Sacro-occipital technique use of padded wedges for diagnosis and treatment

8

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CHAPTER CONTENTS

Introduction

This chapter discusses the use of 'padded wedges' (Fig. 8.1) in both diagnosing and treating low back conditions. Since the use of this equipment was pioneered by DeJarnette, the developer of sacro-occipital technique (SOT) (Cooperstein 1996), padded wedges are often referred to as 'SOT blocks'. In this chapter, we use the terms padded wedges and pelvic blocks interchangeably. Blocks can be used in therapeutic situations as well as to generate diagnostic information. Before turning to their use, the historical context in which padded wedges were developed and their place in modern manual medicine will be addressed.

Historical context of padded wedges

Major Bertrand DeJarnette, DC and DO, although universally known as 'The Major', bore no military commission. While working as an engineer, he sustained severe injuries in an explosion, which led to both a consultation with an osteopath and eventually attending osteopathic college (Heese 1991, Unger 1995). There he met and became very friendly with osteopath Garner Sutherland, developer (perhaps co-developer with chiropractic's Nephi Cottam) of cranial manipulation. After receiving an osteopathic degree in 1922, DeJarnette obtained a chiropractic degree in 1924, motivated in part by a chance encounter with a senior chiropractic student. He was arrested for practicing medicine without a license in 1929. Collaboration with Randolph Stone (of 'bloodless surgery' fame) eventually led to the development of chiropractic manipulative reflex technique (CMRT) (Heese 1991). DeJarnette's 1983 claim that SOT was then in its 58th year would assign its invention to the year 1925 (DeJarnette 1983). The use of pelvic blocks was introduced in 1962 (Heese 1991).

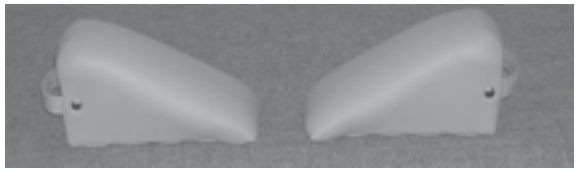


Figure 8.1 Padded wedges (pelvic blocks).

Padded wedges and SOT

In a narrow sense, SOT practitioners use blocks to effect a low-force correction of pelvic torsion, a complex rotation of the innominate bones in opposite directions (Cooperstein & Lisi 2000). However, in a broader sense, the blocks are part of a strategy to correct full-body structural distortions that include pelvic torsion, but are much more than that, and may include visceral as well as somatic conditions. In SOT, the ascription of patients to one of three possible 'categories' is central, and is briefly discussed below. Readers untrained in SOT may not make much sense of the next paragraph, but it is included in order to offer a sense of the jargon, its look and feel.

Example of SOT descriptive jargon Category I, 'the first level of subluxation to develop' according to Saxon (1985), involves failed coordination between the sacroiliac and cranial-sacral respiratory mechanisms, normally connected by the dural membranes and the flow of cerebral spinal fluid. Category II, following on the heels of an unresolved Category I subluxation, is essentially a post-traumatic clinical entity. It is said to involve the 'weight-bearing' function of the sacroiliac joint and 'affect the connective tissue of the cranial sutures and spine, the iliofemoral ligaments, the extremities, and the psoas muscle' (Getzoff 1993). An unresolved Category II may progress to a Category III, which Unger characterizes as an insult to the lumbosacral cartilaginous system (Unger 1991). Saxon (1985) adds that it is accompanied by nerve root compression or stretch syndrome, and Getzoff (1993) that there is injury to 'disc tissue, the surrounding muscles, the sciatic nerve and the pyriformis [sic] muscles'.

SOT is a prime example of a reflex technique. These are techniques or procedures that purport to examine or treat the patient by means of physiological pathways that tend to lie outside of what has been established by normal science. Such techniques often posit poorly understood connections between body parts and functions, such as an occipital area that would relate to cardiac function (DeJarnette 1966). Use of reflex techniques in SOT should not be confused with other, more conventional usages of the word 'reflex', as in 'deep tendon reflex' or 'pathological reflex'. Reflex techniques tend to be less forceful than other techniques, although nothing prevents a reflex practitioner from using a highly accelerated thrusting technique.

Once a theory, model or hypothesis underlying a reflex technique is validated, however ironic this may seem, it leaves the world of reflex technique and simply becomes a mainstream clinical reality. Although the use of padded wedges arose from a reflex technique, it does not follow that their use must be defined as a reflex procedure. Thus, readers not familiar with, or inclined to take up, reflex techniques, as we have defined them, need not eschew the use of padded wedges for that reason. One of the goals in this chapter is to rationalize the use of padded wedges, to help define their place in both the worlds of reflex and more orthodox manual medicine. These comments are not meant to discourage in any way the use of padded wedges as applied in reflex technique, even though that is not the author's practice inclination; and he would urge more research on such use. Rather, descriptions are offered as to how they can be used in a more orthopedic manner, by clinicians of literally any background.

Padded wedges and manual medicine

During the last several years a most welcome convergence and even integration of formerly competing technique systems and procedures has evolved, as many practitioners of manual medicine have become more familiar with, and supportive of, other techniques within and between professions. It is in this spirit that the use of padded wedges to diagnose and treat musculoskeletal disorders is presented. No attempt has been made to rigorously describe their use by SOT practitioners, either past or present. This chapter describes how padded wedges may be integrated into both other chiropractic techniques and healthcare disciplines. It is interesting to speculate what DeJarnette himself would have said about efforts to adapt the blocks to a contemporary practice setting, to wonder whether he would have resisted change or been pleased with the changes made – but such speculation will be avoided.

Provocation testing, directional preference and related procedures

Although SOT blocks were originally developed for treatment purposes, the author of this chapter has found them to be also very useful for diagnostic purposes. There is surprisingly little evidence that

any chiropractic examination method, or indeed any examination method used by any of the manual medicine professions, provides information that demonstrably improves the outcome of care (French et al 2000, Hestbaek & Leboeuf-Yde 2000, Leboeuf-Yde & Kyvik 2000, Lisi et al 2004). For example, Haas et al (2003) found that treatment of the cervical spine according to the findings of motion palpation did not result in a better outcome than random findings generated by a computer program, although a variety of interpretations of that study are possible. Lacking substantial evidence that most of the commonly performed examination procedures in manual medicine are clinically useful, it is proposed that provocation testing generally, and orthopedic blocking more specifically, may offer a fresh starting point, at least for assessment of lumbopelvic and more generally postural conditions.

Orthopedic testing aims generally at increasing or decreasing the biomechanical stress in particular joints or soft tissue, the more specifically the better. Blocks may be used in this regard to apply specific light forces, gravitational in nature, in order to identify the location of structural problems and the directions that impact upon the symptoms. As always, the aggravation of symptoms, when joints are stressed into a certain position, not only indicates which joints are the worst offenders, but provides a rationale for treatment.

- If blocks are positioned under the patient in a way that increases symptoms, this is a priori evidence that the patient should not be treated in accordance with this pattern.
- If blocks are placed under the patient so that symptoms are decreased, this generally suggests an appropriate pattern for treatment.
- From this point of view, the condition itself is not being diagnosed, indeed it may be argued that the exact mechanical diagnosis may not be as important as identification of a treatment approach likely to improve the condition.

Those who feel that in manual medicine the best treatment flows from the most exact diagnosis have not been convincing, in the view of the author. Manual medicine is not like surgical medicine, where a good surgical outcome depends on the right surgeon, doing the right surgery, on the right patient, at the right time, and for the right reason. Indeed, in manual medicine there is no reason to think a good outcome entirely depends on getting the right 'listing' (a term used by chiropractors to characterize a subluxation, akin to the osteopathic somatic dysfunction) or level with 'somatic dysfunction'. The surgery metaphor is much abused when applied to a manual, conservative care setting. The consequences of a surgeon removing the wrong kidney in a case of kidney cancer are not really comparable to a manual therapist treating the wrong spinal segment, or the right segment using the wrong line of thrust, especially since as a general rule it has not been possible to agree upon or localize the optimal spinal level to address (Cooperstein & Haas 2001).

Although surgery is distinctly non-iterative, experienced clinicians know that manual therapy by comparison is. They do not determine the right 'listing' or structural diagnosis so much as converge upon it as the case develops over time. There is a lot of trial and error, clinical hunches and sometimes 'mistakes' – call them suboptimal interventions – since most will work in the long run. Provocation testing skips the exact structural diagnosis, and leads intuitively to a functionally identified intervention likely to obtain a good clinical result.

Directional preference in the physical therapy profession

In the physical therapy field, a component of the McKenzie mechanical examination method has been shown to provide information that can favorably influence the treatment of the low back and neck (see Chapter 9). Donelson et al (1991, 1997) have demonstrated that patients may exhibit a directional preference upon mechanical examination of the spine. This is described as a direction of motion that produces a beneficial change in symptoms, such as increased range of motion, decreased local pain, or decreased pain radiation. In patients with back and leg symptoms, the preferred treatment vectors are those that centralize symptoms (i.e. make them more proximal), whereas treatment directors that peripheralize symptoms (i.e. make them more distal) are to be avoided.

The incorrect, opposite treatment vector, although the majority of patients do not seem to be made worse by it, certainly results in much less improvement and a much greater withdrawal rate in a study setting (Long et al 2004). Several authors have shown that using directional preference to guide the treatment of certain low back pain patients results in positive clinical outcomes (Donelson et al 1997, Long 1995, Sufka et al 1998). Long et al (2004) convincingly argue that patient subtyping into groups more or less likely to respond favorably to various types of care has been very much neglected in manual medicine. It has been a great error to regard all patients suffering from mechanical pain as essentially representative of the same clinical entity, and to not attempt to find a way to customize treatment according to patient subgroups; in this case, based on directional preference. Although the McKenzie work has progressed to the

point that the examination protocol can be shown to provide results congruent with advanced imaging (Donelson et al 1997), the clinical utility of the work does not really depend on its ability to provide an accurate morphological diagnosis.

Provocation testing in chiropractic

In chiropractic, elements of mechanical examination and directional preference have been developed as *provocation testing*, a relatively novel chiropractic examination method. As described by Triano et al (1997), provocation testing assesses changes in patient symptoms during the administration of a manually applied test load. In a manipulation setting, this usually means preparing a patient as if to administer a manipulative thrust, without actually doing so. Essentially, it involves the application of pre-manipulative tension, either singularly or repetitively. The patient's response to provocation testing either supports or refutes the appropriateness of the given procedure, its location and vector. Several authors have suggested that using provocation testing to guide the point application and direction of chiropractic manipulation has resulted in positive clinical outcomes (Cassidy et al 1993, Cooperstein 2000b, Hubka et al 1991, Lisi 2001, Triano et al 1997).

Test thrusting

Cooperstein & Morschhauser (2005) described a 'simulated adjustive procedure' (i.e. mock thrust or test thrust) as a light thrust, not intended to cavitate a joint, but otherwise resembling a high-velocity, low-amplitude (HVLA) thrusting procedure, especially as used in a learning or testing environment.

An anonymous survey of 14 North American chiropractic colleges found that 11 of 14 used such test thrusting in their technique classes (Cooperstein & Morschhauser 2005). The author suspects (but is not certain) that practitioners of manual therapy often use procedures akin to test thrusting in order to establish the appropriateness of an intended mechanical intervention. At the very least, it is reasonable to think that clinicians routinely detect apprehensive patient responses while preparing to deliver a manipulative thrust, and that they may modify or even retract their intention to deliver the planned manipulative thrust accordingly.

Using padded wedges for examination purposes

Although a priori testing of manipulation procedures has been quite feasible, there is no reason to limit provocation testing to *manipulation* pre-testing. In fact, the testing of mechanical vectors to determine the preferred direction of force application need not be technique-specific. Once directional preference is established, the clinician may choose among a variety of interventions – for example: high or low force, manual or instrument-assisted – as long as the direction, and to a lesser extent the magnitude, are guided by the results of provocation testing. Ultimately, this may lead to more reliable and valid examination methods for the selection of appropriate mechanical interventions.

Cooperstein (2000b) described his initial experience using padded wedges for provocation testing. The procedure involved identifying a tender or painful monitoring point in the low back, placing the patient on the blocks in various positions to assess changes in patient pain or tenderness, so deriving appropriate treatment vectors. (A more recently developed and simplified approach, not requiring the identification and assessment of changes in a tender point, is described below.)

The method is as follows:

- *Identification of the monitoring point*. The tender point may be primarily bony or articular: on either posterior superior iliac spine (PSIS), just medial to either PSIS in the sacroiliac joint, on either the lumbosacral, or any of the low lumbar facetal joints, or on a spinous process. Or, the monitoring point may be more myofascial or lodged in some other soft tissue: at the iliolumbar ligament area, the sacrotuberous ligament, or within any of the musculature. (There is no need to over-interpret the exact location of the tender point, since it will be used less to identify the specific pathology and more to monitor the appropriateness of alternative treatment vectors.)
- *Application of padded wedges*. The wedges are placed under the prone or supine patient to serve as fulcrums that allow gravitational forces to affect the position or movement of the sacroiliac and lumbar joints. Care is taken to insert the wedges to the same degree under the patient, usually bilaterally and perpendicular to the patient. (This does not emulate SOT block insertion, which is often done with the blocks angled in various and different ways.)

Provocation testing with blocks may as well be considered as an orthopedic test, since the purpose of virtually any such test is to put the joints under investigation in stressed or potentially de-stressed positions, noting the symptomatological changes and drawing the appropriate clinical conclusions.

SOT practitioners, who pioneered the use of padded wedges, also look for changes in pain or tenderness

severity and location while the patient is on the blocks, but almost exclusively in remote locations, such as within the shoulder girdle, rather than locally, in the sacroiliac and lumbar areas. The author prefers determining the *local* effects of blocking procedures.

Although provocation testing favors vectors that ameliorate, and eschews those that aggravate symptoms, there are at least two possible exceptions to this analysis:

1. During blocking procedures, centralization of leg symptoms sometimes occurs at the expense of a mild and temporary (i.e. during the office visit) increase in low back pain. According to Mackenzie protocols (McKenzie 1981), this is an acceptable tradeoff.
2. Lying on padded wedges very occasionally evokes mild, temporary pain in shortened tissues, even while pain or tenderness in joints is reduced, if the blocking position stretches these tissues (Peterson & Bergmann 2002, p. 72). Patients have no problem identifying this stretch-related pain as appropriate, as 'a good pain'. A typical scenario would be the production of mild low back myofascial pain in a hyperlordotic patient, even as the facetal joints become less tender, if the blocks are applied so as to flex the low back.

In principle, changes in symptoms could result from changes in bone and joint positions, from amelioration of joint restrictions (Gillet & Liekens 1973, 1981), a combination of the two, or something else entirely. It is tempting to conclude that the test results confirm a particular distortion pattern, or movement restriction. For example, the patient shown in Figure 8.2, whose pain happens to be ameliorated by the blocking position, *may* have a right posterior, left anterior pelvic torsion pattern; or, this patient *may* be restricted in left posterior innominate rotation and/or right anterior innominate rotation; or both.

On the other hand, as plausible as these inferences may seem, it is not necessary to insist upon them. Nor is it necessary to go beyond the clinical finding that symptom amelioration speaks in favor of the blocking pattern shown as a treatment vector. In fact, when blocks can be used for diagnostic purposes, this suggests that a mechanical (somatic) clinical condition has been identified that can probably be made better through the application of certain vectors and avoidance of others. The condition diagnosed is a very good example of what Haldeman et al (1993) call a 'manipulable lesion', his particular subluxation-equivalent term (Cooperstein & Gleberzon 2001, Haldeman et al 1993). The treatment options include, but are not limited to, leaving that patient on the blocks in the ameliorating position for some period of time. (The second part of this chapter focuses in greater detail on treatment protocols using padded wedges.)

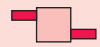
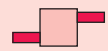
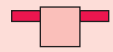
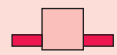
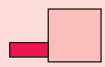
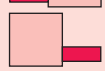
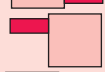
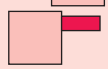
Figure 8.2 Prone diagonal blocking.

In the end, there is precious little information available as to whether, and to what degree, specific misalignments predict specific directions of restriction. We are not aware of any evidence confirming what pelvic misalignments, if any, are associated with particular pelvic movement restrictions. That stated, Table 8.1 identifies *consistent* positional and movement restriction diagnoses.

In SOT, the blocks are almost always used in pairs, usually diagonally, as in rows 1 and 2 in the table. In the author's practice the blocks are customarily inserted under the patient in at least four patterns, adding what may be described as sagittal to more typical diagonal placement, as in rows 3 and 4 of Table 8.1. Less frequently, single blocks are inserted under the patient, as in rows 5–8. The rationale for blocking positions beyond those typically used in SOT has been previously described (Cooperstein & Lisi 2004). It is recognized by the author that it is very time-consuming and cumbersome to test all eight blocking positions in the table, and in clinical practice this is rarely done. Usually testing the first four patterns provides enough clinical information to proceed.

As stated previously, if it is felt to be necessary to interpret the results of provocation testing, diagonally placed blocks are thought to exacerbate or ameliorate pelvic torsional states, or perhaps innominate restrictions in posterior and anterior rotation around an axis through the symphysis pubis (Cooperstein & Lisi

Table 8.1 Provocative orthopedic testing using padded wedges

Blocking pattern that ameliorates and/or does not aggravate	Consistent positional inference	Consistent restriction inference	Illustration
1. Left crest, right trochanter	Left AS/right PI (pelvic torsion)	Restriction in left posterior, right anterior innominate rotation	
2. Right crest, left trochanter	Right AS/left PI (pelvic torsion)	Restriction in right posterior, left anterior innominate rotation	
3. Bilateral iliac crests	Lumbopelvic hyperextension (sagittal plane fault)	Restriction in posterior pelvic tilting	
4. Bilateral trochanters	Lumbopelvic hypolordosis (sagittal plane fault)	Restriction in anterior pelvic tilting	
5. Left trochanter	Left PI (unilateral misalignment)	Restriction in left anterior innominate rotation	
6. Right trochanter	Right PI (unilateral misalignment)	Restriction in right anterior innominate rotation	
7. Left iliac crest	Left AS (unilateral misalignment)	Restriction in left posterior innominate rotation	
8. Right iliac crest	Right AS (unilateral misalignment)	Restriction in right posterior innominate rotation	

PI: posterior, inferior; AS: anterior, superior.

2000). Sagittally placed blocks putatively exacerbate or ameliorate symptoms related to lumbopelvic hypolordosis or hyperlordosis, and/or flexion/extension lumbopelvic restrictions.

Quantifying blocking as provocation testing

After years of clinical experience using padded wedges qualitatively for provocation testing, Cooperstein & Lisi (2004) set out to quantify the frequency and magnitude of possible subject responses using a soft-tissue algometer, in a minimally symptomatic (pain less than or equal to 2 on a numerical rating scale) population of 20 chiropractic students (Lisi et al 2004). In one experimental run, the baseline pain-pressure threshold (PPT) was measured at each PSIS and at each lumbosacral facetal joint. Next, repeat measurements were taken after placing the blocks under the research participants as depicted in the first four rows of Table 8.1, and in that exact order (to maximize procedural consistency).

In another experimental run, the subject was asked to identify the most tender point during the application of 8 kg of pressure, as measured and applied by the algometer through the examiner's thumb, rating the tenderness from 0 to 10 on a numerical rating scale. Then, as before, repeat measurements were taken with blocks in place, in the same four previously described blocking positions, and in the same order.

Although a variety of responses were obtained, most could be classified as falling into one of the following three categories:

1. non-responders: none of the blocking positions changed the PPT
2. coherent responders: at least one of the blocking positions reduced or increased pain or tenderness, while the opposite blocking position either had no effect or had an opposite effect
3. paradoxical responders: both a given blocking position and the opposite blocking position increased or decreased pain or tenderness.

Coherent responders, were defined as either being a *strong responder* in those whose pain or tenderness was increased in one blocking position and decreased in the opposite position, or as a *weak responder* in those whose pain or tenderness was either increased or

decreased in one blocking position, and unaffected by the opposite blocking pattern.

Although this was not anticipated, many of the study participants in the first experiment, in which each of four different monitoring points were checked before and after four patterns of block placement, experienced an across-the-board lowering of their PPTs. This apparently resulted from the excessive number of measurements taken. Thus irrespective of their other responses to blocking, this protocol was judged to be too invasive and thus unacceptable, and the data are not discussed in this description of the study.

Only one subject of 20 in the second protocol, in which only one monitoring point was assessed, showed a decreased PPT. Thus, this second method is preferred. Eleven of the subjects (55%) demonstrated a coherent response (three strong responders, eight weak responders), seven (35%) demonstrated a paradoxical pattern of response, and two (10%) were non-responders. In comparing baseline to post-blocking measurements, five subjects showed a decrease in tenderness, one showed an increase in tenderness, and 14 were unchanged.

In the case of strong responders, it was concluded that there are very clear indications as to how to proceed clinically, with blocking, or other directionally consistent procedures. In the case of weak responders, although there is less certainty in the suggested clinical approach, it seems unlikely that the patient will be made worse by proceeding in accordance with its results, and is more likely to be improved than worsened. The strong and weak responders make up collectively more than half the patients, at least in the sample of minimally symptomatic research participants. It might be expected that this percentage would increase in a more symptomatic population.

Simplified approach to provocation testing: the quick scan

Having found quantitative support for the use of padded wedges for provocation testing, using both diagonal and sagittally applied vectors, it was thought expedient to return to a more qualitative and simpler approach, one more conducive to clinical practice. Instead of monitoring changes in a tender or painful monitoring point, the patient is now asked to report which of two blocking positions is preferred to the other, first for diagonal blocking (rows 1–2, Table 8.1) and then for sagittal plane blocking (rows 3–4, Table 8.1) (Fig. 8.3).

For the sake of consistency, the blocking process always begins with a high left block and low right block; the blocks are then reversed (rows 1–2, Table 8.1). The patient is then asked which blocking position of these two is preferred. Very few patients have any problem understanding the question; most respond rapidly and unequivocally. After the diagonal blocking information is logged, the blocks are then tested double-high versus double low (row 3 vs. row 4, Table 8.1), and the patient's preference for these two blocking positions logged. Treatment is ultimately rendered that is consistent with the test results, as described below in the treatment section of this chapter. The finding in each of the two comparisons may be separately addressed by two interventions, using blocks or otherwise; or a single intervention may be devised that satisfies both diagonal and sagittal plane patient preferences.

Overall, the procedure is not unlike what happens at an optician's office when eyeglasses are being prescribed. To a point, there are various measures that may be taken using a variety of equipment. However, there always comes a point where the optician switches back and forth between two suggested lenses, asking 'if this is number one, and this is number two, which is better, one or two?'

There are several advantages to using this quick scan approach, as compared with the original more detailed method involving evoked changes in pre-established tender or painful spots:

1. There may be more than one obvious tender point. If a blocking position were to exacerbate one point while ameliorating another, the information as to how to treat would be confounded.
2. In the comprehensive scan, the patient must compare the pain or tenderness levels associated with four different blocking positions: diagonal 1 vs. diagonal 2 vs. sagittal 3 vs. sagittal 4. Although a patient can readily compare one blocking position with the previous blocking position, it is far more difficult to compare a blocking position with a position tested previous to the former one. That is, it is not easy to compare the third position with the first, nor the fourth with the first or second. By comparison, in the quick scan, the patient compares diagonal 1 vs. diagonal 2, then sagittal 1 vs. sagittal 2.
3. Since during the quick scan it takes less time to insert the blocks, and less time to obtain the information, there is less opportunity for the patient's condition to become altered by the provocation procedure.
4. Since repetitive blocking and unblocking during assessment might itself produce therapeutic or exacerbating changes in the patient, the quick

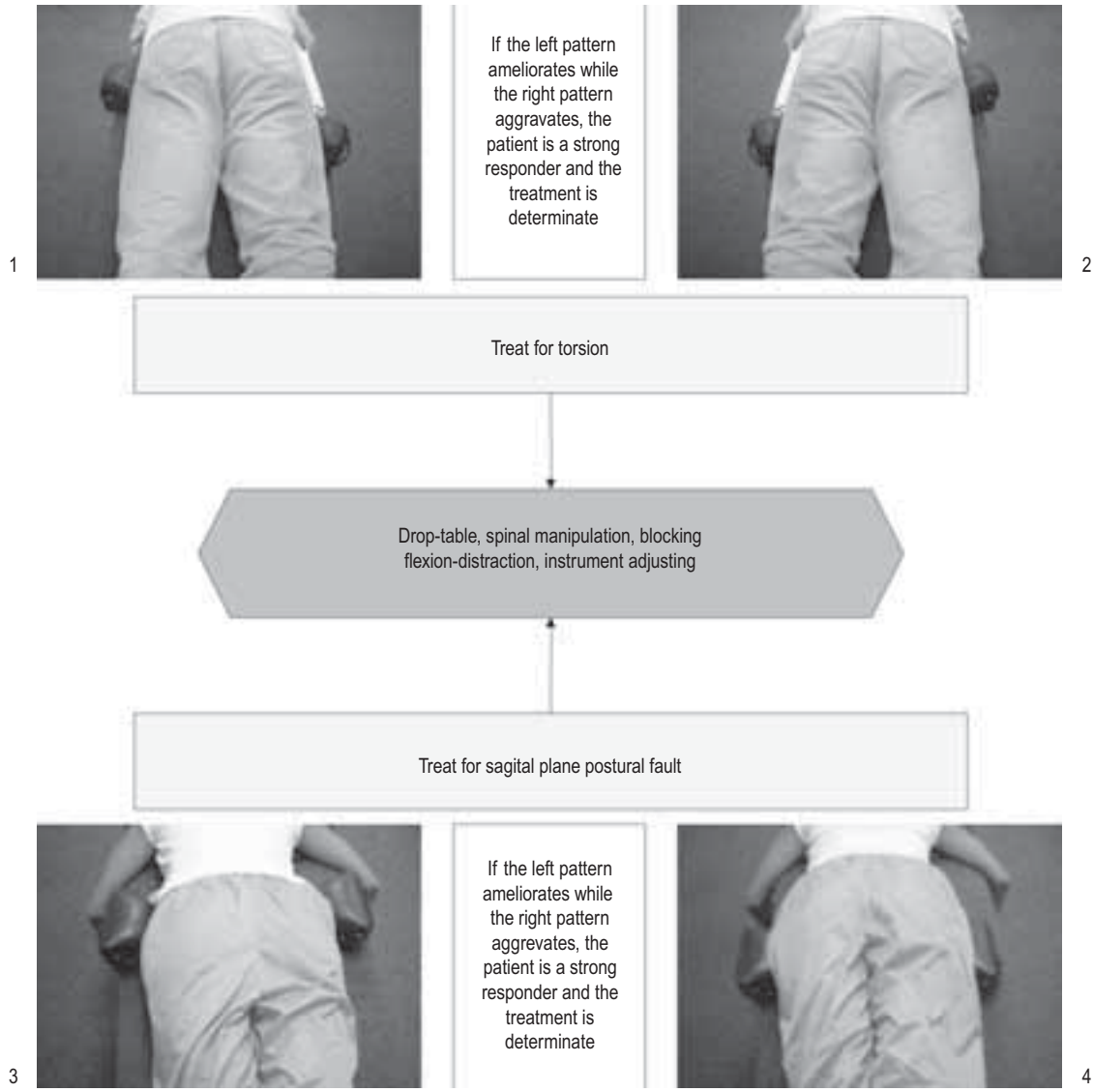


Figure 8.3 Diagnostic blocking protocol, quick scan.

scan, in that it uses fewer test positions than the original more detailed protocol, is less likely to alter the clinical condition being assessed.

Provocative lumbar blocking

Cooperstein serendipitously accidentally discovered that placing the blocks under the lumbar spine of a supine patient, so as to extend the low back, could effect a reduction in low back and especially back-related leg pain (Cooperstein & Lisi 2000). (This is further discussed in the treatment section of this chapter.) On occasion a dramatic increase in straight leg raising has been observed during block placement, and this is regarded as a favorable prognostic sign. It would seem that supine lumbar blocking (Fig. 8.4) emulates the Mackenzie directional preference protocol (see Chapter 9), and that the implications are parallel.

Conclusions on provocation testing using padded wedges

Summarizing: Padded wedges (blocks), apart from their value in treating patients, may be used to generate diagnostic information as well, offering a procedure

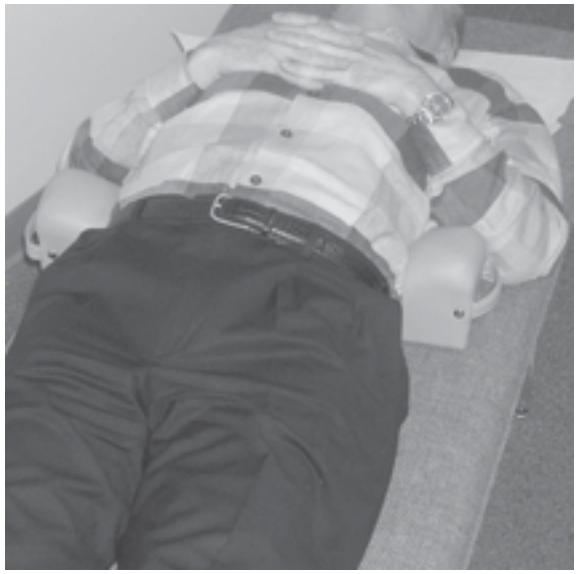


Figure 8.4 Lumbar blocking.

that amounts to *mechanically-assisted orthopedic testing*. Following that, the clinician decides whether to proceed by simply leaving the patient on the blocks for a period of time; to apply a consistent manipulative thrust, with or without using a drop-table; to treat using a handheld percussive instrument; or to devise a rehabilitative approach; or apply some other consistent mechanical means.

The aggravation and/or amelioration of symptoms when joints are stressed into a certain position not only identifies which joints are the worst offenders, but suggests appropriate vectors for treatment. If padded wedges are positioned under the patient so as to increase local symptoms, this is a priori evidence that the patient should not be adjusted (manipulated) in this pattern. If padded wedges ameliorate symptoms, an appropriate treatment approach is instantly identified.

This may be considered a 'black box' approach to treating the patient. Provocation testing simply identifies vectors that are likely to be clinically useful, regarding the lumbopelvis as a black box: the padded wedges provide input to the box, and patient responses represent outputs from the box. It is not based on obtaining a specific mechanical *listing*. It is more based on the clinical intuition that a pre-adjustive body placement pattern that ameliorates mechanical pain is more likely to inform a good clinical outcome and prevent symptom aggravation than the opposite pattern.

As all clinicians know, the final examination maneuver – following static and motion palpation, X-ray analysis, leg checks, etc. – is *setting up on (preparing) the patient*, prior to introducing a treatment force. This 'orthopedic test' amounts to a mechanical override switch that prevents us from not seeing the forest for the trees. If the patient winces, tenses up, becomes apprehensive, or even complains as the practitioner begins to assert pre-adjustive tension, there is good reason to expect a bad outcome. True, a forceful adjuster may be able to overcome the patient's resistance, but at what price? The best adjustments do not result from the application of irresistible force, but from the practitioner finding a way to minimize patient resistance. Diagnostic blocking should be seen as an orthopedic test designed to illuminate the way.

Test blocking may suggest a listing or structural diagnosis

It has already been observed that provocation testing with padded wedges need not produce 'listings', as they are called in chiropractic, or mechanical 'diagnoses' as they are called in osteopathy or physical therapy. That stated, a simple study was mounted to see if patient blocking preferences were associated with pelvic torsion (Cooperstein et al 2004a). Initially patients were identified who were thought to exhibit pelvic torsion, by palpating their PSISs in the sitting position, using a method based on a description by Levangie (Cooperstein 2004, Levangie 1999). An examiner blinded as to the torsion findings then performed diagonal blocking provocation testing. The data in Table 8.2 show a very robust tendency (kappa = 0.79, $P < 0.001$) for patients judged to have a right posterior, left anterior pattern of torsion to prefer being blocked so as to correct just that pattern, and vice versa. (The data in the table include more subjects than the more preliminary published report (Cooperstein et al 2004a).)

Thus, although provocation need not lead to an anatomical diagnosis in order to suggest treatment vectors, initial results from this study suggest that there may indeed be such a diagnosis obtainable. Although what was being studied was a diagnostic procedure, rather than a treatment procedure, the

Table 8.2 Blocking preferences and pelvic torsion findings

PSIS palpation/blocking preference	Right PI	Left PI
Right PI blocking preferred	14	1
Left PI blocking preferred	1	6

results do suggest there would be an enhanced treatment outcome based on the mechanical diagnosis, in this case, of pelvic torsion of a specific direction. Given the dearth of information linking mechanical diagnosis and treatment outcomes in chiropractic, unlike the plethora in physical therapy, thanks to McKenzie et al, this might be quite significant.

Padded wedges as treatment method

Before addressing the historical basis and contemporary setting in which padded wedges are used for treatment purposes, some typical clinical scenarios in which they, as well as other light force treatment methods, appear preferred to more invasive treatment methods deserve comment.

Treating with padded wedges may be classified as a type of mobilization, in that light forces are used. It differs from more traditional mobilization in that the treatment is block-assisted. Although the relative merits, in particular clinical situations, of manipulation and other treatments vs. block-assisted mobilization are not the subject of this chapter, the evidence suggests that in similar clinical circumstances both are likely safe and effective. Thus, it would be rational, from an evidence-based care point of view, to use one or the other, depending on the particulars of the case.

With one or both blocks in position under the prone position, the practitioner may simply allow the patient to rest on the blocks and allow 'gravity to do the work'. Or, the practitioner may attempt to speed things up or introduce more joint movement by 'pumping' on the sacroiliac (SI) joints, through the application of mild and repetitive oscillatory thrusts on the PSIS and the ischium, but not at the block itself. Although this chapter emphasizes a typical low force manner of using blocks, they may also be used as fulcrums to assist HVLA thrusting. As another manipulative possibility, the practitioner may use a drop-table thrusting procedure, with one or two blocks in place.

Table 8.3 Indications for lumbopelvic blocking

Large or heavy patient
Osteoporosis
Previous poor outcome with HVLA
Previous good outcome with blocking
Patient fears cavitation
Sacroiliac instability
Uncertain diagnosis

Where evidence is lacking, the judicious use of a best-practices approach allows the clinician to choose treatment methods at least partially on the basis of individual, doctor and patient, preferences. Although in many cases we, as chiropractors, are quite comfortable using manipulation, which has been afforded respect in a number of settings (Haldeman et al 1993, Shekelle et al 1991a, 1991b, 1992a, 1992b), there are certain clinical situations that render manipulation less preferred. These are indicated in Table 8.3.

Padded wedges in SOT

In pelvic blocking, the mechanical intervention is accomplished by means of gravity being applied across asymmetrically placed fulcrums, and so must be considered a low force treatment method, a type of mobilization. Applying the blocks to the patient for an extended period of time allows elongation of shortened tissues, muscle relaxation, and possibly correction of aberrant neurological function. According to Magnusson et al (1996), reflex electromyographic activity does not limit the range of movement during slow stretches, and training-related increases in range of motion result from the subject's increased stretch tolerance; they do not result from a change in the mechanical or viscoelastic properties of the muscle.

Before describing the author's own used of padded wedges for treatment purposes, it is worth reiterating that DeJarnette, who pioneered their use, and SOT practitioners, who remain their principal proponents, do not champion using blocks for treating stand-alone lumbopelvic conditions. DeJarnette did believe that if the innominate bones could be balanced using blocks, then the sacrum, lodged in-between where it forms an integral part of the pelvic kinematic chain, would also achieve a balanced position, associated as well with head-on-spine balance (DeCamp 1990, 1994, Heese 1988). As a barometer of how important the blocks were to DeJarnette himself, he once stated '80% of all correction is accomplished by use of the DeJarnette mechanical wedges' (DeJarnette 1977).

However, DeJarnette also believed that pelvic dysfunction was intimately related to cranial dysfunction. The very term 'sacro-occipital' confirms the kernel idea of SOT: if the sacrum and occiput are both balanced, then the spine in-between can function normally, hopefully eliminating the perceived need for the practitioner to 'adjust the vertebrae of the spine traumatically' (DeJarnette 1982).

The pelvic complex is stated to accomplish three tasks:

1. The posterior ligamentous aspect of the SI joint is weight-bearing.
2. The anterior fibrous aspect of the SI joint functions in the craniosacral respiratory mechanism.

3. The pelvic complex must allow normal lumbosacral function (DeCamp 1992).

Pelvic torsional dysfunction is thought to interfere with these functions, predisposing to and aggravated by associated cranial dysfunction. It should be noted that SOT practitioners ascribe much importance to the controversial view that the cranial sutures are mobile, and can attain dysfunctional states that are related to and corrected simultaneously with sacroiliac dysfunctional states. A hypermobile anterior sacrum would be associated with an ipsilateral compensatory hypomobile and contralateral hypermobile occiput (DeCamp 1990).

SOT practitioners strongly prefer a block-assisted shifting of the pelvis to manual HVLA thrusting on the sacroiliac joints, which they believe introduces more of the microtrauma that supposedly led to the problem in the first place. Although the author does not share that view, it is an opinion that has also been expressed by Knutson (2004), who speculates: 'In cases where sacroiliac joint sprain is suspected, based on probable neuromuscular reactions, low-load manipulation via pelvic blocking is advised', although to his credit he adds: 'Testing of this hypothesis is recommended'.

SOT practitioners also believe that side-posture manipulative thrusting on the innominate 'tries to move a bone without supporting its opposing side … The blocks are so constructed that they correct by respiratory motion' (DeJarnette 1983). Although this chapter is not the place to critically examine what is meant by 'respiratory motion', suffice to say that this putatively involves coordination between the sacroiliac and cranial-sacral respiratory mechanisms, considered (by SOT) to normally be connected by the dural membranes and the flow of cerebral spinal fluid. According to Getzoff (1990), the cranial-sacral respiratory mechanism (CSRM) is: 'A combination of integrated functions that support, nourish and enhance the performance of the nervous system as it controls bodily functions'. The CSRM is also said to involve: cranial motion, sacral weight-bearing motion, dural tension, cerebrospinal fluid pulsation and flow, ventricular respiration, and several other functions that relate to cranial development (Getzoff 1990).

Identification of pelvic torsion and treatment in SOT

In SOT, patients are ascribed to one of three categories, a detailed description of which is beyond the scope of this chapter. Suffice to say that Category I and III patients are treated in the prone position, whereas Category II patients are blocked in the supine position. Blocking is not only thought to effect a more relaxed and easy correction from the patient's point of view, but to constitute a tremendous ergonomic innovation for the doctor, whose 'effort is primarily lifting [the] wedges to position them' (DeJarnette 1983).

The blocks are used as fulcrums to correct intrapelvic torsion in either the prone or supine position. Although there are some different views among practitioners, the evidence thought to identify pelvic torsion and characterize its direction is obtained by means of a visual, prone leg check. Although a detailed description cannot be provided as to how leg-length checking is conducted in chiropractic, osteopathy and physical therapy settings, it is safe to say that it is commonly believed that a functional short leg identifies a posteriorly rotated innominate, whereas a functional long leg identifies an anteriorly rotated innominate (Cooperstein & Lisi 2000).

It is usually stated (Cooperstein 1993, Cooperstein & Lisi 2000) that a posterior swing of the innominate bone, around an axis through the sacroiliac joint, swings up the hip as well, and thus creates a functional short leg, as would be seen in a prone or supine leg check. However, such a model, were it accurate, would luxate the symphysis pubis, since it as well would have to offer accommodation by approximately twice as much as the hip (Fig. 8.5).

Cooperstein, in a geometric analysis of this problem (Cooperstein 1993), elaborates a different (muscular) model linking a functional short leg to a posterior innominate rotation. This model invokes hypertonic lumbosacral musculature on the side of a standing low innominate bone, creating a functional short leg in the prone or supine position. Figure 8.6 shows a standing low iliac crest on the right, presumed hypertonus in the right-sided sacrospinalis and quadratus lumborum muscles, resulting in a hiking up of the right lower extremity in the prone position, and thus the creation of a right functional short leg.

Schneider (1993) provides a similar explanation. Studies performed using a novel apparatus called the friction-reduced table (Cooperstein & Jansen 1996a, Jansen & Cooperstein 1998) confirmed the functional short leg as a temporally stable entity (Cooperstein & Jansen 1996b). Cooperstein further discusses situations in which anatomic leg length inequality would confound the interpretation of this effect (Cooperstein 2000a), and has described a procedure called compressive leg checking thought to distinguish functional from anatomical short leg (Cooperstein et al 2003, 2004b).

Whatever the exact explanation of the putative short leg on the posterior innominate side, and thus a functional long leg on the side of the anterior innominate, it follows that identifying functional leg length

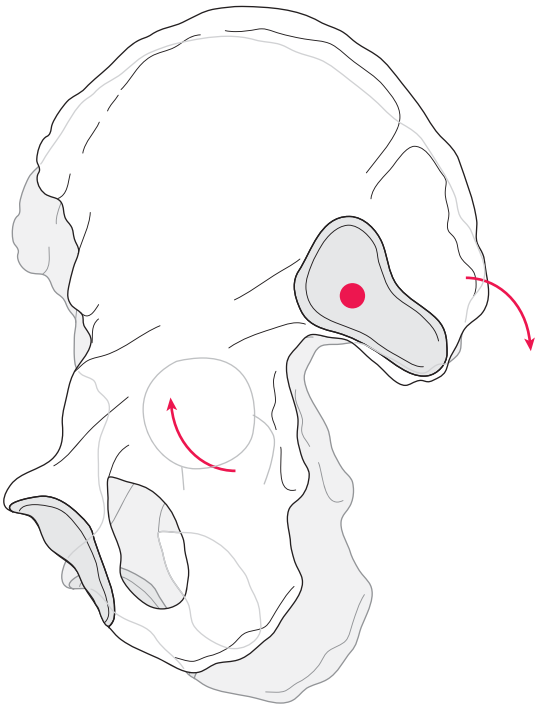


Figure 8.5 Common subluxation model luxates symphysis.

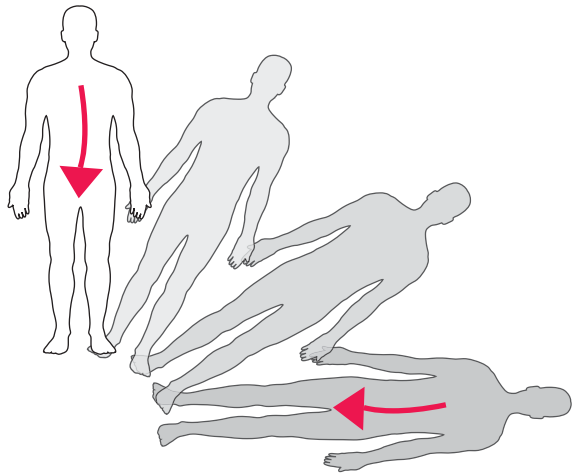


Figure 8.6 Muscular model of the functional short leg on side of inferior innominate.

inequality would seem to suggest how one might have the patient lie on the blocks, in either the prone or supine position. Unfortunately, the presence of anatomic leg length inequality, which some investigators have found to be very common, is a troubling complication. Friberg (1987), in an authoritative study, found that about 50% of an asymptomatic population, and about 75% of the low back pain patients, had leg length inequality of 5 mm or more. Either anatomic leg length inequality would need to be ruled out so that blocks could be used according to the side of the (functional) short leg, or the blocks could be inserted under the patient according to the results of provocation testing. How the blocks are used to rotate the innominate bones in opposite directions is described in the next section of this chapter, in the mechanics of prone and supine diagonal blocking.

The mechanics of prone and supine diagonal blocking

It is widely believed by chiropractors, including SOT practitioners, that pelvic torsion occurs around a horizontal axis through the acetabuli. A similar view is found in the work of a physical therapist (Manheimer & Lampe 1984) and possibly in osteopathy. From this point of view, the correction of pelvic torsion could plausibly involve having the patient lie prone or supine, the blocks positioned so as to turn the innominate bones in opposite directions, around this hypothetical acetabular axis (Fig. 8.7).

Following this logic, Figure 8.8 shows a prone patient with a high right block (under the iliac crest and ASIS), so as to effect posterior rotation of the right innominate, and a low left block (under the trochanteric area), to effect anterior rotation of the left innominate.

Figure 8.9 shows a supine patient with a high right block (under the iliac crest and PSIS) so as to effect anterior rotation of the right innominate, and a low left block (under the trochanteric and ischial area), to effect posterior rotation of the left innominate. Thus, the same diagonal listing can be corrected using either a prone or supine setup, although there are some differences in the overall mechanics, as discussed below.

Unfortunately, these pelvic mechanics are unlikely to occur as described and shown in Figure 8.7, since the pubic symphysis would be luxated. Despite the popularity of this acetabular axis view of pelvic torsion, investigators since at least 1936 (Pitkin & Pheasant 1936) have posited the symphysis pubis as a more likely location for pelvic torsion (Fig. 8.10). Although he came to the same conclusion by different means, Hildebrandt (1985) argued the same point in chiropractic, as did Bourdillon in osteopathy (Bourdillon & Day 1987). In prone blocking, although the high padded wedge under the crest and ASIS area

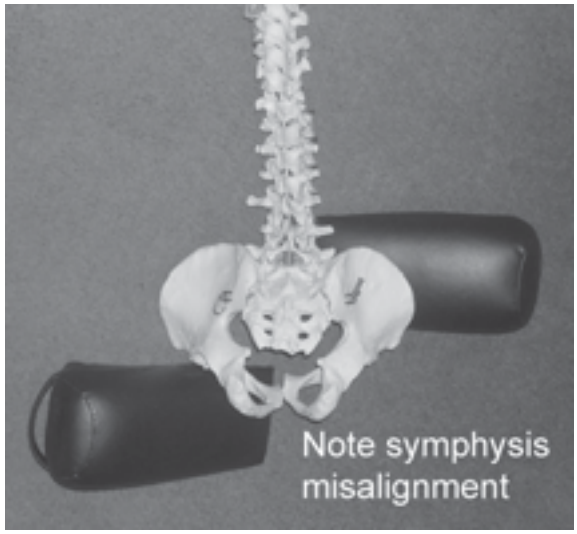


Figure 8.7 Pelvic torsion assuming acetabular axis of rotation.

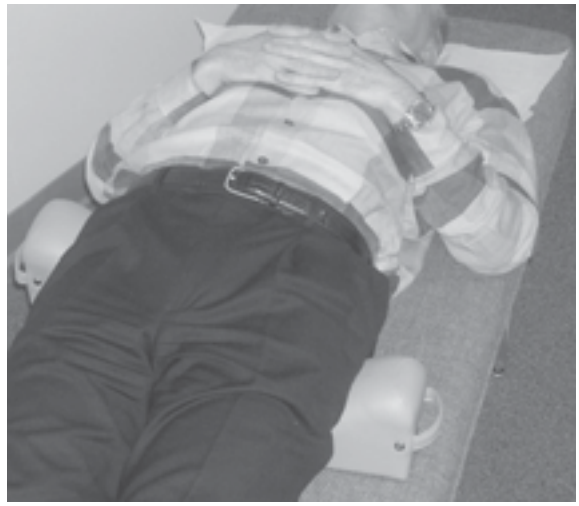


Figure 8.9 Supine diagonal blocking, with high right block and low left block.

Figure 8.8 Prone diagonal blocking, with high right block and low left block.

would indeed be expected to rock the innominate posterior-ward, around the symphysis axis, the low block under the trochanteric area would not be expected to create the desired anterior rotation, since the block is near the symphysis pivot point. (Similar considerations apply to supine blocking: the high block would be expected to effect anterior innominate rotation, but the low block would not be expected to produce posterior innominate rotation.)

None of this implies that diagonal blocking is ineffective, but rather suggests that the mechanical impact of such blocking needs to be further investigated, in full view of contemporary understanding of the mechanics of pelvic torsion. This analysis also suggests that if the primary therapeutic goal is to create anterior rotation of an innominate bone, say, because the ipsilateral sacroiliac joint seems fixated, then supine blocking is preferred; whereas, if the primary goal is to create posterior rotation of an innominate bone, then prone blocking is likely more optimal. Discussion below offers yet another consideration affecting the choice between prone and supine blocking, having to do with sacroiliac joint mobility.

Although the acetabular axis view of pelvic torsion is considered by the author to be inaccurate, the different effects of prone and supine blocking need to be considered, the analysis of which seems mostly axis-independent (Figs 8.11A and B). Although both prone and supine pelvic blocking would both be expected to reduce pelvic torsion, the mechanics would be quite different.

- Prone blocking, by raising the innominate bones relative to the sacrum, simultaneously distracts the sacroiliac joints (Cooperstein 1996).
- Supine blocking, by elevating the innominate bones relative to the sacrum, simultaneously approximates the sacroiliac joints (Cooperstein 1996, Getzoff 1999).

Practitioners will have to decide whether, in addition to reducing the pelvic torsion (or at least blocking according to the results of provocation testing), there is a further therapeutic goal of mobilizing (increasing motion) in the sacroiliac joints using prone blocking;

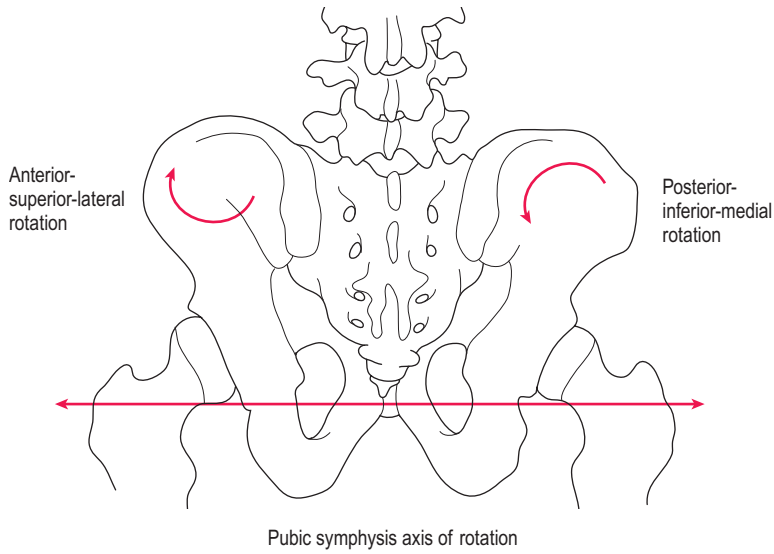


Figure 8.10 Pelvic torsion about the pubic symphysis.

or stabilizing the sacroiliac joints, using supine blocking. From this point of view, the quintessential candidate for supine blocking would be a young, pregnant or postpartum, female. Other candidates would be hypermobile patients of either sex, including congenital cases, such as in Ehlers–Danlos syndrome.

According to SOT practitioners, the patient is kept on the wedges for 2 minutes or less if supine, and usually for longer periods of time if prone. Asked 'why 2 minutes?' a chiropractor who teaches SOT once stated in a personal communication that: 'there have been several reports of spontaneous patient combustion when left supine on the blocks for longer than 2 minutes'. Although we certainly doubt that, we do recognize that the approximation of the sacroiliac joints during supine blocking is likely to prove uncomfortable in many patients in a relatively short space of time. The only important limit on the time frame for prone blocking is how much time the practitioner has to spare, although 1 to 5 minutes makes sense from what we know of the stretching properties of soft tissues. It takes some time for stretching to begin, and little further stretch is likely after a few minutes. Besides the results of provocation testing, other criteria for blocking in this manner would include tests that determine the presence and direction of pelvic torsion (Cooperstein 2004) or motion restriction (Cooperstein & Lisi 2000).

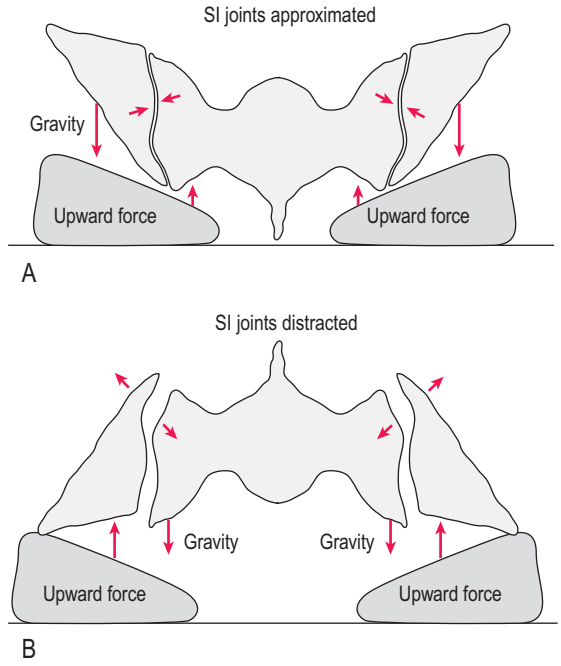


Figure 8.11 (A) Mechanics of supine blocking. (B) Mechanics of prone blocking.

Sagittal plane blocking

Sagittal plane prone blocking addresses the postural listings commonly known in chiropractic as the 'double PI' (PI = posterior, inferior) ilium and 'double AS' (AS = anterior, superior) ilium. These listings, at first glance, would appear to refer to sacroiliac dysfunction, since in traditional chiropractic terminology, unilateral PI and AS listings refer to innominate

rotations involving the sacroiliac joints. However, the double PI and double AS listings actually denote lumbopelvic postural distortion: the so-called double PI amounts to lumbopelvic hypolordosis, and the double AS to lumbopelvic hyperlordosis (Clemen 1983).

Although the link between bad posture and low back pain does not appear to be as strong as widely believed (Scannell & McGill 2003, Tuzun et al 1999, Widhe 2001), some investigators continue to support the concept that lumbopelvic hypolordosis and hyperlordosis are often contributing factors to low back and other pain syndromes (Evcik & Yucel 2003, Harrison et al 2002). Paradoxically, even when studies fail to find an important relationship between posture and pain, it is often the case that improving posture reduces pain (Fann 2002, Kuchera 1997).

When provocation testing indicates a patient preference for lumbopelvic flexion, the blocks are inserted bilaterally underneath the ASIS area in the prone position (Fig. 8.12). Besides the results of provocation testing, other criteria for blocking in flexion would be restriction in forward flexion, and/or pain on extension as seen in Kemp's test or similar orthopedic tests that create low back extension. When provocation testing, and/or other orthopedic tests, indicate a patient preference for lumbopelvic extension, the blocks are inserted bilaterally underneath the ischia in the prone position (Fig. 8.13).

Sagittal plane blocking can also be done in the supine position, using bilateral low blocks to effect lumbopelvic flexion (Fig. 8.14), or bilateral high blocks to effect lumbopelvic extension (Fig. 8.15). That stated, prone blocking is preferred by the author,

Figure 8.12 Prone pelvic blocking flexion for lumbopelvic hyperlordosis.

Figure 8.13 Prone pelvic blocking in extension for lumbopelvic hypolordosis.

Figure 8.14 Supine pelvic blocking flexion for lumbopelvic hyperlordosis.

because in that position there is access to the paraspinal musculature and other soft tissues while the patient is afforded treatment with the blocks. This allows concurrent ancillary treatment to be rendered: ischemic compression of trigger points, massage, passive stretching, and application of physical therapy modalities to the low back area.

Lumbar blocking

Quite accidentally, Cooperstein discovered the value of lumbar blocking (Fig. 8.4). One day, many years ago, a patient was brought to his office by friends, flat on his back in a pickup truck. This patient, who

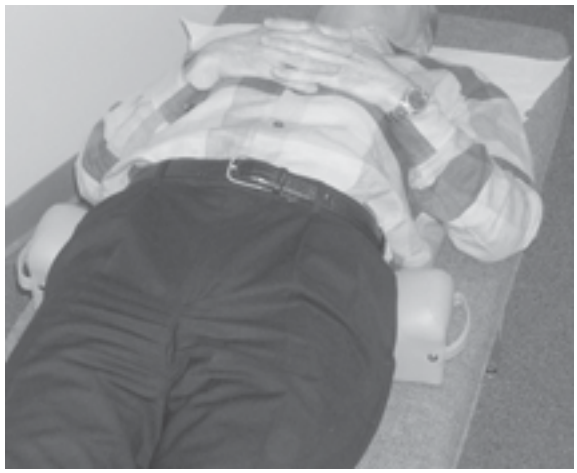


Figure 8.15 Supine pelvic blocking in extension for lumbopelvic hypolordosis.

exhibited the classic behavior of a patient with lumbar herniated disc, could not remain seated during the taking of the case history. Therefore, he was placed in his least uncomfortable position, supine with the knees bent. Shortly thereafter, blocks were inserted under the patient, in a diagonal pattern suggested by SOT analysis. Called from the treatment room momentarily, on his return Cooperstein found the patient visibly more comfortable: 'I don't know what you did to me, but this is the best I have felt in two days … but you put these things underneath me crooked, so I had to rearrange them.' The patient was lying supine with both blocks underneath the mid-lumbar spine. Straight leg raising was dramatically improved with the lumbar blocks in place.

Physical therapist Robin McKenzie tells a similar story (McKenzie 1981), except his patient, asked to lie down on a hospital bed with a raised back piece, inexplicably lay down in the prone position, thus extending his low back. This eventually led to the McKenzie method of treating spinal conditions, especially of the low back, which has had a dramatic impact on the physical therapy profession especially.

Jones (1981), the developer of strain/counterstrain, tells a very similar story of accidentally 'discovering' positional release benefits in someone with an acute low back pain.

Lumbar blocking seems to produce relaxation of the low back musculature, primarily quadratus lumborum and sacrospinalis, by approximating their origins and insertions. The frequent improvement in straight leg raising, at least while the blocks are in place, may result from diminished stretch reflexes in the low back muscles that would otherwise reduce straight leg raising. Lumbar blocking amounts to a supine version of McKenzie-style pain provocative orthopedic testing (McKenzie 1981). It is not known whether this method obtains the same, lesser, or greater clinical benefit as compared with McKenzie's prone method, which has been shown to be safe and effective for patients exhibiting directional preference (Donelson et al 1991, 1997, Donelson & McKenzie 1992).

Diagonal, sagittal plane, and lumbar blocking not mutually exclusive

Diagonal, sagittal plane, and lumbar provocative blocking each provide indications for treatment, and the vectors suggested are not mutually exclusive. Thus, a patient who receives diagonal blocking might also receive lumbar blocking and/or sagittal plane blocking during the same office visit. A practitioner need never decide, for example, whether the patient has a left posterior ilium or a hyperlordotic lumbopelvis or a lumbar spine that would benefit from more extension. Each indication can be separately addressed by its own specific intervention, including but not limited to blocking procedures.

Outcome studies on padded wedges

The author is not aware of outcome studies, rigorous or otherwise, comparing the use of padded wedges with any other form of treatment, including no treatment. There are a few case reports describing patients treated with blocking procedures, but in all cases other types of treatment (often cranial) were also rendered, leaving no way of ascertaining any specific treatment benefit accruing from the use of blocks alone. That stated, a number of studies deserve to be cited.

Study 1 Cook & Rasmussen (1992), in a rather esoteric article, report on the treatment of uterine fibroids in two chronic cases using a manual method known as the 'total mesenteric apron' in conjunction with SOT chiropractic adjustments. Although the authors acknowledge that it was difficult to determine which of the utilized procedures had the largest impact, they felt there was no doubt that visceral manipulation did in fact have a beneficial impact in this case.

Study 2 Richards et al (1989, 1990) reported on two patients with documented disc herniations and sciatic neuropathy who were treated with a variety of methods, including activator adjusting instrument (AAI) adjustment, pelvic blocking, high voltage galvanic current, and exercise. Follow-up CT scans showed complete resolution of the bulge in one case, and reduction in the other. The patients experienced

marked reduction in pain and an increase in their functional activities. The research design did not permit attribution of clinical utility to any of the individual components of the regimen, but the authors concluded that the 'favorable patient outcomes are somewhat encouraging'.

Study 3 Hospers (1992) reports on a case study involving a chiropractic student suffering from chronic headaches, who was studied with computerized electroencephalography (CEEG) before and after treatment of a Category II subluxation. Colorized brain maps recorded 10 and 60 minutes after treatment showed normalization of pre-adjustment frequency spectras in the brain. In an apparently overstated summary remark concerning this $n = 1$, non-controlled study, the investigator concludes that 'subluxation in a remote member of the craniosacral pump mechanism, specifically unilaterally in the sacroiliac joint, can induce abnormal frequency spectra in cerebral cortical activity, which can return to normative values when this subluxation is removed'.

Study 4 Gregory (1993) presents an interesting case of a woman with temporomandibular disorder whose symptoms reduced with pelvic blocking (without treatment directly aimed at the jaw), and whose low back complaints were made worse by the replacement of a crown. He goes on to present a model for the biomechanical interdependence of the temporomandibular joint and sacroiliac sprain (dental malocclusion and Category II sacroiliac dysfunction).

Study 5 Froehle (1996) reported retrospectively on 46 children with complaints related to the ear, paying 'particular attention to the cervical vertebrae and occiput'. Regarding technique, he states he used 'Sacral occipital technique-style pelvic blocking and the doctor's own modified applied kinesiology.' (Applied kinesiology is a chiropractic technique system, described by Cooperstein in Cooperstein & Gleberzon (2004), and also by Perle (1995).) Somewhat unconvincingly, the author concludes 'this study's data indicate that limitation of medical intervention and the addition of chiropractic care may decrease the symptoms of ear infection in young children'.

Study 6 Blum et al (2003) presented a case series of three cases of lumbar herniated disc, each treated by prone blocking with padded wedges. In each of the cases, pre- and post-magnetic resonance images (MRIs) were available, although the imaging protocols varied from case to case. The investigators concluded that there were both symptomatic and structural improvements, as determined by the advanced images, in each of the three patients. Blum et al (2004) also reported on three patients with what were thought to be signs and symptoms of discogenic nerve root irritation, treated using both traditional SOT procedures (blocking included) and a novel patient coughing method. This method was speculated to effect a reduction in 'intrathecal impingement'. Finally, Blum provides another report (Blum 2004) related to disc herniation, of a 37-year-old patient with multilevel lumbar disc herniation, who responded favorably to blocking and other SOT procedures, and was found on repeat MRI to have a significantly reduced degree of disc herniation.

Study 7 Blum & Klingensmith (2003) took X-rays with subjects lying on a pair of padded wedges in four different patterns, two types of diagonal blocking and two types of sagittal blocking. The research goal was to determine if the insertion of the blocks would affect apparent leg length, and whether it would affect radiometric measurements of the pelvis while the blocks were in place. There were too many methodological problems with the research to comment on the results.

Study 8 Unger (1998), while providing what he described as 'routine' chiropractic care, treated until he felt there were amelioration of Category II indicators. At that point, he ascertained through manual muscle testing that strength had improved in 15 of 16 muscles, among eight muscle groups bilaterally tested.

Study 9 Rosen (2003) reports on a patient who, although she had been able to conceive through in vitro fertilization, had not previously been successful at becoming pregnant naturally. While under SOT care, including blocking procedures, she not only experienced resolution of a variety of somatic complaints, but became pregnant and delivered a child.

Conclusions

By definition, this chapter is about the use of padded wedges for diagnostic and treatment purposes, as a type of mobilization procedure. However, in practice, they can be favorably combined with other interventions, including those that originally developed in other fields of manual medicine. The ascendancy of the interdisciplinary care model and more particularly of integrative care, which differs from interdisciplinary care only in making more use of complementary and alternative methods (CAM), marks something of a turnaround in technique wars and interprofessional rivalry, as it becomes clear that patients are best served by the accumulated knowledge and diverse procedures of all the allied professions that specialize in the conservative treatment of somatic and, to an uncertain degree, somatovisceral conditions.

Now, practitioners need not so much choose one or several techniques, let alone professional approaches, over the others, so much as 'integrate' them into a more generic diagnosis and treatment package. We hope the reader will be motivated by this chapter to consider becoming familiar with and possibly integrate padded wedges into his or her daily practice of manual medicine.

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