Specific pelvic joint spring tests

All tests are carried out first on one side and then the other. Spring tests are always used even if the pelvis is symmetric as movement dysfunction may still be present. Firm and increasing pressure is applied to the part being tested until motion no longer occurs. At this point the soft tissue and joint slack is taken up and maintained before imparting the spring test. The actual spring test is then performed when an additional force is imparted. The spring test should therefore test primarily joint play (qualitatively) in the joint, and to a lesser extent a response in the surrounding soft tissue. When performing the spring test, take note of the quality of the initial load, the end feel of the spring test, and the feel of recoil, as well as the subjective response. Retest several times if unsure. When evaluating the recoil, it is important to return to the point at which the slack is taken up, rather than abruptly letting go. The quality of the perceived joint play is rated as normal, hypomobile, or hypermobile. A 0–6 scale can also be utilized (Paris 1991):

0 = ankylosis or no detectable movement
1 = considerable limitation in movement
2 = slight limitation in movement
3 = normal (that is, for the individual)
4 = slight increase in motion
5 = considerable increase in motion
6 = unstable.

Of course, there is a degree of subjectivity in rating joint play. Skill in joint spring testing comes with practice and training. Spring tests are not used to determine whether pain is present when one is evaluating biomechanical function of the pelvic girdle. It is not uncommon for clients to have biomechanical dysfunction that is subthreshold, so pain is not present. Additionally, the forces imparted with clinical tests applied to the knee do not replicate physiological forces (Noyes 1977), and this might also be true for the pelvis. However, if pain is encountered, it is acknowledged, the test is modified or deferred, and an interpretation of the pain is attempted.

Spring tests can be measured with force transducers, for example MicroFET™ muscle testing device (Hoggan Health Industries, Draper, UT, USA). This is a hand-held instrument that measures the amount of force applied by the clinician. After taking up the slack in the joint, the clinician can then apply an additional force and determine how much force is applied when joint play is perceived. Both sides are compared. The clinician can measure pre- and post-treatment force. Most force transducers used in the clinic describe force in pounds, or kilograms, although force described in Newtons (N) accounts for the influence of gravity. For the benefit of the interdisciplinary audience, all three measures will be presented. The spring tests average 88 N (20 lb, 9 kg) for taking up the slack and up to 176 N (40 lb, 18 kg) to apply the spring test. The force needed may vary from person to person. The above averages serve as a guideline with which to develop the skill of applying the spring tests. The appropriate amount of force is the least amount that yields useful information without increasing pain. The initial load takes from 2–3 s and performing the spring test takes 1–2 s, as does assessing the recoil.

A study was performed to determine whether therapists could learn accurately to produce specific forces to the lumbar spine (Keating et al 1993). The authors concluded that therapists can learn to quantify applied forces, which has implications for evaluation and communication of joint behavior. This study is encouraging and a similar study with forces applied to the pelvis is needed.

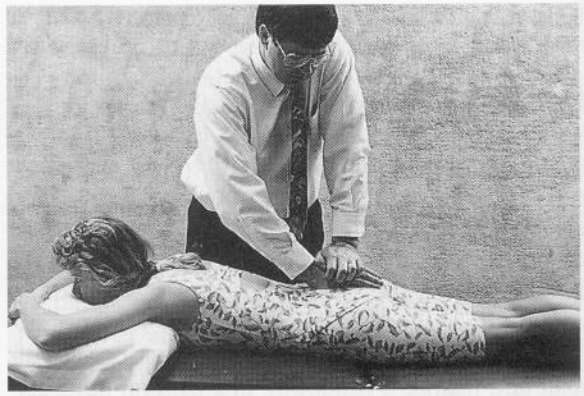

Fig. 42.2 Prone sacral rotation spring test.

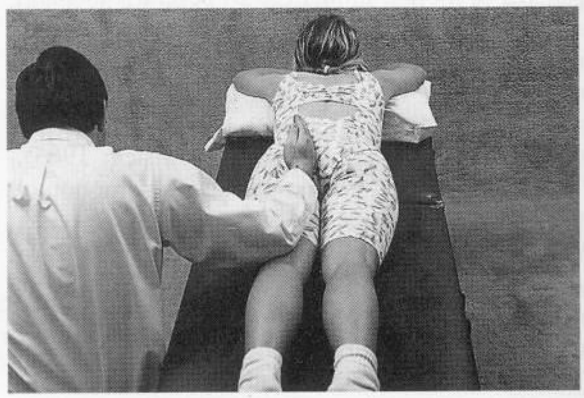

Fig. 42.3 Prone sacral side-bending spring test.

The basic sacroiliac joint spring tests

1. ***Prone sacral rotation*** (Fig. 42.2). With the client prone, apply the ulnar border or the heel of your hand on the left side of the sacrum at the joint level (S1, S2, and S3). You must be medial to the posterior superior iliac spine (PSIS) to assure that you do not have contact on the ilium. Apply an anteriorly directed force of up to 88 N (20 lb, 9 kg) to take up the slack in the joint, and then an additional force of up to 176 N (40 lb, 18 kg) to assess joint play. Repeat the test on the other side. Pressure on the left side induces right rotation; pressure on the right induces left rotation.

2. ***Prone sacral side-bending*** (Fig. 42.3). With the client prone, palpate the coccyx and locate the inferior lateral angles of the sacrum by pushing laterally and superiorly with your thumbs. You will have to depress the soft tissue to make bony contact. Then place the ulnar border of your hand on the left inferior lateral angle. Apply a superior force of up to 88 N (20 lb, 9 kg) to take up the slack. Only a minimal additional force

of up to 49 N (11 lb, 5 kg) is required to assess joint play. Repeat the test on the right side.

*3. **Supine posterior rotation of the ilium*** (Fig. 42.4). With the client supine, place as much contact as possible with one hand on each ilium. The hand should mold to the anterior ilium to maximize comfort. Take up the slack on one side by applying up to 88 N (20 lb, 9 kg), directed at a 45° angle. The force applied is a posterior rotary force. After taking up the slack, apply an additional force up to 176 N (40 lb, 18 kg) to assess joint play. Repeat the test on the other side.

*4. **Prone anterior rotation of the ilium*** (Fig. 42.5). With the client prone, place the heel of your hand on the left superior ilium, just above and lateral to the PSIS. Apply a pure anterior force with up to 88 N (20 lb, 9 kg) of force to take up the slack. Then apply an additional force up to 176 N (40 lb, 18 kg) to assess joint play. Repeat the test on the right side.

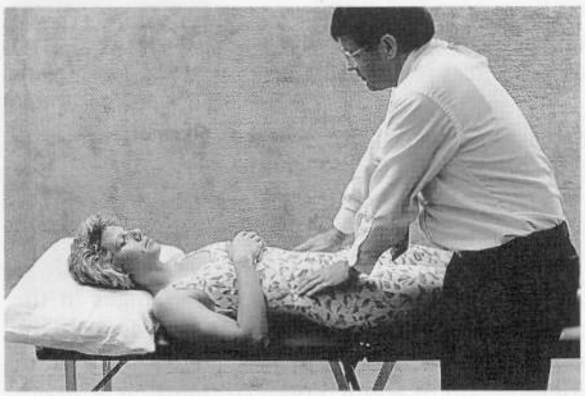

Fig. 42.4 Supine posterior rotation of the ilium spring test.

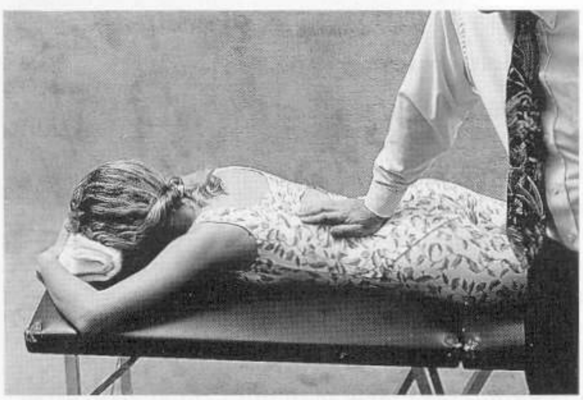

Fig. 42.5 Prone anterior rotation of the ilium spring test.

*5. **Prone anterolateral glide of the ilium*** (Fig. 42.6). With the client prone, place the heel of your hand on the posterior ilium, including the medial portion of the PSIS and the portion of the ilium above and below the PSIS. Take care not to include the sacrum or the test will be invalid. Apply up to 88 N (20 lb, 9 kg) of force directed anterolaterally at a 45° angle. After taking up the slack in the joint, apply an additional force up to 18 kg to assess joint play. Repeat the test on the other side.

A convenient grading form for basic spring tests is available (Fig. 42.7).

EVALUATION AND TREATMENT CONSIDERATIONS

A diagnosis is established by a physician prior to using this approach to evaluation and treatment. Mechanical pain responds rather quickly to mechanical treatment, and thus care is not prolonged in the absence of progress. Whether or

Fig. 42.6 Prone anterolateral glide of the ilium spring test.

	Hypomobile	Hypermobile
1. Sacral rotation (prone)	☐	☐
2. Sacral side-bending (prone)	☐	☐
3. Posterior rotation of the ilium (supine)	☐	☐
4. Anterior rotation of the ilium (prone)	☐	☐
5. Anterolateral ilium glide (prone)	☐	☐

Fig. 42.7 Basic pelvic spring test grading form.

not this approach is effective can usually be determined within 2–3 visits, up to a maximum of 6. Previous to utilizing this approach, a thorough evaluation is performed, including the lumbar spine, the hip joints, a review of medical tests, history-taking, neurological screening, and consultation as appropriate. This approach can easily be integrated or interfaced with other approaches to low back pain.

Caution is warranted and treatment may be contraindicated in the presence of poor rapport, severe protective muscle guarding, no direction of movement that eases pain, recent herniated nucleus pulposus with nerve root compromise, paresthesia or sensory loss below the knee, and undiagnosed pain. This list is not exhaustive, and sound clinical judgement always takes precedence.

Treatment should be tolerated with minimal, if any, discomfort. Treatment is usually perceived as relieving pain and is always discontinued if pain increases to a moderate degree during the procedure. If painful, reassessment is carried out to determine the appropriate course of action. This method of evaluation emphasizes the role of joint function and treats on the basis of faulty joint play. It acknowledges that there is a relationship between pain and function, and that treatment should address both. The rationale for this treatment approach has been presented elsewhere (Hesch et al 1992).

THE MOST COMMON PATTERN OF LUMBOPELVIC MOVEMENT DYSFUNCTION

The most common pattern of faulty lumbopelvic movement dysfunction is based on the evaluation of palpation and spring tests described earlier. In an outpatient physical therapy clinic, this pattern is encountered on a daily basis. In certain patients, this pattern appears to be the root cause of the lumbopelvic pain syndrome; in others, it is only a contributing factor. There are many other patterns of lumbopelvic movement dysfunction, which are described in detail elsewhere (Greenman 1996, Hesch 1996). Based on this method of evaluation, 90% of the patient population with SIJ dysfunction will also have joint dysfunction of the lumbar spine (Kraemer, unpublished data).

There are eight components of the most common pattern. Patients typically present with all eight, but occasionally may have fewer:

1. left posterior pubic bone
2. left sacral rotation
3. left sacral side-bending fixation
4. right anterior ilium
5. left posterior ilium
6. type I right inflare
7. type I left outflare
8. type II left lumbar flexion movement dysfunction.

Left posterior pubic bone

Positional dysfunction. The entire anterior surface of the left pubic bone is posterior in relation to the right.

Movement dysfunction. Spring tests at the symphysis pubis are rarely utilized as palpatory findings correlate very highly with the spring test findings, and clients are often quite tender even with mild pressure. If an anterior-to-posterior spring test is performed, it will reveal hypermobility on the left and hypomobility on the right.

Other findings. Tenderness of the soft tissue overlying the left pubic bone and at the left sacrospinous ligament may correlate with a posterior pubic bone. No doubt, changes in the dimension of the sciatic notch would accompany a pubic shift, and there may be adverse tension or compression of sciatic notch contents.

Treatment. See Fig. 42.8.

Left sacral rotation

Positional dysfunction. With the patient prone, the entire left side of the sacrum is prominent as the sacrum appears rotated left about a vertical axis.

Movement dysfunction. The prominent left side will have decreased anterior mobility; the deep right side will have increased anterior mobility (spring test 1).

Other findings. Sacral rotation has a direct effect on L5–S1 facet motion.

Treatment. See Fig. 42.9.

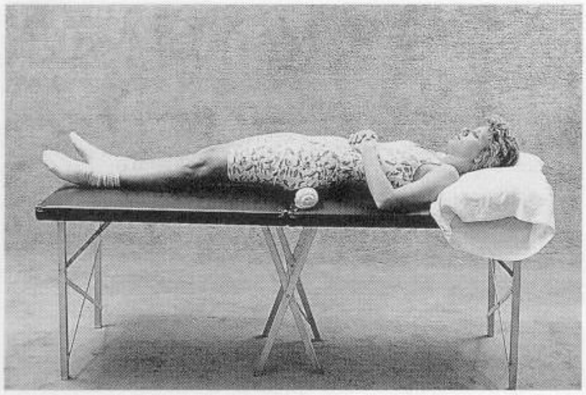

Fig. 42.8 Self-treatment for left posterior pubic bone. *Patient Position*: supine with hips and knees in neutral position. *Self-treatment*: place a rolled (7 cm diameter) towel horizontally under the left ischium and maintain for 2–5 min. Then retest via palpation.

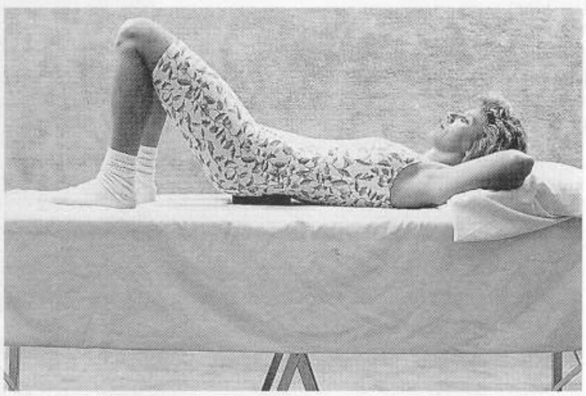

Fig. 42.9 Left sacral rotation treatment. *Patient position*: supine with hips and knees flexed. Padded dowel placed vertically on the left side of the sacrum to encompass L5–S1, and S1–3. Padded dowel is 2.5 cm × 10 cm wood dowel covered with pipe foam for comfort. *Treatment*: maintain this position for 2 min. After treatment, retest mobility.

Left sacral side-bending fixation

Positional dysfunction. The left inferior lateral angle will be inferior in relation to the right.

Movement dysfunction. There is a lack of superior glide when tested at the left inferior lateral angle (spring test 2).

Other findings. Sacral side-bending can perpetuate faulty lumbosacral motion coupling.

Treatment. See Fig. 42.10.

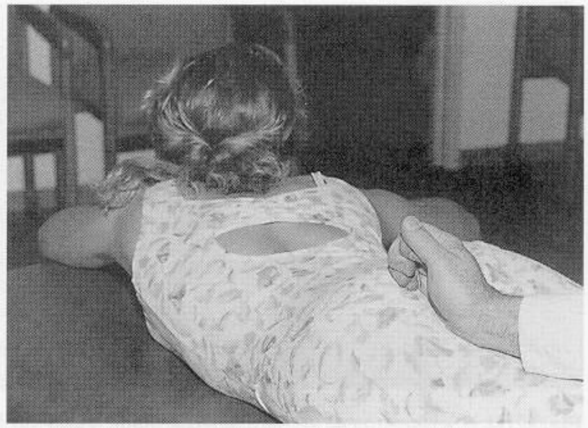

Fig. 42.10 Left sacral side-bending treatment. *Patient position*: prone with the trunk side-bent to the right. This is done to minimize left lumbosacral facet compression during mobilization, and to pull the sacrum into right side-bending. *Therapist position*: the ulnar border of the hand is on the undersurface of the inferior lateral angle of the sacrum on the left side. *Treatment*: gently take up any available slack and perform five gentle oscillations. The combined force to take up the slack and perform oscillations rarely exceeds 137 N (31 lb, 14 kg). After treatment, retest mobility with the spring test.

Right anterior ilium

Positional dysfunction. The anterior superior iliac spine (ASIS) anterior, medial, and inferior; anterior iliac shelf inferior; posterior superior iliac spine PSIS anterior; posterior iliac shelf superior; and ischial tuberosity superior.

Movement dysfunction. Reduced posterior rotation (spring test 3).

Other findings. Dysfunction of the anterior ilium is very common (DonTigny 1993), particularly on the right side, but rarely on the left. It is a common postural adaptation due to asymmetric sitting posture, getting in and out of the car in a hurried fashion thus twisting the spine on the pelvis, holding babies supported on one side of the pelvis, etc. It is present to some degree in most of the adult population and is often asymptomatic. In acute injuries, the client may have had an anterior ilium for quite some time, then overloaded the joint and soft tissues, enhancing a pattern that was previously quiescent. Anterior ilium is a contributor to faulty biomechanics of the spine and lower extremity, and is therefore often addressed in clients who do not appear to have sacroiliac joint pain. Anterior ilium

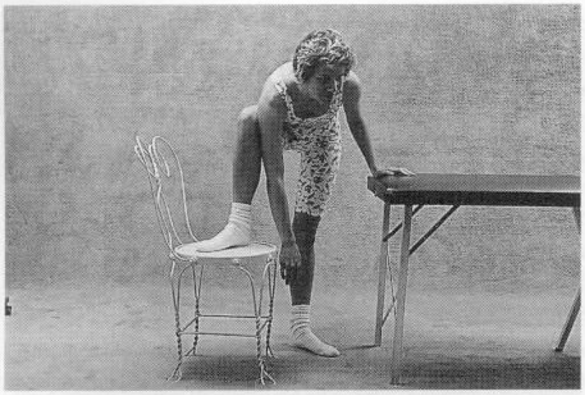

Fig. 42.11 Self-treatment for right anterior ilium. The client places the right foot on a stool with the hip flexed to 90° and abducted to 45°. The client then reaches for the floor with the right hand, which is medial to the right knee. The stretch is performed gently for 2 min. After treatment, retest mobility. *Alternate method*: in sitting, supine or side-lying, bring the knee on the right side to the outside of the right axilla and stretch gently for 2 min. After treatment, retest mobility.

contributes to left lumbar rotation via pull of the right iliolumbar ligament.

Treatment. See Fig. 42.11.

Left posterior ilium

Positional dysfunction. ASIS superior, lateral, posterior; anterior iliac shelf superior; posterior iliac shelf inferior; ischial tuberosity inferior; and PSIS posterior.

Movement dysfunction. Decreased anterior rotation of the left ilium (spring test 4).

Other findings. Dysfunction of the posterior left ilium does not always follow that of the anterior right ilium, but when present is usually more symptomatic than that of the anterior ilium. Clients usually also have limited and painful lumbar extension, with restricted facet joint movement.

Treatment. See Figs 42.12 and 42.13.

Type I right inflare/Type I left outflare

Position dysfunction. Right ASIS medial and anterior; right PSIS lateral and anterior; left ASIS lateral and posterior; left PSIS lateral and posterior.

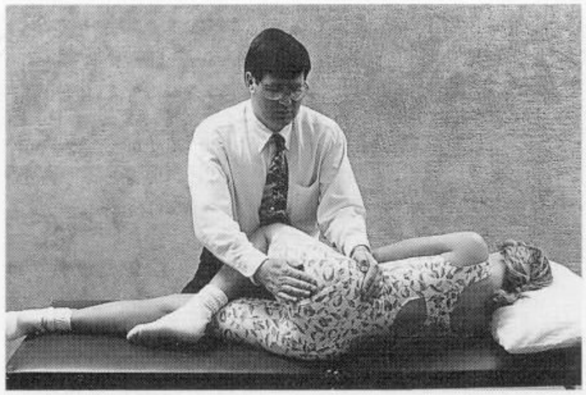

Fig. 42.12 Side-lying treatment for left posterior ilium. *Patient position*: side-lying with the left hip on top flexed 60–90°, assuring that the ilium does not rotate posteriorly. Two or three pillows are placed under the left thigh to keep it both horizontal and comfortable. *Therapist position*: left palmar contact is made on the posterior ilium, 2–4 cm above the level of the PSIS. The patient's left knee rests against the therapist's abdomen. *Treatment*: the therapist takes up the slack by gently pushing the client's femur posteriorly into end-range and pulling the ilium anteriorly into end-range with the left hand. Gently oscillate the ilium anteriorly 10 times with the left hand. After treatment, retest mobility with spring test.

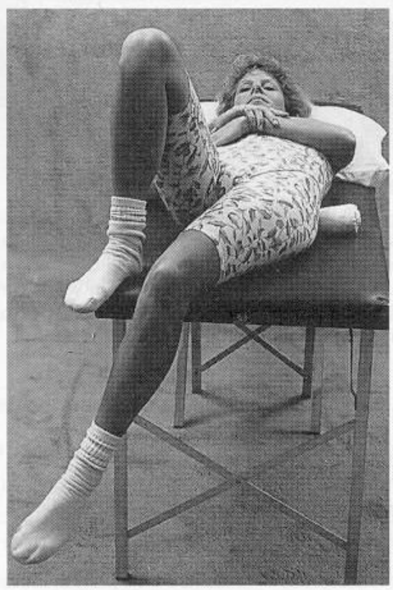

Fig. 42.13 Self-treatment for left posterior ilium. *Patient position*: supine with the left leg off the table. The left hip is maximally adducted. The right hip is flexed and abducted with foot flat on the table. *Treatment*: maintain this position and let it stretch passively for 2 min. The left thigh should literally be suspended above horizontal by the hip capsule and soft tissues, otherwise the degree of adduction is inadequate.

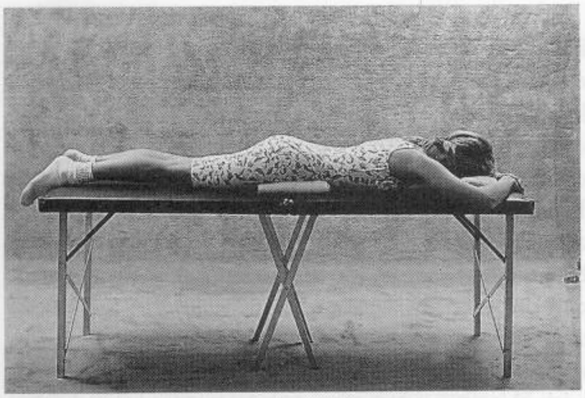

Fig. 42.14 *Flare exercise 1.* Lie on your stomach with a 7 cm diameter, 25 cm long rolled towel placed vertically under your right anterior pelvis and thigh for 2 min.

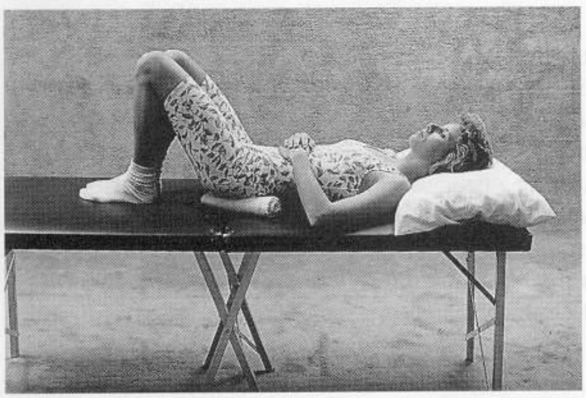

Fig. 42.15 *Flare exercise 2.* Lie on your back with the towel roll under the left part of your pelvis at a 30° angle for 2 min. The towel roll should encompass the ilium and the ischium, but not the sacrum. Keep both knees bent and feet flat.

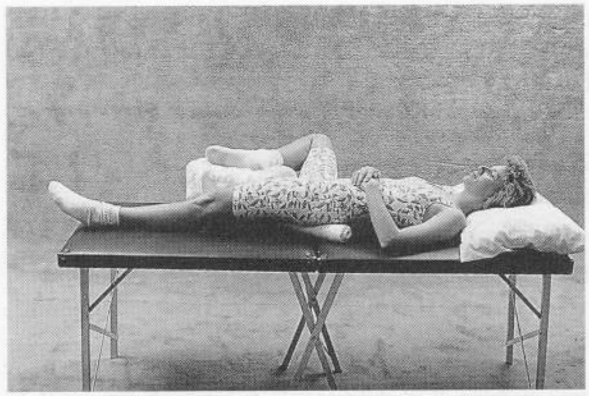

Fig. 42.16 *Flare exercise 3.* In the same position as in Fig. 42.15 with the towel roll, bend your right hip to 90° and let it stretch out to the right side for 2 min. Keep your left leg straight. To assist the 90° angle of the hip, you may place a folded pillow under the right foot and lower leg.

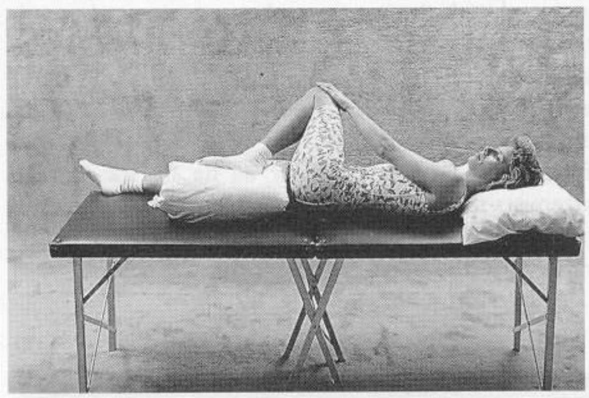

Fig. 42.17 *Flare exercise 4.* In the same position as in Fig. 42.15 but without the towel roll, bend your left hip to 90°and with your left hand, push the left thigh to the right. Use a folded pillow under the foot and lower leg if needed to maintain 90° hip flexion, and stretch for 2 min.

Movement dysfunction. Increased anterolateral mobility will be noted when tested at the right posterior ilium in prone (see Fig. 42.6 above). This hypermobility can be subtle. There will be a very apparent decrease of anterolateral mobility as tested in prone at the left posterior ilium.

Other findings. Type I right inflare is a very common pattern. As it is always accompanied by a type I left outflare, treating both sides is mandatory.

Treatment. See Figs 42.14–42.17.

Type II left lumbar flexion movement dysfunction (Greenman 1996)

When the L5–S1 facet has restricted flexion on one side, ipsilateral rotation will be induced when flexion is attempted. If a motion segment cannot flex on the left, it will remain in extension on the left when the rest of the spine flexes. This creates a pathological axis, and the vertebra will extend at the left facet, rotate to the left, and typically side-bend to the left. With flexion movement dysfunction, there may be a slight asymmetry in neutral. With active extension there is no asymmetry; with increasing flexion, there is increasing asymmetry. Palpation through the soft tissues overlying the transverse processes, facets, or laminae will demonstrate increased prominence on the left with flexion. In other words, the side with flexion dysfunction becomes prominent with flexion.

Treating type II left lumbar flexion motion dysfunction

This is by muscle energy treatment (Greenman 1996).

Patient position. Sitting with the lumbar spine in flexion.

Therapist position. Sitting behind the patient. The left thumb palpates the left lumbosacral junction. The right hand is placed in front of the right shoulder.

Treatment. Keep the left ischium in contact with the seating surface. The motion barrier is engaged with flexion from above downwards until the lumbosacral segment attempts to flex. Then side-bending to the right and rotation to the right are added until the L5–S1 segment is again engaged. Resist the patient with contact at the front of the right shoulder as he or she gently attempts to rotate left for 10 s isometrically. Then have the patient relax, and he or she will passively move into the barrier. Repeat three times.

Self-treatment. See Fig. 42.18.

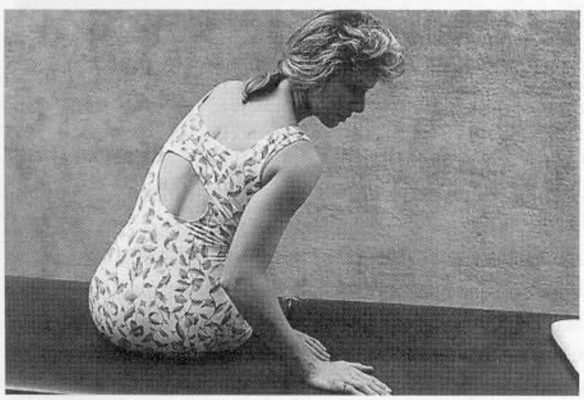

Fig. 42.18 Self-treatment for type II left lumbar flexion motion dysfunction. Keep the left ischium in contact with the seating surface. The patient sits with the lumbar spine in flexion, right side-bending, and right rotation, gently engaging the motion barrier as described above. Gentle active right rotation is repeated 30 times at mid-to-end range.

After treating the lumbar motion dysfunction, it is appropriate to re-evaluate and treat whatever other motion dysfunctions may be present in the lumbar spine, pelvis, and hip, as it is possible that other types of lumbopelvic and hip joint mobility dysfunction may be present (Greenman 1996, Hesch 1996). This is an appropriate time to address muscle function of the spine, pelvis, and hip. Compensation for the lumbopelvic dysfunction can occur in the lower extremity and in the spinal axis as high as the upper cervical spine. Left hip rotator muscle imbalance is almost always present, with shortened left external rotators.

CONCLUSIONS

1. The most common patterns of SIJ dysfunction based on palpation and joint spring tests have been presented. The spring tests may be more appropriate in testing joint play than are gross motion tests that purport to test SIJ motion. Both testing procedures may be more useful in addressing the lumbopelvic structure when used in combination. Additional spring tests are available for more complex presentations, including 12 newly encountered patterns of dysfunction (Hesch 1996).

2. The pelvis is the hub of the body, and movement dysfunction here can contribute to compensatory patterns above and below. Thus, when dysfunction of the lumbopelvic–hip complex is encountered, it is appropriate to evaluate and treat the entire kinetic chain.

3. Continued research on traditional and emerging methods of evaluation and treatment is needed. While research is in progress, we must be aware of what is already known and what new questions need to be answered regarding this complicated and somewhat mysterious articulation. As our understanding of the coupled lumbopelvic–hip complex and its relevance to the rest of the kinetic chain is growing, so must our treatment approaches. We must continue to treat it based on our current understanding, and we must strive diligently for better methods of evaluation and treatment.

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