3

The clinical use of SCS techniques

CHAPTER CONTENTS

The best known and most widely used positional release variation is the method developed from the clinical research of Laurence Jones, strain/counterstrain (SCS). Jones's pioneering work in developing SCS evolved this into a method of treatment of joint and soft-tissue dysfunction of supreme gentleness (Jones 1981).

Modifications (by the author and others) of Jones's counterstrain methods will be described in this chapter, as will a further variant, known as positional release therapy (D'Ambrogio & Roth 1997).

Is there evidence that SCS works?

Despite its widespread clinical use there has only been a limited amount of research into the efficacy of SCS. Four examples derived from the limited available evidence are summarized below.

Example 1

In a pilot study (Lewis & Flynn 2001), four case of low back pain were treated with SCS as the sole treatment. The SCS intervention phase for each case took approximately 1 week and consisted of two to three treatment sessions to resolve perceived 'aberrant neuromuscular activity'. Outcome measures were derived from the McGill Pain Questionnaire and the Oswestry Low Back Pain Disability Questionnaire. *All patients registered reductions in pain and disability following SCS intervention*. No experimental evidence for the effectiveness of SCS was offered; however, outcomes suggested that a controlled study was warranted to examine the effectiveness of SCS for the treatment of low back pain.

Example 2

In a randomized, controlled study, the reliability and validity of a tender point palpation scale (TPPS) and the effect of SCS on painful tender points (TPs) was evaluated (Wong & Schauer 2004).

The experimental design employed a convenience sample of 49 volunteers with bilateral hip tender points, randomly assigned to three groups each receiving SCS, exercise (EX), or SCS and EX.

Pain before and after intervention was assessed with the TPPS and visual analog scale (VAS).

Interventions were performed twice over 2 weeks. By study end, all groups demonstrated significant pain decreases in both muscle groups demonstrated with the VAS and TTPS.

The SCS groups tended toward greater pain reductions than the exercise group for hip abductors and adductors. However, low TPPS reliability and validity preclude any conclusions based on this assessment method.

Example 3

In a randomized, controlled study, the effects of SCS on TPs and the strength of hip musculature were evaluated (Wong & Schauer-Alvarez 2004).

The convenience sample included 49 volunteers (15 men, 34 women; 98 limbs), aged 19–38 years, with hip weakness and corresponding tender points.

A VAS was used to assess pain; a digital handheld dynamometer was used to assess strength.

Participants were randomly assigned to three intervention groups: SCS, EX, and SCS + EX.

All interventions were performed twice over 2 weeks; pain and strength were measured three times, both before and after intervention began.

The SCS and SCS + EX groups demonstrated increased strength ($P < 0.001$, 2-tailed t-tests), which when analyzed statistically was significantly greater than in the exercise group ($P < 0.001$). All groups reported reduced pain and increased strength 2–4 weeks after intervention ($P < 0.001$). The results supported the hypothesis that SCS reduces TP pain and demonstrated that SCS positively affects strength.

Example 4

In an outcomes-based research study, the authors randomly assigned six patients with pancreatitis to receive standard care plus daily osteopathic manipulative therapy (OMT) for the duration of their hospitalization or to receive only standard medical care (eight patients) (Radjieski et al 1998).

Osteopathic treatment involved 10 to 20 minutes daily of a standardized protocol, using myofascial release, soft tissue, and SCS techniques.

Attending physicians were blinded as to group assignment.

Results indicated that patients who received osteopathic treatment averaged significantly fewer days in the hospital before discharge (mean reduction, 3.5 days) than control subjects, although there were no significant differences in time to first food intake after operation or in use of pain medications. These findings suggest the possible benefit of OMT in reducing length of stay for patients with pancreatitis.

How does SCS work?

It is important to state at the outset that the various theories as to how positional release achieves its effects remain as tentative assumptions.

The basic scientific research has, as yet, not been performed to validate the hypotheses discussed below, and the reader is advised to adopt a robustly critical frame of mind, while attempting to evaluate the mechanisms described that *might* be functioning.

Some of the assumptions made are based on animal models (see Chapter 12).

Certainly some of the evidence emerging from research into unloading taping and mobilization with movement (MWM) methods (see Chapters 10 and 11) is supportive of the neurological hypothesis of SCS mechanisms (see later in this chapter).

Other concepts emerge from a combination of assumption and deduction, based on clinical evidence, an understanding of basic physiology and experience.

Very little concrete certainty exists, apart from the reality that positional release methods are safe and effective. How they achieve their benefits remains for future research.

Theories

Jones's (1981) concept as to how SCS works is based on the predictable physiological responses of muscles in particular situations, most notably in relation to acute or chronic strains. He describes how, in a balanced state, the proprioceptive functions of the various muscles supporting a joint will be feeding a flow of information, derived from the neural receptors in those muscles and their tendons, to the higher centers.

For example, the Golgi tendon organs will be reporting on tone, while the various receptors in the spindles will be firing a constant stream of information (slowly or rapidly depending upon the demands being placed on the tissues) regarding their resting length and any changes that might be occurring in that length.

In a dysfunctional state (see descriptions below under 'Neurological concepts') inappropriately excessive degrees of tone may be sustained, leading to chronic imbalances between agonists, antagonists and associated muscles. In some instances excessive tone might relate to some degree of segmental, or local (i.e. trigger point), facilitation as discussed in Chapter 2.

D'Ambrogio & Roth (1997) state that:

> *Positional release therapy appears to have a damping influence on the general level of excitability within the facilitated [see Chapter 2] segment. Weiselfish (1993) has found that this characteristic of PRT is unique in its effectiveness, and has utilized this feature to successfully treat severe neurologic patients, even though the source of the primary dysfunction arose from the supraspinal level.*

It is the dampening, calming, influence on the neurological features (including pain receptors) of hyperreactive and stressed tissues that seems to characterize many of the results observed following appropriate use of PRT.

Circulatory and fascial influences are also considered possible mechanisms for PRT's benefits, as outlined below.

Neurological concepts

The proprioceptive hypothesis

(Korr 1947, 1975, Mathews 1981)

Jones first observed the phenomenon of spontaneous release when he 'accidentally' placed a patient who was in considerable pain, and some degree of compensatory distortion, into a position of comfort (ease) on a treatment table (Jones 1964).

Despite no other treatment being given, after just 20 minutes resting in a position of relative ease, the patient was able to stand upright and was free of pain. The pain-free position of ease into which Jones had helped the patient was one which exaggerated the degree of distortion in which his body was being held.

Jones had taken the patient into the direction of 'ease' (as opposed to 'bind'), since any attempt to correct or straighten the body would have been met by both resistance and pain. In contrast, moving the body further into distortion was acceptable and easy, and seemed to allow the physiological processes involved in resolution of spasm, etc., to operate. This position of ease is the key element in what later came to be known as strain/counterstrain.

Example

The events that take place at the moment of strain may provide the key to understanding the mechanisms of neurologically induced positional release.

Take, for example, an all too common instance of someone bending forwards from the waist. At that time the flexor muscles would be short of their resting length, and the neural reporting structures (muscle spindles) in the flexor muscles would be firing slowly, indicating little or no activity and no change of length taking place.

At the same time, the antagonist group of muscles – the spinal erector group in this example – would be stretched or stretching, and firing rapidly.

Any stretch affecting a muscle (and therefore its spindles) will increase the rate of reporting, which will reflexively induce further contraction (myotatic stretch reflex) as well as an increase in tone in that muscle, along with an instant inhibition (reciprocal) of the functional antagonists, so further reducing the already limited degree of reporting from the antagonists' spindle cells.

This feedback link with the central nervous system is the primary muscle spindle afferent response, and it is thought to be modulated by an additional muscle spindle function that involves the gamma-efferent system, which is controlled from higher (brain) centers. In simple terms, the gamma-efferent system influences the primary afferent system: for example, when a muscle is in a quiescent state, when it is relaxed and short with little information coming from the primary receptors, the gamma-efferent system might fine-tune and increase ('turn up') the sensitivity of the primary afferents to ensure a continued information flow (Mathews 1981).

It is important to acknowledge that these neurological concepts are largely based on animal studies, and that definitive basic science studies to validate them have not yet been performed in humans.

Crisis

Now imagine an emergency situation arising (a person loses his footing while stooping, or the load being lifted shifts), which creates immediate demands for stabilization on both sets of muscles (the short, relatively 'quiet' flexors and the stretched, relatively actively firing extensors), even though they are in quite different states of preparedness for action.

- The flexors would be 'unloaded', relaxed and providing minimal feedback to the control centers, while the spinal extensors would be at stretch, providing a rapid outflow of spindle-derived information, some of which ensures that the relaxed flexor muscles remain relaxed, due to inhibitory activity.
- The central nervous system would at this time be receiving minimal information as to the status of the relaxed flexors and, at the moment when the demand for stabilization occurs, these shortened/relaxed flexors would be obliged to stretch quickly to a length that will balance the already stretched extensors.
- Meanwhile these stretched extensors will most probably be contracting rapidly, also to achieve stabilization.
- As this happens, the annulospiral receptors in the short (flexor) muscles will respond to the sudden stretch demand by contracting even more – the stretch reflex.
- The neural reporting stations in these shortened muscles would be firing impulses as if the muscles were being stretched, even though the muscle remains well short of its normal resting length.
- At the same time, the extensor muscles, which had been at stretch and which, in the alarm situation, were obliged to rapidly shorten, would remain longer than their normal resting length as they attempt to stabilize the situation (Korr 1976).

Korr has described what he believes happens in the abdominal muscles (flexors) in such a situation. He says that because of their relaxed status, short of their resting length, there occurs in these muscles a silencing of the spindles; however, due to the demand for information from the higher centers, *gamma gain is increased reflexively*, and as the muscle contracts rapidly to stabilize the alarm demands, the central nervous system will receive information that the muscle, which is actually short of its neutral resting length, was being stretched.

In effect, the muscles would have adopted a restricted position as a result of inappropriate proprioceptive reporting. As DiGiovanna explains (Jones 1964):

> *With trauma or muscle effort against a sudden change in resistance, or with muscle strain incurred by resisting the effects of gravity for a period of time, one muscle at a joint is strained and its antagonist is hyper-shortened. When the shortened muscle is suddenly stretched the annulospiral receptors in that muscle are stimulated causing a reflex contraction of the already shortened muscle. The proprioceptors in the short muscle now fire impulses as if the shortened muscle were being stretched. Since this inappropriate proprioceptor response can be maintained indefinitely a somatic dysfunction has been created.*

In effect, the two opposing sets of muscles will have adopted a stabilizing posture to protect the threatened structures, and in doing so would have become locked into positions of imbalance in relation to their normal function. One would be shorter and one longer than its normal resting length (Fig. 3.1).

At this time, any attempt to extend the area/joint(s) would be strongly resisted by the tonically shortened flexor group. The individual would be locked into a forward-bending distortion (in this example).

The joint(s) involved would not have been taken beyond their normal physiological range, and yet the normal range would be unavailable, due to the shortened status of the flexor group (in this particular example). Going further into flexion, however, would present no problems or pain.

Walther (1988) summarizes the situation as follows:

> *When proprioceptors send conflicting information there may be simultaneous contraction of the antagonists … without antagonist muscle inhibition, joint and other strain results [and in this manner] a reflex pattern develops which causes muscle or other tissue to maintain this continuing strain. It [strain dysfunction] often relates to the inappropriate signaling from muscle proprioceptors that have been strained from rapid change that does not allow proper adaptation.*

This situation would be unlikely to resolve itself spontaneously and is the 'strain' position in Jones's SCS method.

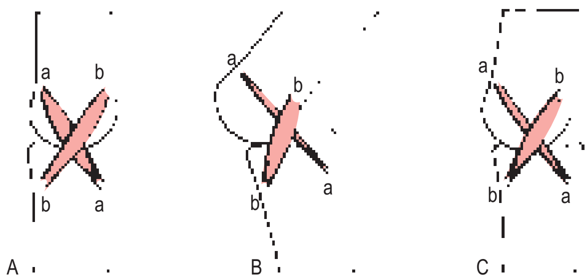


Figure 3.1A Normal unstrained joint in normal position with muscles a and b in a non-stressed state.
Figure 3.1B Normal joint in an extreme position in which stress occurs which will result in strain, as illustrated in Figure 3.1C.
Figure 3.1C Joint in a strained state in which muscle a, which had been excessively stretched, is splinted/contracted and resists movement, and muscle b, short at the time of the stress, is slightly stretched and is neither splinted nor contracted. Any attempt at returning to the situation as illustrated in Figure 3.1A would meet with resistance, while a return to the position of stress, 3.1B, would be easily and painlessly achieved and could allow for a spontaneous positional release of the hypertonicity and splinting in muscle a.

We can recognize it in an acute setting in torticollis, as well as in acute lumbago. It is also recognizable as a feature of many types of chronic somatic dysfunction in which joints remain restricted due to muscular imbalances of this type, occurring as part of an adaptive process (as discussed in Chapter 2).

This is a time of intense neurological and proprioceptive confusion, and is the moment of 'strain'. SCS offers a means of quietening the neurological confusion and the excessive, or unbalanced, tone.

The nociceptive hypothesis

(Bailey & Dick 1992, Van Buskirk 1990)

In order to appreciate a second possible neurological influence involved in strain we need a different example.

Let's consider someone involved in a simple whiplash-like neck stress as a car came to an unexpected halt:

- The neck would be thrown backwards into hyperextension, provoking all of the factors described above involving the flexor group of muscles in the forward-bending strain.
- The extensor group would be rapidly shortened and the various proprioceptive changes leading to strain and reflexive shortening would operate.
- At the time of the sudden braking of the car, there would occur hyperextension of the flexors of the neck, scalenes, etc., which would be violently stretched, inducing actual tissue damage.
- Nociceptive responses would occur (which are more powerful than proprioceptive influences) and these multisegmental reflexes would produce a flexor withdrawal, dramatically increasing tone in the flexor group.
- The neck would now display hypertonicity of both the extensors and the flexors; pain, guarding and stiffness would be apparent and the role of the clinician would be to remove these restricting influences layer by layer.
- Where pain is a factor in strain this needs to be considered as producing an overriding influence over whatever other more 'normal' reflexes are operating.

In the simple example of neck strain described, it is obvious that, in real life, matters are likely to be even more complicated, since a true whiplash would introduce both rapid hyperextension and hyperflexion as well as a multitude of layers of dysfunction.

More complex than described

The proprioceptive and nociceptive reflexes that might be involved in the production of strain are also likely to involve other factors, including chemically mediated changes.

D'Ambrogio & Roth (1997) elucidate:

Free nerve endings are distributed throughout all of the connective tissues of the body with the exception of the stroma of the brain. These receptors are stimulated by neuropeptides produced by noxious influences, including trauma … Impulses generated in these neurons spread centrally and also peripherally along the numerous branches of each neuron. At the terminus of the axons, peptide neurotransmitters such as substance P are released. The response of the musculoskeletal system to these painful stimuli may thus play a central role in the development [and maintenance] of somatic dysfunction.

As Bailey & Dick (1992) explain:

Probably few dysfunctional states result from a purely proprioceptive or nociceptive response. Additional factors such as autonomic responses, other reflexive activities, joint receptor responses, [biochemical features] or emotional states must also be accounted for.

It is at the level of our basic neurological awareness that understanding of the complexity of these problems commences.

Safe solution

Fortunately, the methodology of positional release does not demand a complete understanding of what is going on neurologically, since what Jones and his followers, and those clinicians who have evolved the art of SCS to newer levels of simplicity, have shown is that by means of a slow, *painless* return to the position of strain, aberrant neurological activity currently locked into place in the strained tissues can frequently resolve itself, irrespective of the mechanisms involved.

Making sense of garbled information *(DiGiovanna 1991, Jones 1964, 1966)*

The reaction of the body to this confusing and stressed situation apparently varies with the time available to it.

Should a deliberate and controlled response be possible, allowing the stretched muscles to slowly return to normal, then resolution of the potential problem might take place with no dysfunction arising. This can happen only if a controlled and not a panic return towards the neutral position is achieved.

All too often, however, the situation is one of an almost-panic response, as the body makes a rapid attempt to restore stability to the region and finds the neural reporting information incoherent (one moment the abdominal muscles are saying, 'all is well, we are relaxed and short', and the next they are firing rapidly and lengthening, while there is a sudden change imposed on already stretched spinal extensors, which are trying to shorten at the same time in order to produce balance).

Restriction

The result is likely to involve the shortened muscles being 'fixed' in a position short of their normal resting length, from which they cannot easily be lengthened without pain (Fig. 3.2).

The person bending, as described in our earlier example, would be locked in flexion, with an acute low back pain. The resulting spasm in tissues 'fixed' by this or other similar neurologically induced 'strains' causes the fixation of associated joint(s), and prevents any attempt to return to neutral. Any attempt to force the distorted spine (in this example) towards its anatomically correct position, would be strongly resisted by the shortened fibers.

It would, however, not be difficult, or indeed painful, to take the joint(s) further towards the position in which the strain occurred, effectively shortening the spasmed fibers even further, so reducing tension on affected tissues, and calming excessive proprioceptive reporting.

It is also possible when held at 'ease', that enhanced vascular and interstitial circulatory function in previously tense and probably ischemic tissues would moderate the activity of inflammation-enhancing chemical mediators.

Towards 'ease'

Jones found that by taking the joint/area close to the position in which the original strain took place an interesting phenomenon was observed, in which the proprioceptive functions were given an opportunity to reset themselves, to become coherent again, during which time pain in the area lessened.

This is the 'counterstrain' element of the system.

If the position of ease were held for a period (Jones suggests 90 seconds – see discussion of 'timing' in Box 3.4) the spasm in hypertonic, shortened tissues commonly resolves, following which it is usually possible to return the joint/area to a more normal resting position, as long as this action is performed extremely slowly.

The muscles that had been overstretched might remain sensitive for some days, but for all practical considerations the joint would be normal again.

Jones had found that by carefully positioning the joint, whether this be a small extremity joint, or a spinal segment, into a position of neutral or 'ease' (which is frequently an exaggeration of the distorted position in which the body is holding the area, or is a close replica of the position in which the original strain took place), a resolution of spasm/hypertonia takes place.

Since the position of ease achieved during Jones's therapeutic methods is the same as that of the original strain, the shortened muscles are repositioned in such a manner as to allow the dysfunctioning proprioceptors to modulate their activity.

Korr's explanation for the physiological normalization of tissues brought about through positional release (Korr 1976) is that:

> *The shortened spindle nevertheless continues to fire, despite the slackening of the main muscle, and the CNS is gradually able to turn down the gamma discharge and, in turn enables the muscles to return to 'easy neutral', at its resting length. In effect, the physician has led the patient through a repetition of the dysfunctioning process with, however, two essential differences. First it is done in slow motion, with gentle muscular forces, and second there have been no surprises for the CNS; the spindle has continued to report throughout.*

Circulatory concepts

There exists yet another mechanism that positional release can usefully modify in strained tissues – circulatory embarrassment.

We know from the research of Travell and Simons that in stressed soft tissues there are likely to be localized areas of relative ischemia – lack of oxygenated blood – and that this can be a key factor in production of pain and altered tissue status and hence the evolution

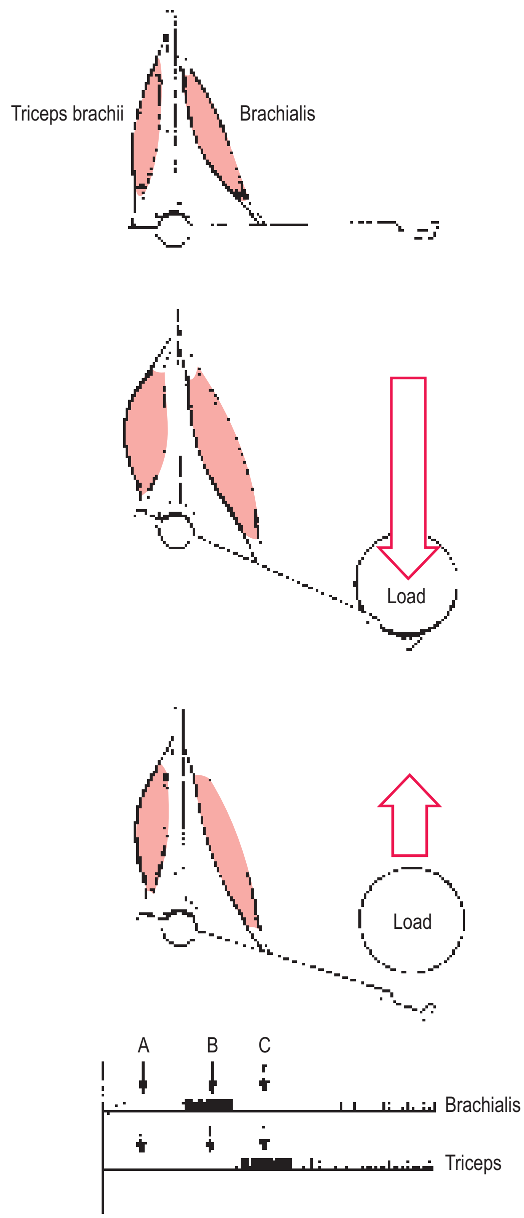


Figure 3.2 (A) The arm flexor (brachialis) and extensor (triceps brachii) muscles in an easy, normal position, as shown by the rate of firing indicated on the scale for each muscle.

(B) A sudden force is applied which results in the flexors being stretched while the extensors protect the joint by rapidly shortening. The firing rate relating to hyperextension and hypershortening is indicated on the scale.

(C) Flexor stretch receptors have been excited by this sudden demand and these continue to fire as though stretch were continuing even though a relatively normal position has been achieved. The rate of firing of both flexors and extensors continues to be maintained at an inappropriately high rate. This is the situation in a strained joint. DiGiovanna (1991) explains: 'The joint is restricted within its physiological range of motion [and is prevented] from achieving its full range of motion. It is therefore an active process rather than a static injury usually associated with a strain.'

of myofascial trigger points (Simons et al 1999, Travell & Simons 1992).

Studies on cadavers have shown that when a radiopaque dye is injected into muscles, this is more likely to spread into the vessels of the muscle when a 'counterstrain' position of ease is adopted than when the muscle is in a neutral position (Rathbun & Macnab 1970). This was demonstrated by injecting a suspension into the arm of a fresh cadaver while the arm was maintained at the side. No filling of blood vessels occurred. When the other arm, following injection of a radiopaque suspension, was placed in a position of flexion, abduction and external rotation (position of 'ease' for the supraspinatus muscle), there was almost complete filling of the blood vessels by the dye, as a result.

Jacobson and colleagues (1989) suggest that, 'unopposed arterial filling may be the same mechanism that occurs in living tissue during the 90-second counterstrain treatment.'

Connective tissue and counterstrain concepts

Connective tissue aspects of PRT are discussed in Box 3.1.

Key elements of SCS

The elements that need to be kept in mind as SCS methods are learned, and which are major areas of emphasis in programs that teach it (Jones 1981) are summarized in Boxes 3.2 and 3.3.

Conventional SCS training

The focus of this chapter is Jones's SCS, and how to use it. In order to do so the phenomenon of the 'tender point' needs to be thoroughly grasped.

The usual method for learning SCS methodology involves learning the locations, and practicing the finding, of tender points, followed by practice of the positioning of the body/associated area, in order to take the pain away from the palpated tender point.

Finding tender points depends upon palpation skills which can be learned, and which practice can refine into a practical ability that allows for the very rapid location of areas of localized soft-tissue dysfunction.

Box 3.1 Connective tissue and fascial concepts

Fascia offers a unifying medium, a structure that literally 'ties everything together', from the soles of the feet, to the meninges surrounding the brain. This ubiquitous material offers support, separation and structure to all other soft tissues and because of this produces distant effects whenever dysfunction occurs in it.

Levin (1986) has described fascia as comprising innumerable building blocks, shaped as icosahedrons (20-sided structures), that produce, in effect, kinetic chains in which tensions are transmitted everywhere in the body, partly by hydrostatic pressure.

Dean Juhan (1987) expands on this:

Besides this hydrostatic pressure (which is exerted by every fascial compartment, not just the outer wrapping), the connective tissue framework – in conjunction with active muscles – provides another kind of tensional force that is crucial to the upright structure of the skeleton. We are not made up of stacks of building blocks resting securely upon one another, but rather of poles and guy-wires, whose stability relies not upon flat-stacked surfaces but upon proper angles of the poles and balanced tensions on the wires. Buckminister Fuller coined the term 'tensegrity' to describe this principle of structure, and his inventive experiments with it have clarified it as one of nature's favorite devices for achieving a maximum of stability with a minimum of materials.

Juhan continues:

This principle of tensegrity describes precisely the relationship between the connective tissues, the muscles, and the skeleton. There is not a single horizontal surface anywhere in the skeleton that provides a stable base for anything to be stacked upon it. Our design was not conceived by a stonemason. Weight applied to any bone would cause it to slide right off its joints if it were not for the tensional balances that hold it in place and control its pivoting. Like the beams in a simple tensegrity structure, our bones act more as spacers than as compressional members; more weight is actually borne by the connective system of cables than by the bony beams.

With these models in mind, of stacked and packed icosahedrons, as well as tensegrity structures (Fig. 3.3) which easily comply with compressive and tension forces, and the unique plastic and elastic properties of connective tissue, we have the possibility of visualizing a structure capable of absorbing and accommodating to a variety of forces and adaptations.

The beneficial effects of holding tissues *at ease* when stressed also emerges.

As D'Ambrogio & Roth (1997) explain:

A perceived condition in one area of the body may have its origin in another area and therapeutic action at the source will have an immediate effect on all secondary areas, including the site of symptom manifestation. It may also account for some of the

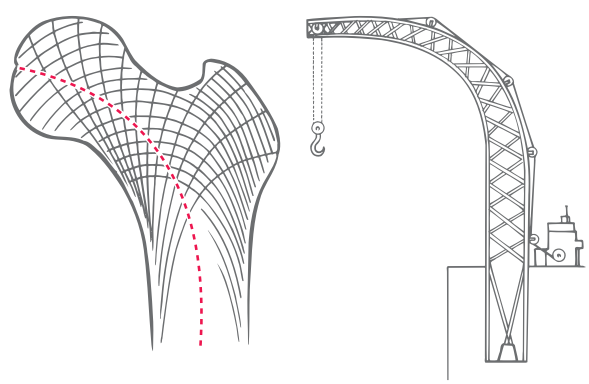


Figure 3.3 The head of the femur and a crane are both tensegrity structures, as they employ both compression and tension-resisting elements.

Box 3.1 Continued

physiologic effects that produce the [spontaneous] release phenomenon.

In Chapter 5 (Box 5.4) clinically relevant evidence is presented that links acupuncture research (Langevin & Yandow 2002) with connective tissue cleavage planes, suggesting that this provides a medium for the transmission of sensations including pain.

This goes a long way to offering an explanation for a variety of apparently unconnected elements, such as:

- the similarity between acupuncture points and trigger points
- the means whereby patterns of pain emerge from such points
- how distant effects may be achieved by stimulation of such points (needling or manual)
- the nature of acupuncture meridians
- how positioning of tissues can modify the behavior of pain-generating 'points'.

The information below, indicating the ubiquitous interconnectedness of fascia, adds support to these concepts.

Anatomy trains

Myers (1997) has described a number of clinically useful sets of myofascial chains – the connections between different structures ('long functional continuities') which he terms 'anatomy trains'. These are not distinct from tensegrity features, but are more specific linkages that may be seen to be connected when some positional release methods are performed.

In particular, SCS methods for normalizing rib restrictions can involve some bizarre positioning of the entire body, with remarkable effects (see later in this chapter).

If the 'trains' that Myers describes (see below) are considered, these 'positions of ease' will be seen to be quite logical.

The five major fascial chains (Myers 1997)

The superficial back line (Fig. 3.4) involves a chain which starts with:

- plantar fascia, linking the plantar surface of the toes to the calcaneus
- gastrocnemius, linking calcaneus to the femoral condyles
- hamstrings, linking the femoral condyles to the ischial tuberosities
- sacrotuberous ligament, linking the ischial tuberosities to the sacrum
- lumbosacral fascia, erector spinae and nuchal ligament, linking the sacrum to the occiput

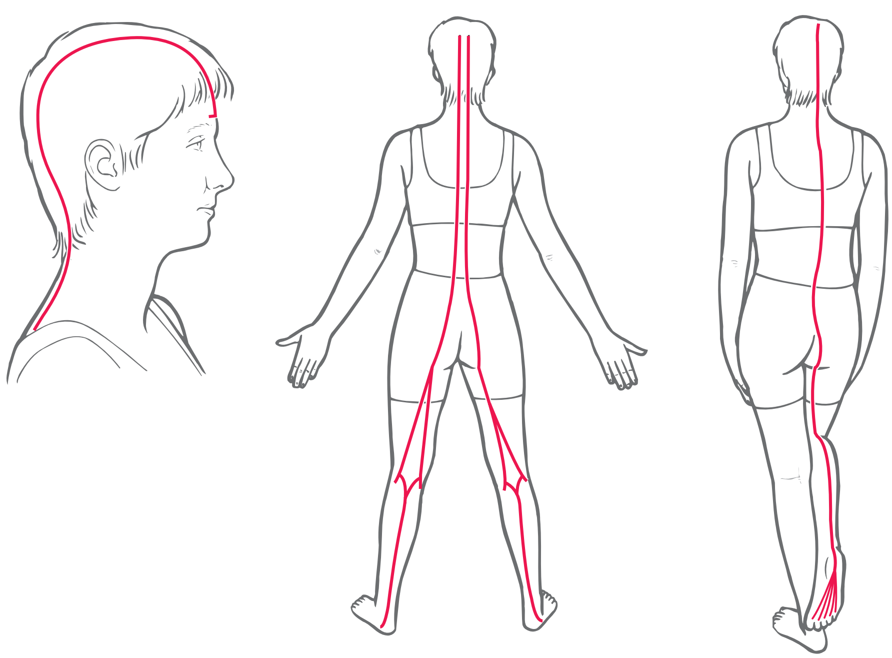


Figure 3.4 The superficial back line.

Box 3.1 Continued

- scalp fascia, linking the occiput to the brow ridge.

The superficial front line (Fig. 3.5) involves a chain which starts with:

- the anterior compartment and the periosteum of the tibia, linking the dorsal surface of the toes to the tibial tuberosity
- rectus femoris, linking the tibial tuberosity to the anterior inferior iliac spine and pubic tubercle
- rectus abdominis as well as pectoralis and sternalis fascia, linking the pubic tubercle and the anterior inferior iliac spine with the manubrium
- sternocleidomastoid, linking the manubrium with the mastoid process of the temporal bone.

The lateral line (Fig. 3.6) involves a chain which starts with:

- peroneal muscles, linking the first and fifth metatarsal bases with the fibular head
- iliotibial tract, tensor fascia lata and gluteus maximus, linking the fibular head with the iliac crest
- external obliques, internal obliques and (deeper) quadratus lumborum, linking the iliac crest with the lower ribs
- external intercostals and internal intercostals, linking the lower ribs with the remaining ribs

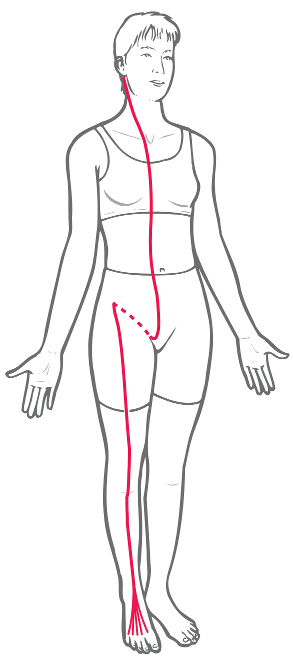


Figure 3.5 The superficial front line.

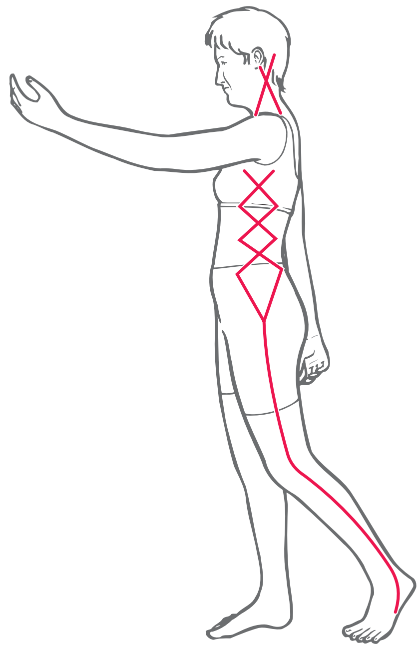


Figure 3.6 The lateral line.

- splenius cervicis, iliocostalis cervicis, sternocleidomastoid and (deeper) scalenes, linking the ribs with the mastoid process of the temporal bone.

The spiral lines (Fig. 3.7) involve a chain which starts with:

- splenius capitis, which wraps across from one side to the other, linking the occipital ridge (say on the right) with the spinous processes of the lower cervical and upper thoracic spine on the left
- continuing in this direction the rhomboids (on the left) link by means of the medial border of the scapula with serratus anterior and the ribs (still on the left), wrapping around the trunk by means of the external obliques and the abdominal aponeurosis on the left, to connect with the internal obliques on the right and then to a strong anchor point on the anterior superior iliac spine (right side)
- from the ASIS, the tensor fascia lata and the iliotibial tract link to the lateral tibial condyle
- tibialis anterior links the lateral tibial condyle with the first metatarsal and cuneiform
- from this apparent end-point of the chain (first metatarsal and cuneiform), peroneus longus rises to link with the fibular head

Box 3.1 Continued

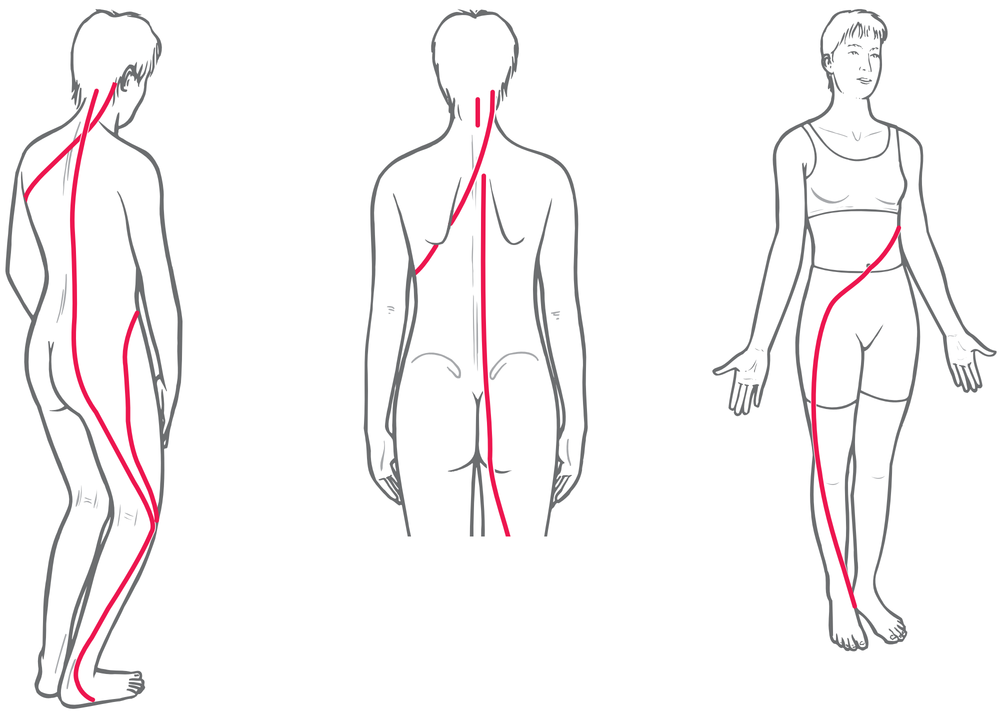


Figure 3.7 The spiral line. Outlines taken from Calais-Germain (1993).

- biceps femoris connects the fibular head to the ischial tuberosity
- the sacrotuberous ligament links the ischial tuberosity to the sacrum
- the sacral fascia and the erector spinae link the sacrum to the occipital ridge.

The deep front line describes several alternative chains involving the structures anterior to the spine (internally, for example):

- the anterior longitudinal ligament, diaphragm, pericardium, mediastinum, parietal pleura, fascia prevertebralis and the scalene fascia, which connect the lumbar spine (bodies and transverse processes) to the cervical transverse processes, and by means of longus capitis to the basilar portion of the occiput
- other links in this chain might involve a connection between the posterior manubrium and the hyoid bone by means of the subhyoid muscles
- the fascia pretrachealis between the hyoid and the cranium/mandible, involving the suprahyoid muscles
- the muscles of the jaw linking the mandible to the face and cranium.

Myers includes in his chain description structures of the lower limbs that connect the tarsum of the foot to the lower lumbar spine, making the linkage complete.

Additional smaller chains involving the arms are described as follows.

Back-of-the-arm lines (Fig. 3.8):

- the broad sweep of trapezius links the occipital ridge and the cervical spinous processes to the spine of the scapula and the clavicle
- the deltoid, together with the lateral intermuscular septum, connects the scapula and clavicle with the lateral epicondyle
- the lateral epicondyle is joined to the hand and fingers by the common extensor tendon
- another track on the back of the arm can arise from the rhomboids, which link the thoracic transverse processes to the medial border of the scapula
- the scapula in turn is linked to the olecranon of the ulna by infraspinatus and the triceps
- the olecranon of the ulna connects to the small finger by means of the periosteum of the ulna

Box 3.1 Continued

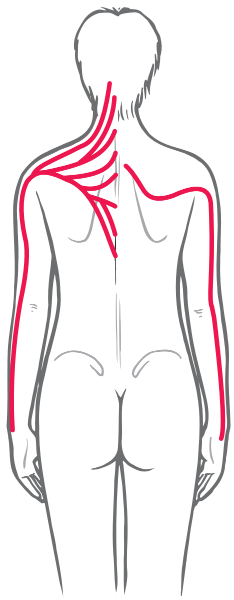


Figure 3.8 The back-of-the-arm lines.

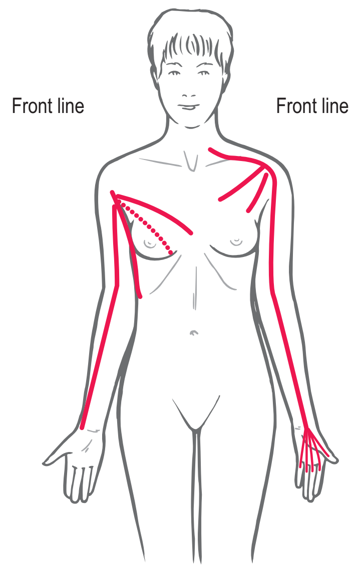


Figure 3.9 The front-of-the-arm lines.

- a 'stabilization' feature in the back of the arm involves latissimus dorsi and the thoracolumbar fascia, which connects the arm with the spinous processes, the contralateral sacral fascia and gluteus maximus, which in turn attaches to the shaft of the femur
- vastus lateralis connects the femur shaft to the tibial tuberosity and (by means of this) to the periosteum of the tibia.

Front-of-the-arm lines (Fig. 3.9):

- latissimus dorsi, teres major and pectoralis major attach to the humerus close to the medial intramuscular septum, connecting it to the back of the trunk
- the medial intramuscular septum connects the humerus to the medial epicondyle, which connects with the palmar hand and fingers by means of the common flexor tendon
- an additional line on the front of the arm involves pectoralis minor, the costocoracoid ligament, the brachial neurovascular bundle and the fascia clavipectoralis, which attach to the coracoid process
- the coracoid process also provides the attachment for biceps brachii (or brachialis) linking this to the radius and the thumb by means of the flexor compartment of the forearm
- a 'stabilization' line on the front of the arm involves pectoralis major attaching to the ribs, as do the external obliques, which then run to the pubic tubercle, where a connection is made to the contralateral adductor longus, gracilis, pes anserinus, and the tibial periosteum.

As discussed above, it is possible that in taking a distressed, strained (chronic or acute) muscle or joint painlessly into a position that allows for a reduction in tone in the tissues involved, some modification takes place of neural reporting, as well as local circulation being improved.

D'Ambrogio & Roth (1997) summarize what is thought to happen to the fascia during PRT as follows:

It is hypothesized that PRT, by reducing the tension on the myofascial system, also engages the fascial components of dysfunction. The reduction in tension on the collagenous cross-linkages appears to induce a disengagement of the electrochemical bonds and a conversion back [from the gel-like] to the sol [solate] state.

Many researchers into positional release and SCS who discuss tender point characteristics speak of *sudomotor changes* as a primary feature, usually associated with increased or decreased temperature as compared with surrounding tissues (Lewit 1999). Phenomena such as blanching, erythema and sweating of the skin which overlies tense, tender and often edematous tender points are all used as a means of identification when

Box 3.2 Ideal settings for application of SCS/PR (see also Box 3.8 for contraindications and Box 3.9 for indications)

- For reduction of stiffness (hypertonia) in pre- and postoperative patients
- In cases involving muscle spasm – where more direct methods would not be tolerated
- Where contraction is a feature – reducing tone before stretching tissues after use of muscle energy or other techniques
- In cases of acute and multiple strain – whiplash, for example
- As part of any treatment of chronic soft-tissue dysfunction
- As part of a sequence (INIT) of treating trigger points – after NMT and before MET
- In treatment of sensitive, frail, delicate individuals or sites
- In treatment of joint dysfunction where hypertonia is the prime restricting factor

Box 3.3 SCS guidelines

The four keys which allow anyone to apply SCS efficiently are:

1. An ability to localize by palpation soft-tissue changes related to particular strain dysfunctions, acute or chronic
2. An ability to sense tissue change as it moves into a state of ease, comfort, relaxation and reduced resistance
3. The ability to guide the patient as a whole, or the affected body part, towards a state of ease with minimal force
4. The ability to apply minimal palpation force as the changes in the tissues are evaluated.

Application guidelines:

1. Locate and palpate the appropriate tender point
2. Use minimal force
3. Use minimal monitoring pressure
4. Achieve maximum ease/comfort
5. Produce no additional pain anywhere else.

manual palpation is used (Chaitow 2003, Jones 1964, 1981, Lewit 1999, Schwartz 1986).

- The simplest method of palpation involves a light passage across the skin involving one digit, which seeks a sense of 'drag' in which the elevated sympathetic, sudomotor activity becomes apparent, as the finger or thumb feels a momentarily retarded passage over the skin, due to increased hydrosis – as fully described in Chapter 2.
- Pressure applied into the tissues below such localized skin changes (described as 'hyperalgesic skin zones' by Dr Karel Lewit (1999) usually evinces an increased degree of sensitivity or pain.
- Whether this or some other form of soft-tissue palpation is used, the tender points, which Jones has catalogued, need to be identified. They frequently differ from myofascial trigger points inasmuch as Jones's tender points may refer pain elsewhere when compressed, whereas active trigger points always refer pain elsewhere.
- They commonly lie in those tissues that were shortened at the time of strain, or which are chronically shortened in response to chronic strain, and are seldom in areas where the patient was previously aware of pain.

SCS guidelines

The general guidelines that Jones gives for relief of the dysfunction with which such tender points are related (pain, restriction, etc.) involves directing the movement of these tissues towards ease, which commonly involves using the protocols listed in Box 3.4.

Suggestions regarding the length of time positions of ease should be maintained will be found in Box 3.5.

Using these guidelines, it is possible to begin to practice the use of SCS on a model, fellow student, a willing volunteer, or even oneself.

Once in a 'position of ease', the optimal amount of time this position should be maintained has been subject to different opinions. The key suggestions are listed in Box 3.5.

Further clinical guidelines

A consensus has emerged, out of the clinical experience of thousands of practitioners, over the past 40 years, of a number of simple yet effective ways of selecting which of many areas of discomfort and 'tenderness' should receive primary attention (McPartland & Klofat 1995).

The advice is summarized in Box 3.6.

Where to look for tender points

- Use of Jones's 'maps' (or D'Ambrogio & Roth 1997) offers one way of deciding where to palpate for a tender point (Figs 3.10A, B).
- If the patient can identify a movement in which tissues were strained, the concept of 'replicating the

Box 3.4 Positioning guidelines

- For tender points on the anterior surface of the body, flexion, side-bending and rotation is most commonly towards the side of the palpated point, followed by fine-tuning to reduce sensitivity by at least 70%.
- For tender points on the posterior surface of the body, extension, side-bending and rotation is most commonly away from the side of the palpated point, followed by fine-tuning to reduce sensitivity by at least 70%.
- The closer the tender point is to the midline the less side-bending and rotation is usually required, and the further from the midline the more side-bending and rotation may be required, in order to effect ease and comfort in the tender point (without any additional pain or discomfort being produced anywhere else).
- The direction towards which side-bending is introduced when attempting to find a position of ease often needs to be away from the side of the palpated pain point, especially in relation to tender points found on the posterior aspect of the body.
- Despite the previous comment, there are many instances in which ease will be noted when side-bending towards the direction of the painful point. These guidelines therefore offer a suggestion as to the likeliest directions of ease and not 'rules'. Individual tissue characteristics will ultimately determine the ideal directions that will achieve comfort/ease for the point being monitored.

position of strain' (see Chapter 1) may be used, with the tender point likely to be located in tissues *short at the time of strain*.

- If the patient displays obvious distortion, or a marked imbalance in terms of 'loose–tight' tissues, the tender points most likely to be useful as monitors will be found in the tight (i.e. short) tissues, and the ease position is likely to be an exaggeration of the presenting distortion (see Chapter 1), as tissues that are short are shortened and crowded (painlessly) even more, during the positioning and 'fine-tuning' process.

- If the patient demonstrates a movement that is painful, or that is restricted, then Goodheart's guidelines (see Chapter 1) suggest that the tender points most useful for monitoring will be located in the muscles that would perform the opposite movement to that which is painful or restricted, i.e. seek tender points in antagonists to muscles active when pain or restriction is reported or observed.
- Any area of local tenderness probably represents a response to some degree of imbalance, chronic

Box 3.5 Timing and SCS

- Jones (1981) suggests a 90-second hold of the position of ease.
- Goodheart (in Walther 1988) suggests that if a facilitating crowding, or neuromuscular manipulation of the spindle, is utilized, a 20–30-second holding of the position of ease is usually adequate.
- Morrison (induration technique – see Chapter 1) suggests a 20-second hold in the position of ease.
- Weiselfish (1993) recommends not less than 3 minutes for neurological conditions to benefit.
- Schiowitz (1990) reduces the holding time to just 5 seconds when employing facilitated positional release (Chapter 6).
- D'Ambrogio & Roth (1997) suggest that between 1 and 20 minutes may be needed to achieve fascial release.
- Others (Chaitow 1996) suggest that the times recommended above are approximate at best, since tissues respond idiosyncratically, depending on multiple factors which differ from individual to individual.
- As the tissues release, palpation should reveal these changes, at which time a slow return to neutral is called for. However, the basic idea of a 90-second hold as a minimum for using Jones's methodology is endorsed.

Box 3.6 Which points to treat first?

- Choose the most painful, the most medial and the most proximal tender points for primary attention, within the area of the body that demonstrates the greatest aggregation of tender points.
- If a chain, or line, of tender points is identified, treat the most central of these.
- No more than five tender points should receive attention at any one treatment session, even if a relatively robust individual is involved.
- The more dysfunctional, ill, adaptively exhausted (see Zink & Lawson evaluation in Chapter 2), pain-ridden and/or fatigued the patient, the fewer the number of tender points that should be treated at any one session (between one and three in such cases).

strain or adaptive change. Using such a point as a monitor while local or general positioning is introduced to remove the sensitivity from the point will almost certainly help to modify whatever stress pattern is causing or maintaining it.

Tender points and the position of ease

Jones's discovery that almost all somatic dysfunction has associated areas of palpable tenderness, that are frequently only tender when palpated or probed led to the realization that when the joint or area is suitably positioned to ease the tenderness in these points, associated hypertonia or spasm usually diminished.

He called these points 'tender points'. (See Box 1.1 in Chapter 1.)

Describing his methods, Jones (1981) states:

> *Finding the myofascial tender point, and the correct position of release, will probably take a few minutes at first. Watching a skilled physician find a tender point, in a few seconds, and a position of release in a few seconds more, may give a false impression of simplicity to the beginner.*

It may take longer than a few minutes to locate tender points initially; however, accurate palpation methods, such as the 'drag' method (see above, and Chapter 2), can usually be rapidly learned if practiced regularly.

What happens next?

- Once located, the tense tender point should be palpated, with just less than sufficient pressure to cause pain in normal tissue.
- The pain/sensitivity should be apparent to both the physician and the patient.
- By careful guiding of the joint (or other tissue) while constantly palpating the tender point (or by intermittently probing it), a monitoring of progress towards the ideal neutral (reduced or no pain in the palpated point) position is eventually achieved.
- The practitioner senses and evaluates reducing (desirable) or increasing (undesirable) levels of muscle tension in the palpated tissues, as well as the patient's report of either increasing or diminishing levels of sensitivity/pain in the point.
- These indicators are used to guide ('fine-tuning') the practitioner/therapist to the position where eventually there is a feeling of relative ease in the soft tissues, together with markedly reduced pain in the tender point (by 70% at least, ideally).
- An absence of 'bind' and also, most importantly, the patient's report that pain has significantly lowered are the desired indicators.

Jones (1981) states:

> *The point of maximum relaxation accompanied by an abrupt increase in joint mobility, within a very small arc, is the mobile point.*

After holding this position for 90 seconds (see Box 3.5) the practitioner/therapist slowly returns the area to its neutral position.

What are the tender points?

Jones equates tender points with trigger points (Simons et al 1999, Travell & Simons 1992) and with Chapman's neurolymphatic reflexes (Owens 1982). However, this comparison cannot be strictly accurate despite an inevitable degree of overlap in all reflexively active points on the body surface.

There are differences in the nature, if not in the feel, of these different point systems (Kuchera & McPartland 1997). For example, myofascial trigger points will refer sensitivity, pain or other symptoms to a target area when pressed, which is not usually the case with Chapman's (neurolymphatic) reflex points, which are found in pairs and not singly, as are Jones's tender points and most trigger points.

Osteopathic physician Eileen DiGiovanna (1991) states:

> *Today many physicians believe there is a relationship among trigger points, acupuncture points and Chapman's reflexes. Precisely what the relationship may be is unknown.*

She quotes from a prestigious osteopathic pioneer, George Northrup (1941), who stated:

> *One cannot escape the feeling that all of the seemingly diverse observations [regarding reflex patterns of surface 'points'] are but views of the same iceberg, the tip of which we are beginning to see, without understanding either its magnitude or its depth of importance.*

Felix Mann, one of the pioneers of acupuncture in the West, has entered the controversy as to the existence, or otherwise, of acupuncture meridians (and indeed acupuncture points). In an effort to alter the emphasis which traditional acupuncture places on the specific charted positions of points, he stated (Mann 1983):

> *McBurney's point, in appendicitis, has a defined position. In reality it may be 10 cm higher, lower, to the left or right. It may be 1 cm in diameter, or occupy the whole of the abdomen, or not occur at all. Acupuncture points are often the same, and hence it is pointless to speak of acupuncture points in the classical traditional way. Carefully performed electrical resistance measure-*

ments do not show alterations in the skin resistance to electricity corresponding with classical acupuncture points. There are so many acupuncture points mentioned in some modern books, that there is no skin left which is not an acupuncture point. In cardiac disease, pain and tenderness may occur in the arm; however, this does not occur more frequently along the course of the heart meridian than anywhere else in the arm.'

Hence, Mann appears to conclude, meridians do not exist, or – more confusingly perhaps – that the whole body is an acupuncture point! Leaving aside the validity of Mann's comment, it is true to say that if all the multitude of points described in acupuncture, traditional and modern, together with those points described by Travell and colleagues, Chapman and Jones were to be placed together on one map of the body surface, we would soon come to the conclusion that the entire body surface is a potential acupuncture point.

The discussion in Chapter 2 on the evolution of soft-tissue dysfunction in general (along with the tight–loose concept), and trigger points in particular, offers a representation in which some areas are seen to become short, tight and bunched, while others become lax, stretched or distended.

If the broad guideline of 'exaggerating the distortion' (see Chapter 1) is brought into consideration in such situations, this suggests that whatever is short, tight and bunched is likely to benefit by having these characteristics amplified, reinforced and held, as part of a treatment approach that attempts to offer these tissues an opportunity to change, to release.

Using a tender point (whether or not it is also a trigger point, or plays some other role in relation to reflex activity) to guide the tissues towards the precisely balanced degree of crowding, folding and compression describes SCS methodology simplistically but accurately.

Are ah-shi points and tender points the same?

It is worth remembering that, in acupuncture, there exists a phenomenon known as the 'spontaneously sensitive point'. These 'points' arise in response to trauma, or joint dysfunction, and are regarded, for the duration of their existence, as 'honorary' acupuncture points (Academy of TCM 1975).

Most acupuncture points that receive treatment by means of needling, heat, pressure, lasers, etc., are clearly defined and mapped. The only exception to this rule relates to these spontaneously arising (ah-shi) points, associated with joint problems, which become available for treatment for the duration of their sensitivity.

In an earlier text (Chaitow 1991), I make the following comment: 'Local tender points in an area of discomfort may be considered as spontaneous acupuncture points. The Chinese term these ah-shi points, and use them in the same way as classical points, when treating painful conditions.'

It is worth recalling that in Chinese medicine, as well as use of acupuncture, manual acupressure of ah-shi points is also considered an appropriate form of treatment.

It would seem that Jones's points are in many ways the same, if not identical, to ah-shi points.

Positioning to find ease

As we have seen, Jones discovered a further use for tender points, apart from pressing or puncturing them.

Maintaining a sufficient degree of pressure on such a point allows the patient to be able to report on the level of pain being produced as the joint is (re)positioned, becoming a monitor and guide for the practitioner. The disappearance, or at least marked reduction of pain noted on pressure, after holding the joint in the position of ease for the prescribed period, is instant evidence as to the success of the procedure.

The holding, or periodic probing, of the point during the 90-second period recommended by Jones, leads to a further question, one which Jones acknowledges as being asked of him quite frequently. This queries whether the pressure on the tender point is not in itself therapeutic? Jones answered:

The question is asked whether the repeated probing of the tender point is therapeutic, as in acupressure, or Rolfing techniques [or ischemic compression as used in neuromuscular technique]. It is not intentionally therapeutic, but is used solely for diagnosis and evidence of accuracy of treatment.

This answer could be thought of as being equivocal for it does not address the possibility of a therapeutic end-result from the use of pressure on the tender point, but states only the intention of such pressure.

It may be assumed that some therapeutic effect does indeed derive from sustained inhibitory (also known as 'ischemic') pressure on such a spontaneously arising tender point, for the reasons described in Box 3.7.

Applied pressure and positioning

Since acupuncture authorities both in China and the West include spontaneously tender (ah-shi) points (which seem to be in every way the same as Jones's points) as being suitable for needling or pressure techniques, the avoidance of a clear answer on this point by Jones may be taken to indicate that he has not really addressed himself to the possibility that the applied pressure aspect of SCS contributes to the results.

Box 3.7 Some of the effects of sustained compression

- Ischemia is reversed when pressure is released (Simons et al 1999).
- Neurological 'inhibition' results from sustained efferent barrage (Ward 1997).
- Mechanical stretching occurs as 'creep' of connective tissue commences (Cantu & Grodin 1992).
- Piezoelectric effects modify hardened 'gel-like' tissues, towards a softer more 'sol-like' state (Barnes 1997).
- Mechanoreceptor impulses resulting from applied pressure interfere with pain messages ('gate theory') (Melzack & Wall 1988).
- Analgesic endorphin and enkephalins are released in local tissues and the brain (Baldry 1993).
- 'Taut bands' associated with trigger points release due to local biochemical modifications (Simons et al 1999).
- Traditional Chinese medicine concepts associate digital pressure with altered energy flow.
- In the use of acupuncture there is clear evidence of a pain-reducing effect when pressure methods are applied to acupuncture points.

That his method has other mechanisms which achieve release of pain and spasm in injured joints is beyond doubt. The total effect of SCS would seem to derive from a combination of the positioning of the joint in a neutral position, and the pressure on the tender point.

The process of positioning used in SCS is similar, but not identical, to that described in functional technique by Harold Hoover (see Chapter 6). Hoover's methods involved the positioning of a joint or tissues which display a limited range of motion in what he called a 'dynamic neutral' position. He sought a position in which there was a balance of tensions, fairly near the anatomical neutral position of the joint.

Jones also aims at a position of ease, but he relates more to the identical position in which the original strain occurred, or by exaggeration of existing distortions.

By combining the position of ease, in which the shortened muscle(s) are able to release themselves, while simultaneously applying pressure (which, despite Jones's doubts, appears almost certainly to involve a therapeutic effect), dramatic improvements in severe and painful conditions are possible.

Jones's conclusions regarding joints

Jones came to a number of conclusions as a result of his work, which may be summarized as follows:

- The pain in joint dysfunction is related very much to the position in which the joint is placed – varying from acute pain in some positions, to a pain-free position which would be almost directly opposite the position of maximum pain.
- The dysfunction in a joint that has been strained is the result of something which occurs in response to the strain – a reaction to it. The palpable evidence of this is found by searching not in the tissues that were placed under strain, but by searching for tenderness in the (usually shortened) antagonists of these overstretched tissues.
- These painful structures in joint problems are usually not those which were stretched at the time of the injury, but which were in fact shortened, and which have remained so.
- It is in these shortened tissues that the tender points will be found.

Jones's technique

Jones described the use of 'tender points' as follows:

> *A physician skilled in palpation techniques will perceive tenseness and/or edema as well as tenderness. The tenderness, often a few times greater than that for normal tissue, is for the beginner the most valuable sign.*

Jones suggested maintaining the palpating finger over the tender point, to monitor expected changes in tenderness, while with the other hand he positioned the patient into a posture of comfort and relaxation.

Jones reported that he might proceed successfully just by questioning the patient as to comfort, reduction in pain, etc., as he probed intermittently, while moving towards the position of ease. If the correct position is arrived at, the patient would report diminished tenderness in the palpated area.

By intermittent deep palpation, as he fine-tuned the positioning, he monitored the tender point, seeking the ideal position at which there was at least a 70% reduction in tenderness. This degree of pressure stimulus is similar to that applied in the treatment of similar tender points by acupressure or tsubo techniques.

The key to successful normalization by means of these methods seems to be the achievement of the position of maximum ease of the joint, in which the tender point becomes markedly less sensitive to palpation pressure.

Most importantly, the subsequent return to the neutral resting position, after the maintenance of the joint in this position of ease for not less than 90 seconds, is achieved very slowly. Without this slow repositioning, the likelihood exists of a sudden return to a shortened state of the previously disturbed structures.

The geography of SCS

Tender points, relating to acute and chronic strain, can be found in almost all soft-tissue locations which have come under adaptation stress.

Although Simons et al (1999) indicate that trigger points close to attachments are the ones most likely to benefit from positional release methods (see previous chapter), D'Ambrogio & Roth (1997) observe:

> *Tender points are found throughout the body, anteriorly, posteriorly, medially, and laterally … on muscle origins or insertions, within the muscle belly, over ligaments, tendons, fascia and bone.*

Jones has identified a large number of conditions that are related to predictable tender points and from his vast clinical experience, and a lengthy process of trial and error, he has concluded that when tender points are found on the anterior surface of the body they are (with a few exceptions) indicative of the associated joint requiring a degree of forward-bending during its treatment (see Box 3.4). The location (in this case on the anterior aspect of the body) also indicates that the joint was probably initially injured in a forward-bending position.

Thus, information as to the original injury position (or observation of the direction in which adaptation is directing distortion) helps to direct the search for the tender points to the likeliest aspect of the body.

The exception to this rule is that the tender point related to the fourth cervical vertebra, when injured in flexion, is not necessarily treated with the neck in flexion, but may require side-bending and rotation, away from the side affected. Reduction in pain from the tender point during positioning, and fine-tuning, will produce the guide to the best position.

Tender points found on the posterior aspect of the body indicate joint dysfunction which calls for some degree of backward-bending in the treatment (see Box 3.4). There are also exceptions to this rule, notably involving the piriformis muscle, and the third and fifth cervical vertebrae. These exceptions may involve a degree of flexion on treatment.

Maps

Figures 3.10A–H will guide the reader to the most common tender point positions, as noted by Jones. Proprioceptive skills, and the use of careful palpation, will enable the required technique to be acquired – as described later in this chapter.

Reading of Jones's (1981) book, or that of D'Ambrogio & Roth (1997) is suggested, for greater detail and understanding of his approach for those who wish to work in this structured manner.

The examples that follow are adapted from Jones's text (Jones 1981) and are not recommendations but are for general information only.

Settings in which SCS/positional release might ideally be applied are given in Box 3.2.

The suggested positions of ease relate to the findings of Jones and his followers over many years, and while they are largely accurate, the author is critical of formulae which prescribe a set protocol for any given joint or muscular strain, and encourages the use of 'Goodheart's guidelines', described later in this chapter, as well as the development of palpation skills that allow for sensing of ease in the tissues, rather than reliance on verbal feedback from the patient as to the current level of discomfort as tissues are being positioned and repositioned.

Reminder about positioning (see Box 3.4)

Remember that when positioning/fine-tuning the body as a whole or just the part in question (elbow, knee, etc.) it is normally found that tender points on the anterior aspect of the body require flexion, and those on the posterior aspect require extension as a first part of the process of easing pain or excessive tone.

The more lateral the point is from the midline the greater the degree of side-bending and/or rotation required to achieve ease.

Notes on prioritizing points for treatment (see Box 3.6)

When selecting a tender point for use as a monitor in SCS treatment, there are often a confusing number of possibilities. The consensus among clinicians (McPartland & Klofat 1995) experienced in use of SCS is that choice should be based on the following priorities:

- First, the most sensitive point found in the area with the largest accretion of tender points should be treated.
- If there are a number of similarly tender points, the most proximal and/or medial of these should be chosen.
- If there exists an apparent 'line' of points, one close to the center of the chain should be chosen to 'represent' the others.
- Clinical experience suggests that no more than five points should be treated at any one session to avoid adaptive overload, and that one treatment weekly is usually adequate.

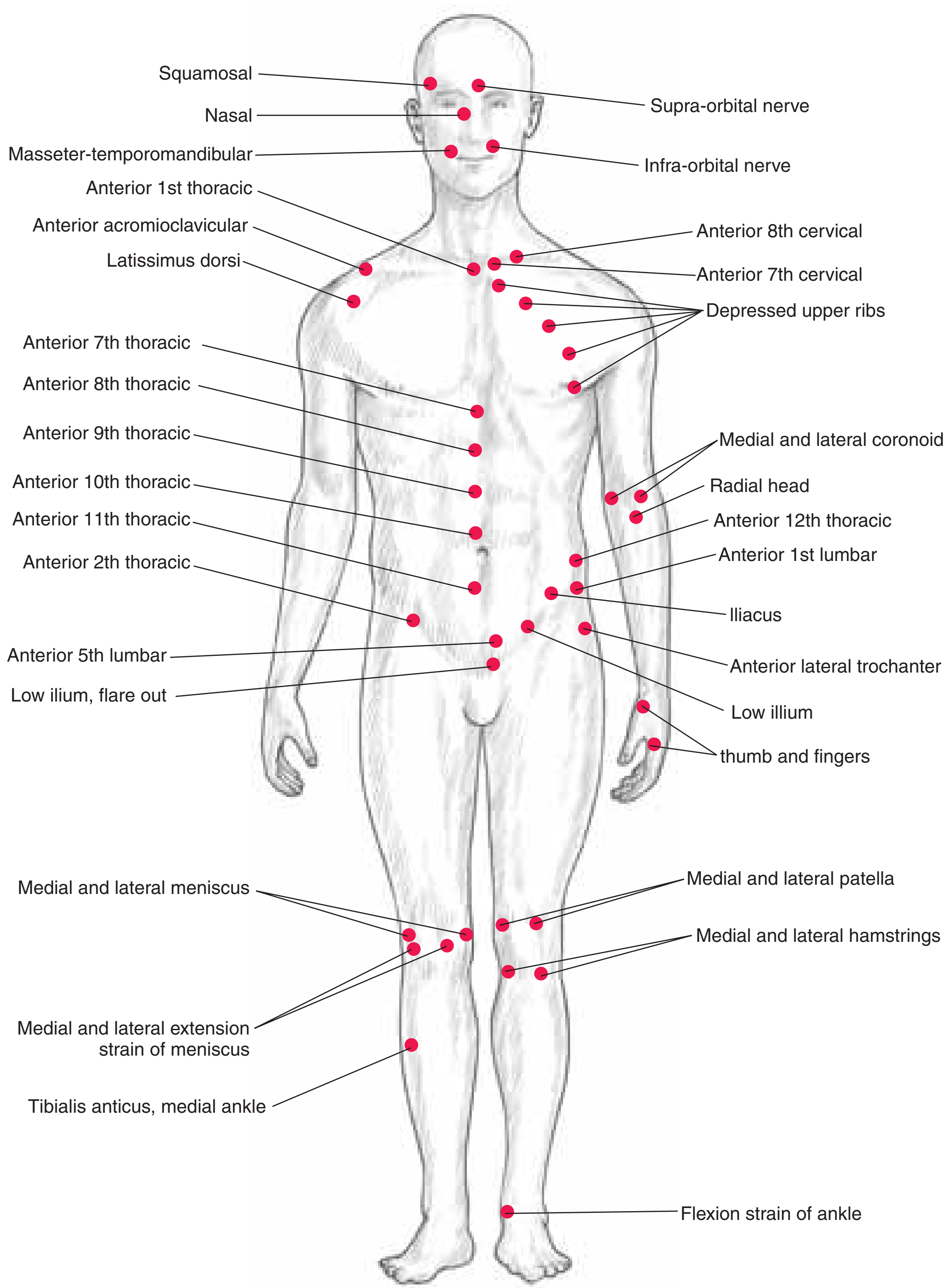


Figure 3.10 Location of Jones's tender points, which are bilateral in response to specific strain (acute or chronic) but are shown on only one side of the body in these illustrations. The point locations are approximate, and will vary within the indicated area, depending upon the specific mechanics and tissues associated with the particular trauma or strain.

Figure 3.10A Jones's tender points on the anterior body surface, commonly relating to flexion strains.

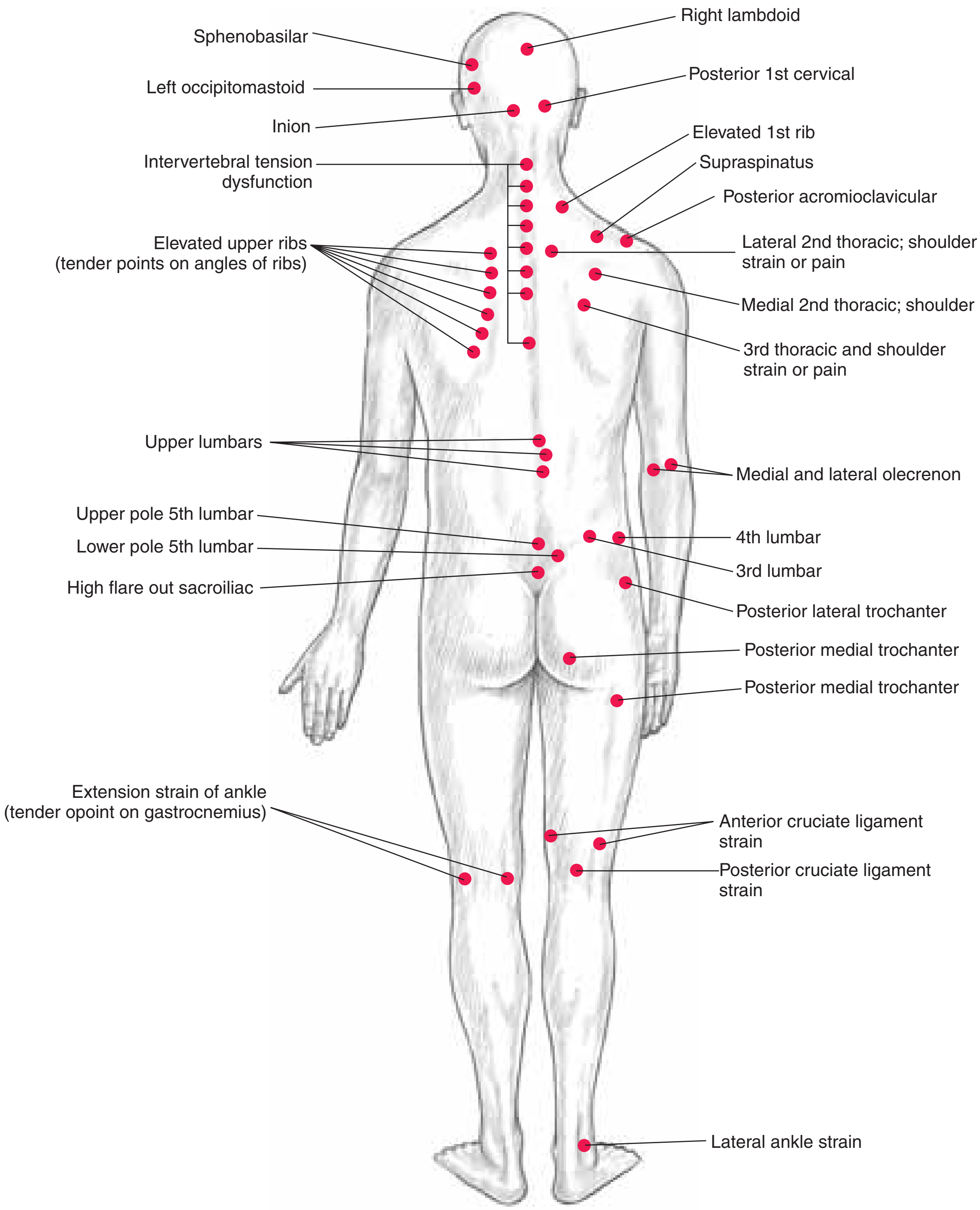


Figure 3.10B Jones's tender points on the posterior body surface, commonly relating to extension strains.

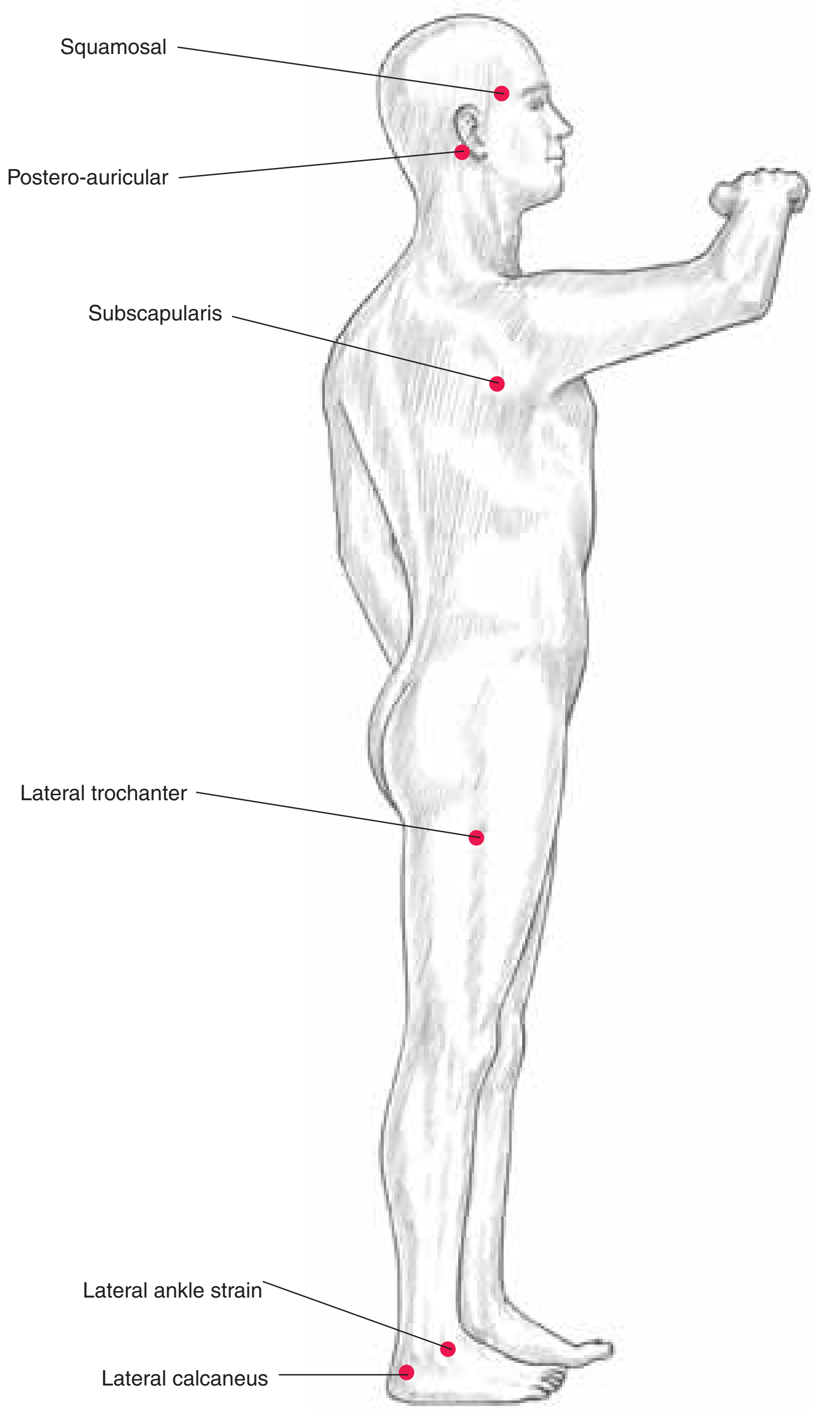
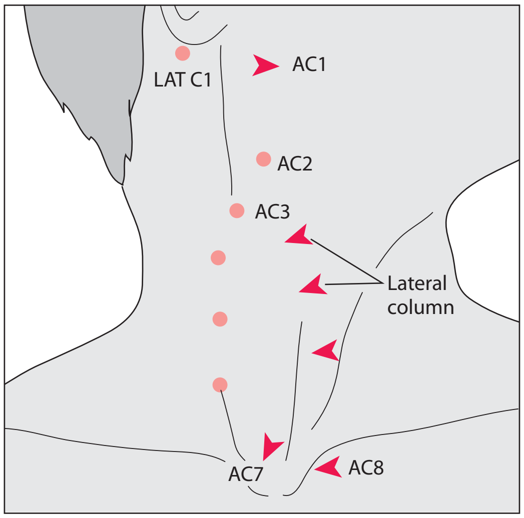


Figure 3.10C Jones's tender points on the lateral body surface, commonly relating to strains involving side-bending or rotation.



D

Figure 3.10D Anterior cervical extension strain tender point sites.

These 'rules' are based on experience rather than research.

An example might be where tender points of similar intensity are noted in the low back as well as the hip region. The low back point would receive primary attention (i.e. the most proximal point treated first). However, if tender points were found in the low back and hip, but the hip point was more sensitive, this would receive primary attention (i.e. most sensitive point treated first). If a row of points was noted between the low back and the hip and these were equally sensitive, the most central point in the row would receive primary attention (i.e. treat middle of a line of points first).

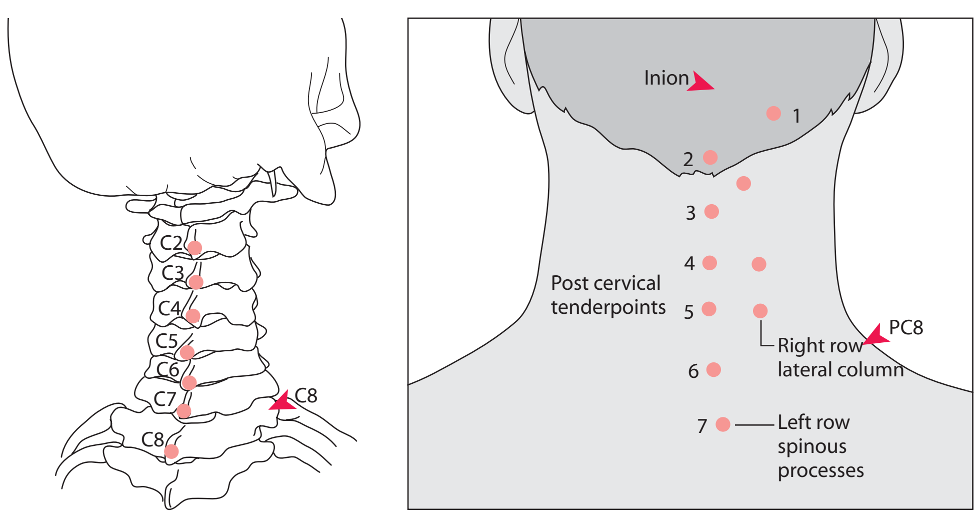
Notes on patient feedback

In order to have instant feedback as to the degree of pain/sensitivity/discomfort being felt as the tender point is palpated, it is useful to ask the patient to 'grade' the pain out of 10 (0 = no pain) and to give frequent reports as to the 'value' of the pain being noted during the process of fine-tuning.

A reduction to a score of 2 or 3 (approximately 70% reduction in pain) is regarded as adequate to achieve the release required.

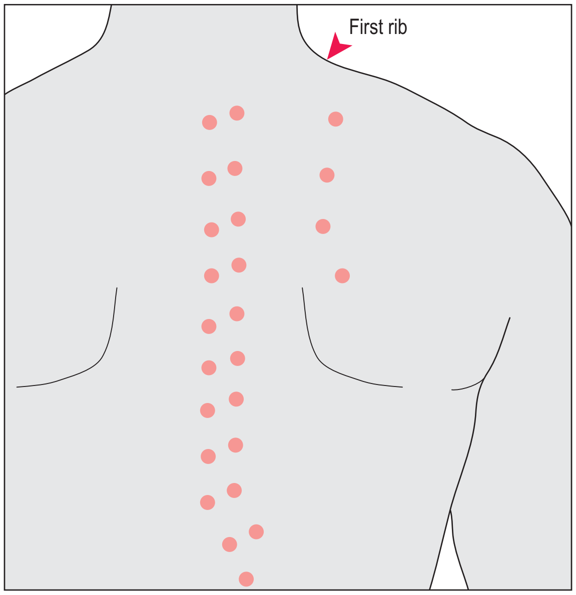
In the USA a method commonly suggested is to say to the patient, 'The amount of pain you feel when I press this point is a dollar's worth. I want you to tell me when there is only 30 cents worth of pain.'

Whichever approach is chosen it is important to instruct the patient that a conversation is not what is needed, but simple indications as to the benefits or otherwise, in terms of pain felt in the point being palpated and monitored, of the various changes in position that are being made.



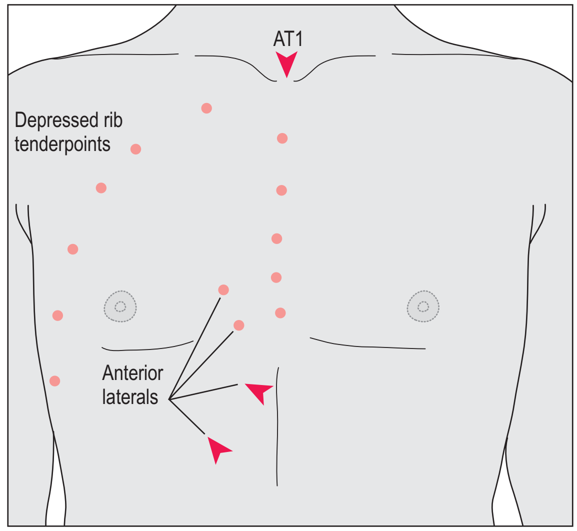
E

Figure 3.10E Posterior cervical flexion strain tender point sites.



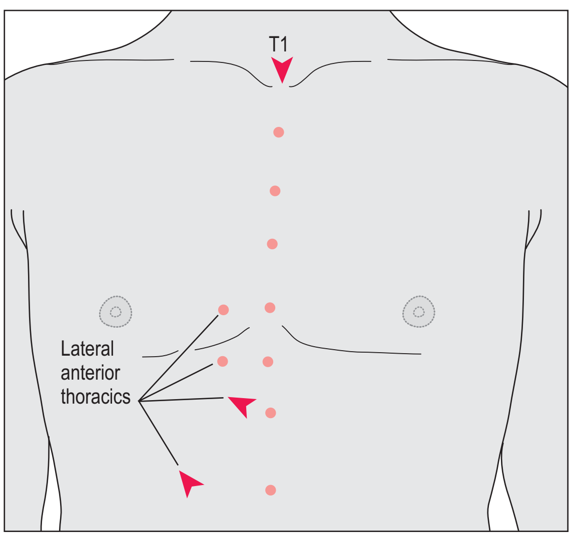
F

Figure 3.10F Posterior thoracic spine extension strain tender point sites.



H

Figure 3.10H Tender points relating to depressed upper ribs (2 to 7).



G

Figure 3.10G Anterior thoracic spine flexion strain tender point sites.

Notes on fine-tuning the ease position

A crowding of the tissues to induce slackness in the affected tissues is a usual final aspect of the 'fine-tuning' once initial pain reduction has been achieved.

Additional ease can often be achieved by asking the patient to fully inhale or exhale to evaluate which phase of the breathing cycle reduces pain (or which reduces increased tone) the most.

Eye movements (visual synkinesis) can also be used in this way, always allowing the patient's report of pain levels and/or your palpation of a sense of ease in the tissues to guide you towards the 'comfort zone' (Lewit 1999).

Tips and comments about positioning into ease

1. There should be NO increase in pain elsewhere in the body during the treatment process.
2. It is not necessary to maintain possibly painful pressure on the tender point throughout, although this almost certainly has an 'acupressure' effect (ischemic compression/inhibition/endorphin release, etc.).
3. Intermittent pressure applied periodically, to evaluate the effects of a change in position in order to ascertain the degree of sensitivity still present, is the preferred Jones method.
4. The amount of time the position of ease should be maintained is discussed in Box 3.6.

After the 90-second hold

- It is necessary for a slow return to be made to the neutral start position, in order to avoid ballistic proprioceptors firing, and restoring the dysfunctional pattern that has just released.

- The patient should be advised to avoid strenuous activity over the following days.
- Reassessment of the tender point should indicate that a reduction in previous sensitivity of at least 70% has taken place.
- Post-treatment soreness is a common phenomenon and the patient should be warned that this may occur and that it should pass over the next 48 hours or so without further attention.

Advice and choices

The listings that follow in this chapter describe the main sites of tender points relative to particular strain patterns, as identified by Jones (1981), and also give the most usual directions of ease as presented in his writings and teachings. The author suggests that these should not be taken as absolute, for the reasons explained above, and should be used as a starting point in guiding you towards identifying the desired position of ease.

If ease (as judged by pain reduction in the palpated tender point) is not achieved in the position suggested by Jones, then that which emerges by careful fine-tuning is the 'correct' position. The body and its tissues, in other words, are being 'consulted' during the positioning phase, and the answer comes in the form of a reduction in pain in the palpated point.

As will become clear in Chapters 6 and 7, which describe functional technique and facilitated positional release, the use of pain in a point as a guide to the state of 'ease' is not the only way of arriving at the point of tissue balance – palpated reduction in 'bind' can be used as an equally clear message from the tissues to indicate that 'ease' is being approached.

Pressure – constant or intermittent?

The author suggests that at times it may be useful to maintain pressure on the tender point throughout the repositioning process, rather than using the intermittent probing urged by Jones. The reasoning for this is explained in Box 3.7.

Patient's assistance

A final variation which the author feels worthy of restating involves having, where convenient, the patient apply pressure to the tender point sufficient to register pain.

In many instances, especially in intercostal areas, this has proved very useful, allowing freedom of movement for the practitioner/therapist as the positioning process is carried out and, in some instances more significantly, allowing pressure to be applied to areas of extreme sensitivity by the patient, when he or she was unable to tolerate practitioner/therapist application of pressure.

Contraindications and indications

There are very few contraindications to the use of SCS, but those that are suggested are listed in Box 3.8.

Box 3.9 lists major indications for use of SCS (in combination with other modalities or on its own).

What does SCS treatment do?

- Where should treatment start?
- What should be treated first?
- Is there a way of prioritizing areas of dysfunction and choosing 'key' locations for primary attention?

Box 3.8 SCS: contraindications and cautions

- Particular care should be taken in application of SCS in cases of malignancy, aneurysm and acute inflammatory conditions.
- Skin conditions may make application of pressure to the tender point undesirable.
- Protective spasm should not be treated unless the underlying conditions are well considered (osteoporosis, bone secondaries, disc herniation, fractures).
- Recent major trauma or surgery precludes anything other than gentle superficial positional release methods (see Chapter 4 for further details concerning SCS in hospital settings).
- Infectious conditions call for caution and care.
- Any increase in pain during the process of positioning shows that an undesirable direction, movement or position is being employed.
- Sensations such as numbness or aching may arise during the holding of the position of ease, and as long as this is moderate and not severe the patient should be encouraged to relax and view the sensation as transient and part of the desirable changes taking place.
- Caution should be exercised when placing the neck into extension. It is as well to maintain verbal communication with the patient at all times and to ask them to keep the eyes open so that any signs of nystagmus are observable.

Box 3.9 Indications for SCS (alone or in combination with other modalities)

See also Box 3.2, which lists 'ideal settings' for use of SCS, and the list of contraindications in Box 3.8.

Note: The fact that conditions are included in the partial listing below is not meant to suggest that SCS/PRT could do other than offer symptomatic relief in some of them. Alleviation of pain, enhanced mobility and, in some instances, resolution of the actual dysfunctional condition may be anticipated following appropriate use of SCS.

- Painful and restricted muscles and joints, irrespective of cause
- Degenerative spinal and joint conditions, including arthritis
- Post-surgical pain and dysfunction
- Osteoporosis
- Post-traumatic pain and dysfunction, such as sporting injuries, whiplash, ankle sprain, etc.
- Repetitive strain conditions
- Fibromyalgia pain (see Chapter 4)
- Headache
- Pediatric conditions such as torticollis
- Respiratory conditions that might benefit from normalization of primary and accessory breathing muscles, ribs and thoracic spinal restrictions
- Neurological conditions such as dysfunction following cerebrovascular accidents (stroke), spinal or brain injury or degenerative neural conditions such as multiple sclerosis (Weiselfish 1993)

The notes on selecting and prioritizing points for treatment earlier in this chapter (see Box 3.6), as well as the discussion on soft-tissue dysfunction in Chapter 2, should offer some general guidelines as to how and when dysfunctional tissues should be selected for treatment.

The author, to a large extent, works with a model of care that attempts to achieve one of two objectives (and sometimes both) when treating general or local (e.g. soft tissue) dysfunction.

It can be argued that all potentially beneficial therapeutic interventions depend for the manifestation of that benefit on the response of the body and tissues being treated. In other words the treatment (involving any technique whatsoever) has a catalytic influence, but is of itself not capable of 'curing' anything.

The objectives, relating to the two areas of influence within which all therapeutic interventions operate, can be summarized as follows:

- reduction of the adaptive load to which the organism as a whole, or the local tissues, are adapting (or failing to adapt), i.e. the objective is to 'lighten the load'
- enhancement of the ability of the organism as a whole, or of the local tissues, to adapt to whatever stress load is being coped with, i.e. the objective is to 'enhance homeostatic self-regulating functions'.

An additional emphasis needs to be, 'don't make matters worse', by overloading adaptive functions even more.

Therefore, the decision as to which, and how many, points to treat at a given time, using PRT methods, as well as whether to combine this with other methods of treatment, depends on individual characteristics including age, vulnerability, the chronicity or acuteness of the condition, as well as the specific objectives in the case, with all these considerations being related to assessment findings and therapeutic objectives.

Scanning

Clinicians such as D'Ambrogio & Roth (1997) argue for a 'scanning evaluation' (SE) that records tender points, as well as their severity, when the entire body is evaluated. Just as a postural evaluation will provide a number of pointers that might relate to the patient's symptoms, or the palpation and eliciting of active trigger points might show patterns that explain the pain being experienced by the patient, or testing for shortness, weakness or malcoordination in muscles might correlate with somatic dysfunction, so might a grid, or map, of areas of tenderness ('tender points') and their severity be seen to contribute to the formulation of a plan of therapeutic action.

A major element in this mapping approach is identification of what have been termed 'dominant tender points' (DTPs), the deactivation of which can lead to a chain reaction in which less tender areas will normalize. This concept is not dissimilar to that of Simons et al (1999) who maintain that chains of active trigger points can be 'switched off' in much the same manner.

As D'Ambrogio & Roth (1997) explain:

> *Several patients may have the same complaint (e.g. knee pain, shoulder pain, or low back pain) but the source of the condition, as revealed by the scanning evaluation [and the 'dominant tender points'], may be different for each … By identifying the location of key dysfunctions and treating restrictive muscular and fascial barriers, the pain may begin to subside.*

For details of the complex mapping and charting exercise, as recommended by D'Ambrogio & Roth (1997), the reader is referred to their book.

The mapping and charting exercise is a useful procedure, albeit time-consuming; for busy therapists the guidelines offered earlier in this chapter (see Box 3.6) will suffice and should provide good clinical results.

A number of exercises are described below that offer the reader a chance to experiment with SCS methodology, and to become familiar in a 'hands-on' way with the mechanics of its use. These exercises are followed by a series of descriptions of SCS in clinical use, covering most of the muscles and joints of the body.

SCS exercises

1. The SCS 'box' exercise

(Woolbright 1991)

Colonel Jimmie Woolbright (1991), Chief of Aeromedical Services at Maxwell Airforce Base, Alabama, devised a teaching tool that enables SCS skills to be acquired and polished. This is not designed as a treatment protocol but is an excellent means of acquiring a sense of the mechanisms involved.

'Box' exercise guidelines

Note As the head and neck are positioned during this exercise (Figs 3.11A, B and 3.12) no force at all should be used.

- Each position adopted is not the furthest the tissues can be taken in any given direction but rather it is where the first sign of resistance is noted.
- Thus, an instruction to take the patient/model's head and neck into side-bending and rotation to the right would involve the very lightest of guidance towards that position, with no force and no effort, and no strain or pain being noted by the patient/model.
- As each position described below in this 'box exercise' is achieved, three key elements require consideration:
  1. Is the patient/model comfortable and unstressed by this position? If not, too much effort is being used, or they are not relaxed.
  2. In this position, are the palpated tissues (in this exercise those on the upper left thoracic area) less sensitive to compression pressure in this particular head/neck position?
  3. In this position, are the palpated tissues reducing in palpated tone, feeling more at 'ease', with less evidence of 'bind'?

The information derived by the palpating hand (left hand in this example) should, at the end of the exercise, allow the practitioner/therapist to judge which of the various head/neck positions offered the most 'ease' to the palpated tissues (Fig. 3.12).

It will be found that while only one position of the head and neck (in this particular application of the exercise) offers the greatest reduction in palpated tension or reported pain, there are other secondary positions that also offer some reduction in these two key elements (pain and palpated hypertonicity), just as a number of

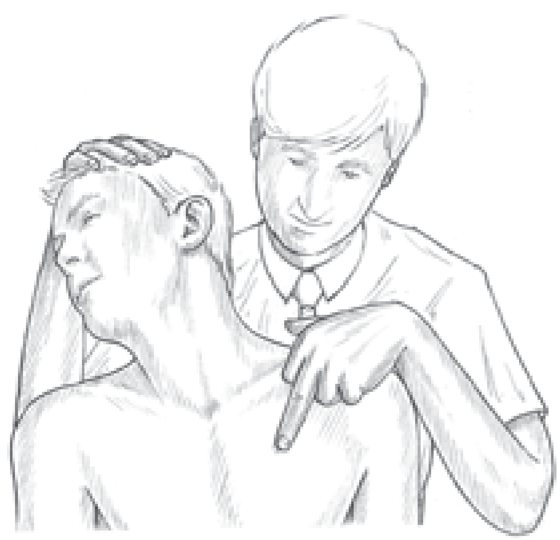


Figure 3.11A The second head/neck position of the 'box' exercise as pain and tissue tension is palpated and monitored (in this instance in the left upper pectoral area).

Figure 3.11B The fourth and final head/neck position of the 'box' exercise as pain and tissue tension is palpated and monitored.

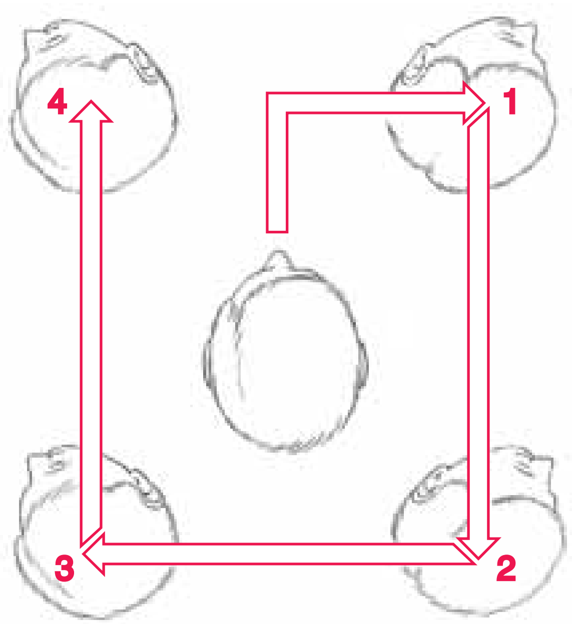


Figure 3.12 Box exercise. The head is taken into four positions: flexion with side-bending and rotation right (1), extension with side-bending and rotation right (2), extension with side-bending and rotation left (3), flexion with side-bending and rotation left (4). As these positions are gently adopted, tenderness and/or tissue tension is monitored.

the positions adopted during application of the 'box' exercise will demonstrably *increase* tension and/or pain.

Woolbright (1991) notes that there are what he terms 'mirror-image' points which are 'directly diagonally across from the anticipated position of release', and that these may at times offer a better position of ease than that designated as the likeliest by virtue of Jones's research.

Method

Note As each position is reached you should pause to evaluate the tissue response to the position, as well as inquiring of the patient/model what the 'score' is for the pain/discomfort being produced by the palpating digit. Try to be constantly vigilant to changes in tone as the head and neck move through the sequence of positions around the 'box'.

- The patient/model is seated with the practitioner/therapist standing behind.
- The practitioner/therapist's right hand rests very lightly on the crown of the patient/model's head (palm on head, fingertips touching forehead, or the hand can be transversely placed on the head so that the heel of the hand is on one side and the fingertips on the other) while the left hand/fingertips palpate an area of tenderness and tension a little below the left clavicle, in the pectoral muscles (Fig. 3.11).
- Sufficient pressure should be applied for a report to be made by the patient/model of discomfort or pain.
- This is given a value of '10' and it is explained that whenever a request is made for the level of pain to be reported, a number (out of '10') should be given.
- The discomfort/pain will change as the head and neck alter their positions, and it is the primary objective of the exercise that you should be able to sense – by virtue of changes in the palpated tension in the tissues – whether the 'score' is going to go up or down.
- As the patient/model exhales, the head should be guided, *with minimal effort*, into flexion and it is then gently side-flexed and rotated to the right to go to position 1 (Fig. 3.12).
- Pausing momentarily to assess changes in the palpated tissues and/or to obtain feedback as to reduction or otherwise in sensitivity, the practitioner/therapist then takes the head out of right rotation (while maintaining a slight right side-bend) and as the patient inhales, the practitioner/therapist introduces a slight pressure on the brow which allows the head to 'float' up out of flexion and into slight extension.
- When the easy limit of extension is reached, rotation to the right is again introduced taking it to position 2 (Fig. 3.11A).
- After a brief pause for evaluation of both tone and reported levels of pain/discomfort, the head is then moved gently to the left, losing the right side-bending/rotation as the head crosses the midline.
- First side-bending and finally some rotation to the left should be introduced, to an easy end-point, as the head comes to rest in position 3, still in slight extension.
- The head/neck is then, after a momentary pause, eased out of left rotation and into flexion (during an exhalation) while left side-bending is maintained.
- Rotation to the left is again introduced as the head/neck comes to rest in flexion, as in position 4 (Fig. 3.11B).
- Taking the head back to the right and losing the side-bending/rotation at the midline returns it to the starting, neutral, position.
- Continuation to the right past the midline, again introducing flexion side-bending and subsequent rotation to the right, takes it back to position 1.

- The head and neck are moved around the box (as described above) a number of times, in order to assess for any additional relaxation (or increased bind) in the tissues under the palpating and monitoring hand.
- It is useful to try to note whether additional assistance to the process can be gained by having the patient/model, with eyes closed, 'look' up or down or sideways in the direction in which the head is moving, as it moves.
- Very often, experimenting with eye movements in this way allows for increased ease to be achieved, if the direction in which the eyes are looking is synchronized with the direction of movement.
- It is suggested that the practitioner/therapist can make the process of moving the model/patient around the box more fluid by duplicating the movements of the patient's eyes and breathing, as well as by leaning in the direction, and at the speed, of the movement that the patient is being directed to follow, by the hand on the head.
- The whole exercise should be repeated a number of times (with different people) until the practitioner/therapist feels comfortable in using the 'box' approach to palpation of a specific tender point – noting the changes in tissue tone and reported pain under the listening/monitoring/palpating hand/finger.
- When palpating a posterior (extension) tender point, the box should be entered from neutral by first going into extension (on inhalation) with the addition of side-bending and rotation towards the side of the tender point followed by progressing around the box.
- When palpating an anterior (flexion) tender point, the box should be entered from neutral by flexing the head/neck (on exhalation) and then side-bending and rotating away from the side being palpated, before progressing around the box.
- If, as the head and neck are being guided around the circuit of the box, there seems to be a resistance to release of the tissues, a light muscle energy approach (a weak isometric contraction held for 7–10 seconds) can be usefully introduced to involve whichever tissues seem restricted and resistant, followed by a continuation of the movement through the box until a position of maximum ease is identified and held for 90 seconds.

Note Before continuing with this series of exercises and clinical treatment protocols it is suggested that you review all the boxes of information in this chapter, particularly Box 3.4, that describes the general guidelines regarding positioning, derived from the clinical experience of Jones and many others, including the author.

2. SCS cervical flexion exercise

(See also Figs 2.8 and 3.10D.)

- The patient/model is supine and the practitioner/therapist sits or stands at the head of the table.
- An area of local dysfunction is sought using an appropriate form of palpation such as a 'feather-light', single-finger, stroking touch on the skin areas overlying the tips of the transverse processes of the cervical spine.
- Using this method, a feeling of 'drag' is being sought for, which indicates increased sudomotor (sympathetic) activity and therefore a likely site of dysfunction, local or reflexively induced (Lewit 1991), as described in Chapter 2.
- When drag is noted, light compression is introduced to identify and establish a point of sensitivity, a tender point, which in this area represents (based on Jones's findings) an anterior (forward-bending) strain site.
- The patient is instructed in the method required for reporting a reduction in pain during the positioning sequence which follows.
- The author's approach is to say, 'I want you to score the pain caused by my pressure, before we start moving your head (in this example) as a "10" and to not speak apart from giving me the present score (out of 10) whenever I ask for it'.
- The aim is to achieve a reported score of 3 or less before ceasing the positioning process.
- In the example illustrated in Figure 3.13 an area of sensitivity/pain will have been located just anterior to the tip of a transverse process, on the right, and this is being palpated and monitored by the practitioner/therapist's right thumb.
- The head/neck is then taken lightly into flexion until some degree of ease is achieved based on the score reported by the patient. At this stage of the process this is being constantly compressed
- When a reduction of the pain score of around 50% is achieved, fine-tuning is commenced, introducing a very small degree of additional positioning (side-flexion, rotation, etc.) in order to find the position of maximum ease, at which time the reported 'score' should be reduced by at least 70%.
- Remember that in Box 3.4 the guidelines for SCS suggest that anteriorly situated pain requires (as a rule, but not always) flexion together with side-flexion and rotation toward the side of pain.
- Once relative 'ease' has been achieved, the patient may be asked to inhale fully and exhale fully, while observing for changes in the level of pain, in order to evaluate which phase of the cycle reduces it still more.

Figure 3.13 Learning to use strain/counterstrain for the treatment of a cervical flexion strain.

- The phase of the breathing cycle in which the individual senses the greatest reduction in sensitivity is maintained for a period that is tolerable (holding the breath in or out or at some point between the two extremes), while the overall position of ease continues to be maintained, and the tender/tense area monitored.
- This position of ease is held for 90 seconds in Jones's methodology, although there exist mechanisms for reducing this, which will be explained later in this chapter.
- During the holding of the position of ease, the direct compression can be reduced to a mere touching of the point, along with a periodic probing to establish that the position of ease has been maintained.
- After 90 seconds, the neck/head is very slowly returned to the neutral starting position. This slow return to neutral is a vital component of SCS, since the neural receptors (muscle spindles) may be provoked into a return to their previously dysfunctional state if a rapid movement is made at the end of the procedure.
- The tender point/area may be retested for sensitivity at this time and should be found to be considerably less hypertonic.

3. SCS cervical extension exercise

(See also Figs 2.8 and 3.10E.)

- With the patient/model in the supine position and with the head clear of the end of the table, fully supported by the practitioner/therapist, areas of localized tenderness are sought by light palpation alongside or over the tips of the spinous processes of the cervical spine.
- When a point that is unusually tender is located, compression is applied to elicit a degree of sensitivity or pain.
- The model/patient is asked to ascribe a score of '10' to this tenderness.
- The head/neck is then very slowly taken into light extension, along with side-bending and rotation, as in Figure 3.14 (usually away from the side of the pain – see guidelines for positioning in Box 3.4), until a reduction of at least 50% is achieved in the reported sensitivity.
- The compression can be constant or intermittent, with the latter being preferable, if sensitivity is great.
- Once a reduction in sensitivity of at least 70% has been achieved, inhalation and exhalation are monitored by the patient/model to see which phase reduces sensitivity even more, and this is maintained for a comfortable period.
- If intermittent compression of the point is being used, this needs to be applied periodically during the 90-second holding period, in order to ensure that the position of ease has been maintained.

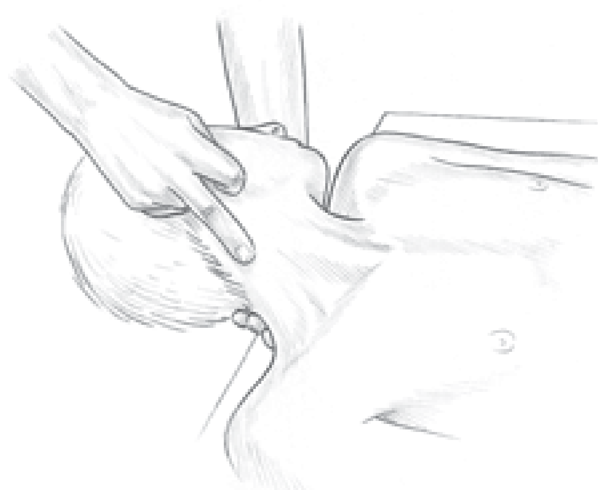


Figure 3.14 Learning to use strain/counterstrain for the treatment of a cervical extension strain.

- After 90 seconds, a very slow and deliberate return to neutral is performed and the patient is rested for several minutes.
- The tender point should be repalpated for sensitivity, which may have reduced markedly, as should excessive hypertonicity in the surrounding tissues.

4. SCS 'tissue tension' exercise

(Chaitow 1990)

- SCS exercises 2 and 3 should be performed again; however, this time, instead of relying on feedback from the patient as to the degree of sensitivity being experienced in the tender point and using this feedback as the guide which takes the practitioner/therapist towards the ideal position of ease, the practitioner/therapist's own palpation of the tissues and their movement towards ease becomes the guide.
- A light contact should be maintained on the previously treated tender point, while positioning of the head and neck is carried out, to achieve maximum 'ease'.
- Ideally, a final position should be achieved which closely approximates the position in which reduction of the pain was achieved in the previous exercises.
- This is an exercise that begins a process of palpatory skill acquisition and enhancement, which will be carried further in exercises involving functional technique described in Chapter 6.

5. SCS exercise involving compression

- Exercises 1, 2 and 3 should be performed again, but this time when pain/sensitivity and/or hypertonicity has reduced by 70% by means of positioning, and after the breathing element has been carried out to aid this process, a light degree of 'crowding' or compression is introduced by means of pressure onto the crown of the head through the long axis of the spine.
- No more than 1 lb (0.5 kg) of pressure – more usually less than half of that – should be involved.
- This can be achieved by use of pressure from the practitioner/therapist's abdomen, or from the hands that are holding and supporting the neck and head.
- This additional element of crowding/slackening the tissues should not increase the sensitivity from the palpated point or cause pain anywhere else.
- If the addition of crowding does cause any additional pain/discomfort, it should be abandoned.
- The more usual response is for the patient to report an even greater degree of pain relief, and for the practitioner/therapist to sense greater 'ease' in the palpated tissues.
- This addition of crowding to the procedures reduces the time required during which the position of ease needs to be held, and mimics a major feature of facilitated positional release (FPR – see Chapter 7).
- The time-scale for SCS when crowding is a feature is commonly given as between 5 and 20 seconds.

These first five exercises – starting with the box exercise – offer an initial opportunity to become familiar with SCS methodology.

The skills that should be enhanced by use of these exercises include:

1. A greater sense of the delicacy of the SCS process.
2. The ability to locate tender points and, depending on their location, to be able to position the area into flexion plus fine-tuning (anterior aspect) or extension plus fine-tuning (posterior aspect) until sensitivity reduces, or palpated tone reduces, by at least 70%.
3. A sense of the changes that occur in response to light 'crowding' of the tissues once they have been taken into their initial ease position.

Before moving on to a series of clinically useful examples of SCS, two more exercises will be described, and should be practiced.

These involve:

- a low back exercise (exercise 6)
- a small joint (elbow) exercise (exercise 7).

In both of these, processes such as those used in the box exercise (above) will be described.

Note that, although these are 'training exercises', meant to familiarize you with SCS assessment and treatment methodology, they are in fact perfectly usable in clinical settings to treat the areas being focused on.

These are authentic SCS protocols.

6. SCS low back/lower limb exercise

- With the patient prone, one of the lower limbs can be used as a 'handle' with which to modify tone and tension and/or tenderness in the low back, as an area of this is palpated (Fig. 3.15).
- The practitioner palpates an area of the lumbar musculature as a systematic evaluation is carried out of the effects of moving the *ipsilateral* and then the *contralateral* limb into (slight) extension, adduction and internal rotation.

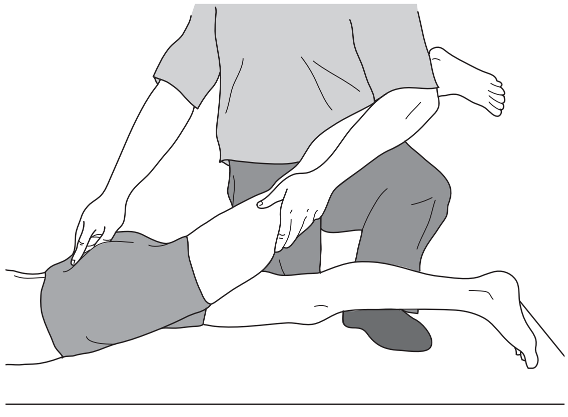


Figure 3.15 SCS low back lower limb exercise.

- Once the effects of these different positions have been assessed, take the limb to a neutral position and introduce abduction and external rotation, while still in extension.
- A further experiment to assess the effects on low back tenderness (palpating a tender point) and hypertonicity should involve taking the abducted limb into flexion (over the edge of the table) and then introducing external rotation.
- Following this, with the hip still in flexion, remove the rotation and take the limb into adduction and, at its easy end-of-range, introduce a little internal rotation.
- In this way an approximation of a 'box' movement will have been created while a low back area is palpated for changes in perceived pain or modifications of tone.
- Assess which positions offer the greatest ease in low back areas as this sequence is repeated several times.
- Evaluate whether greater influence is noted in the tissues being palpated when the ipsilateral or contralateral leg is employed as a lever.
- Repeat these processes but this time, at the end of the fine-tuning, add long-axis compression, by easing the limb towards the pelvis using no more than 1 pound (half kilo) of pressure.
- Evaluate the effects of this on tenderness and tone.

Best position?

According to SCS theory and clinical experience the likeliest positions of 'ease' will be found with the *contralateral leg in extension*.

Other variables will influence which parts of the low back eases most when the limb is adducted, or abducted, and internally or externally rotated. Refer to Box 3.4, which provides the model that should produce optimal results.

As the limb is eased into extension (but only a very small amount – avoiding hyperextension of the spine!), and is adducted and slightly rotated, a tender point on the *right low back area* would be placed into its greatest degree of ease when there is:

- extension of the contralateral (left) leg
- adduction of that limb (so rotating the lumbar spine slightly to the left, i.e. away from the side of palpated pain on the right side of the posterior aspect of the patient)
- some fine-turning involving rotation of the limb one way or the other to achieve 70% reduction in tenderness or tone
- long-axis compression.

7. SCS upper limb (elbow) exercise

- The concept and methodology of the box exercise can be used to introduce a series of movements, while palpating tenderness and tension in the lateral epicondyle area.
- The patient lies supine while one hand palpates an area of tenderness on the lateral epicondyle.
- The other hand holds the wrist as the elbow is placed into extension with side-bending and rotation towards the side of the palpated tender point (i.e. externally rotated).
- Assess changes of palpated tone and reported pain with the arm in this position, and then introduce side-bending and rotation internally (still in extension).
- Now introduce flexion, and while in flexion assess the changes in palpated tone and reported discomfort and then introduce first internal and then external rotation with side-bending to assess changes in reported sensitivity, and changes in tissue tone.
- Identify the position in which the greatest reduction in tone and sensitivity is achieved.
- Then introduce long-axis compression, from the wrist towards the elbow, using no more than a few ounces (grams) of pressure (Fig. 3.16).

The most probable position of ease for an anterior lateral epicondyle tender point is flexion with side-bending and external rotation. However, as in all tender points, the particular mechanisms involved in the dysfunctional strain pattern can make such predictions meaningless. In the end it is the position that achieves the maximum degree of ease which produces the most beneficial effects.

This and the previous exercises offer a useful starting point for anyone new to SCS.

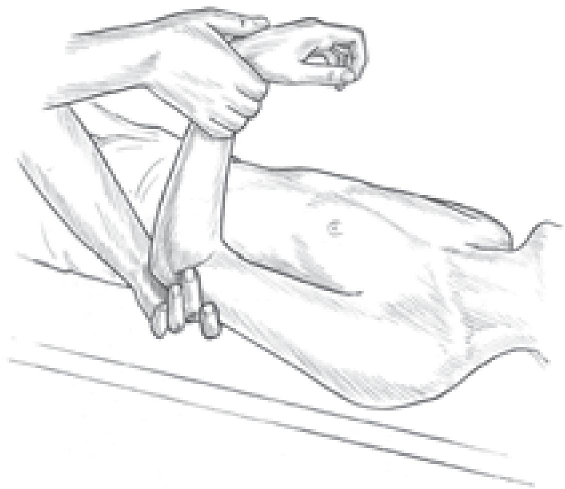


Figure 3.16 The lateral epicondyle is palpated as various positions of the lower arm (flexion, extension, rotation) are introduced to evaluate their influence on the palpated tissues.

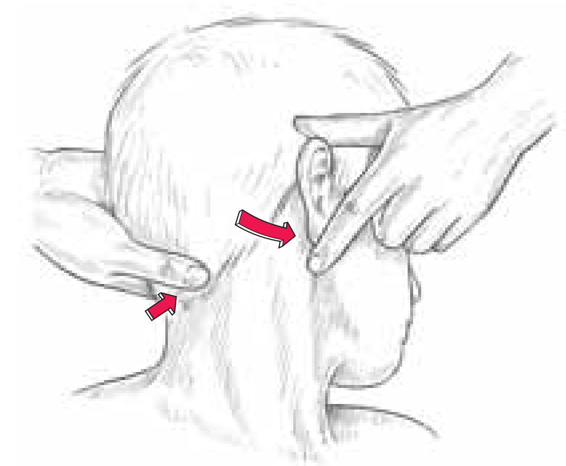


Figure 3.17 First cervical flexion strain tender point lies between the styloid process and the angle of the jaw. A likely position of ease is as illustrated. However, alternative positions of ease can sometimes involve movement of the head and neck into different positions.

SCS techniques

The remainder of this chapter comprises descriptions of protocols for the treatment of many of the joints and muscles of the body.

Many are derived from the work of Jones (1981), while others are either modifications developed by the author, or are modifications of protocols described by Deig (2001) or D'Ambrogio & Roth (1997).

The descriptions of these clinical applications of SCS will follow a descending pathway, starting at the neck and working inferiorly to the feet – with the exception of descriptions of cranial and temporomandibular joint (TMJ) methods that are located in Chapter 4, which contains advanced and specialized SCS methods.

Cervical flexion strains

(See Fig. 3.10D.)

Anterior strain of C1:

- The tender point for anterior strain is a C1 joint is found in a groove between the styloid process and angle of the jaw.
- Treatment usually involves rotation of the head of the supine patient away from the side of dysfunction, either maintaining pressure or repetitively probing Jones's point (Fig. 3.17).
- Fine-tuning is usually by side-flexing away from the painful side.

An alternative or second point for C1 flexion strain lies half an inch (1 cm) anterior to the angle of the mandible. This is usually treated by introducing flexion and rotation, approximately 45° away from the side of pain.

Remaining *cervical anterior (flexion) strain tender points* are located on or about the tips of the transverse processes of the involved vertebrae (Figs 3.18A and B).

- These spinal segments are usually treated by positioning into forward-bending and rotation, to remove pain from the tender point.
- In general, the more cephalad the palpated tender point the more rotation away from it is needed in fine-tuning (Fig. 3.18A).
- The more caudad the point the more flexion, and the less rotation, is usually required.
- See Box 3.11 for Schwartz's (1986) suggestions regarding treating these points in a bed-bound patient.

Note Whenever the suggestion is given that rotation should be towards the tender point, this is the *likeliest* beneficial direction that will take the area towards ease; however, if this fails to achieve results, it is quite possible that rotation away from the side of pain would provide greater ease.

In the end, each strain pattern is unique, and while guidelines as to likely directions of positioning are usually accurate, this is not always so, and the feedback from palpated tissues and the patient is the true guideline.

Cervical side-flexion strains

Tender points relating to side-flexion strains of the cervical spine are located as follows:

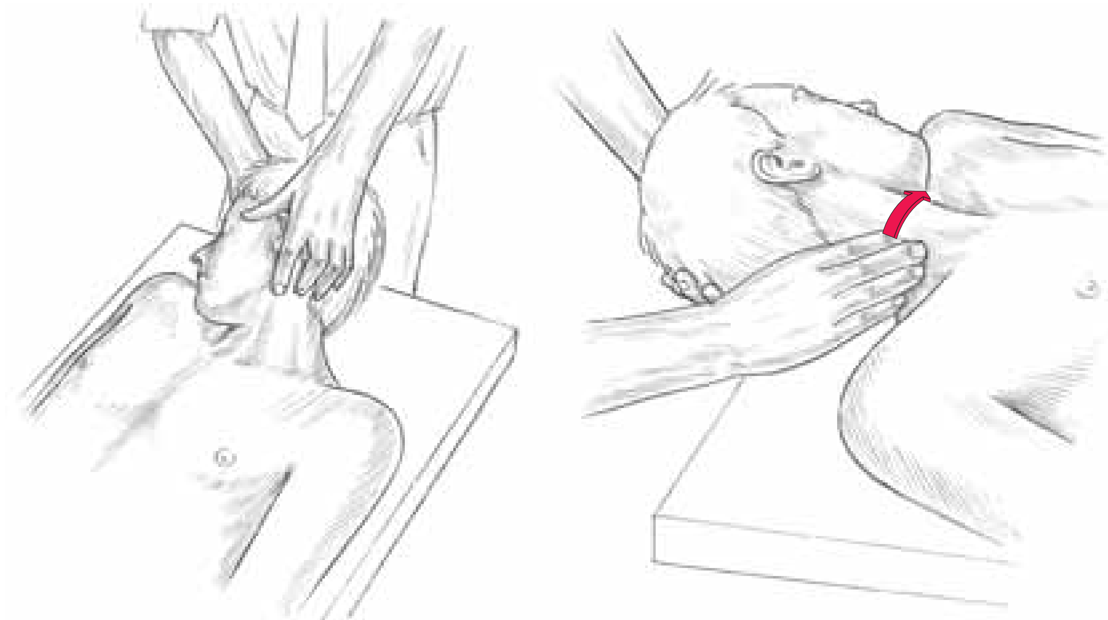


Figure 3.18A and B A flexion strain of a mid to lower cervical vertebra, with the tender point close to the tip of a transverse process. The position of ease is often as illustrated – flexed and rotated away from the side of palpated pain – however, as noted in the text, alternative positioning may be called for.

- for C1 side-flexion restriction – tip of transverse process of C1
- for C2–C6 side-flexion restriction – on the lateral aspects of the articular processes (Fig. 3.19), close to the spinous process.

Treatment involves pressure being applied to the tender point and side-flexion *towards or away from* the side being treated, depending on the tissue response and patient's reports as to pain levels.

Fine-tuning might involve slight increase in flexion, extension or rotation.

Clinical tip Don't forget to use drag palpation in order to *rapidly* identify localized areas of dysfunction (hyperalgesic skin zones) – as described in Chapter 2.

Suboccipital strains

(See Figs 3.10A and 3.10D.)

The tender points associated with upper cervical/suboccipital strains are located on the occiput, or in the muscles attaching to it, such as rectus capitis anterior, obliquus capitis superior and rectus capitis posterior major and minor.

Treatment involves either localizing cranial flexion or cranial extension to the C1 area, while applying precisely focused flexion or extension procedures that markedly reduce the tenderness from the palpated tender point.

Figure 3.19 Treatment for C2–C6 side-flexion strain.

For example:

- If a tender point is located on rectus capitis anterior, just medial to the insertion of semispinalis capitis, inferior to the posterior occipital protuberance, it is said by Jones (1981) to relate to flexion strain of the region.
- The ease position involves localized flexion of the suboccipital region.
- The patient is supine with the practitioner seated or standing at the head of the table.
- One hand palpates the tender point while simultaneously applying light distraction to the occiput, in a cephalad direction.
- The other hand rests on the frontal bone and applies *light* caudad pressure, inducing upper cervical flexion, bringing the chin close to the trachea (Fig. 3.20), until an appropriate tissue response is noted, accompanied by a reduction in perceived tenderness.
- Fine-tuning may also be required, possibly involving rotation towards and side-flexion away from the treated side.

Alternatively:

- If a tender point is located on obliquus capitis superior, approximately 1.5cm medial to the mastoid process, it is said by Jones (1981) to relate to an extension strain of the region.
- The ease position involves localized extension of the tissues.
- The patient is supine and the practitioner is at the head of the table with one hand supporting the head, and with one finger of that hand localizing the tender point (Fig. 3.21).
- The other hand is on the crown of the head applying light pressure to induce upper cervical extension (as the occiput extends on C1).
- This position, together with fine-tuning involving side-flexion and/or rotation, should establish the position of ease.

Or:

- If a tender point is located on the occiput (when cephalad and medial pressure is applied), just lateral to the insertion of semispinalis capitis, or on the superior surface of the second cervical transverse process, the dysfunctional tissues may involve rectus capitis posterior major or minor (commonly traumatized through whiplash injuries or stressed through a forward-head posture).
- The ease positions for either point involve upper cervical extension.
- The treatment position is almost identical to that suggested in the previous description (Fig. 3.21).

Other cervical extension strains

These tender points are found on or about the spinous processes (see Fig. 3.10D).

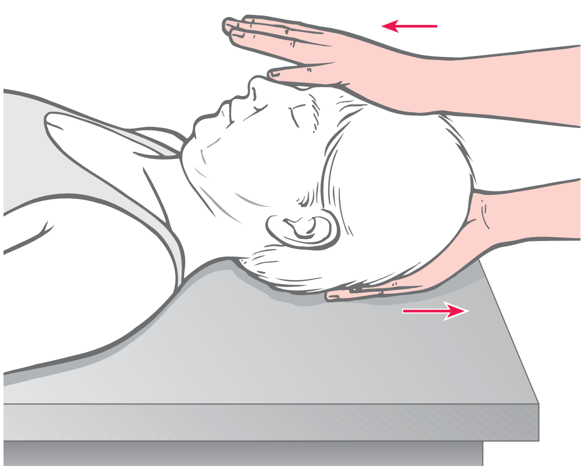


Figure 3.20 Treatment for first cervical flexion strain.

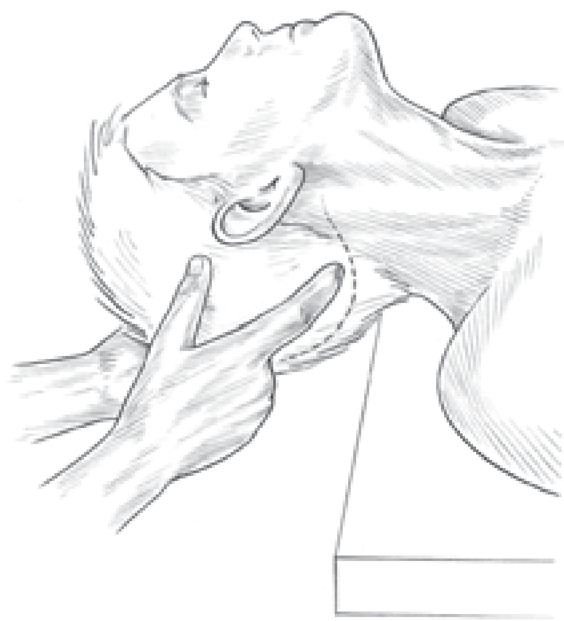


Figure 3.21 First cervical extension strain. The position of ease requires extension of the neck and (usually) rotation away from the side of pain.

Treatment should commence by introduction of increased extension.

- Extension strains in the lower cervical and upper thoracic areas are usually treated by taking the pain out of the palpated tender point, by means of extension of the head on the neck.
- In a bed-bound patient, the patient lies on the side with the painful side uppermost, so that fine-tuning can be accomplished by means of slight side-bending and rotation towards the side of the dysfunction (Fig. 3.22A). See Box 3.11 for Schwartz's (1986) suggestions regarding treating these points in a bed-bound patient.
- Exceptions to the positioning suggestions given above include those applying to C3/4 extension strains, which can usually be treated in either flexion or extension.
- C8 extension strain may also need to be treated in slight extension, with marked side-bending and rotation away from, rather than towards, the side of strain (C8 point lies on the transverse process of C7).

Extension strains of the lower cervical and upper thoracic spine

(See Figs 3.10A and 3.10E.)

The patient should be prone. Jones states:

The head is supported by the doctor's left hand holding the chin. The practitioner/therapist's left forearm is held along the right side of the patient's head for better support. The right hand monitors tender points on the right side of the spinous processes. The forces applied are mostly extension, with slight side-bending and rotation left [Fig. 3.22B].

The tender points of the posterior thorax are located interspinally, paraspinally and at the rib angles, when there exist extension dysfunctions of intervertebral joints, side-bending dysfunction, and ribs that are more comfortable when elevated.

The simplicity of Jones's methods is obvious.

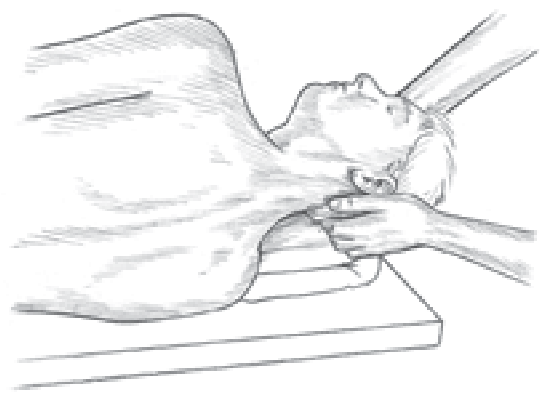
- The shortened fibers relate to the areas where tender points are to be found, and the positioning is such as to increase the already existing shortening, while palpating the tender point(s).
- 90 seconds of holding the position of ease is suggested.
- The skill required lies in locating and localizing the tender point, and identifying and duplicating the nature of the original strain or injury.
- There are few exceptions to Jones's directions in this region, for extension strains.

Treating bed-bound patients

Recommendations for use of SCS methodology in hospital or home (bed-bound) situations are given in Box 3.11.

Additional functional approaches that may be useful for fragile patients, or in acute situations, are discussed in Chapter 6.

Clinical tip Be aware that it is commonly necessary to use alternative positions to achieve ease, if the directions given in this text fail to produce ease and relief from pain in the tender point.



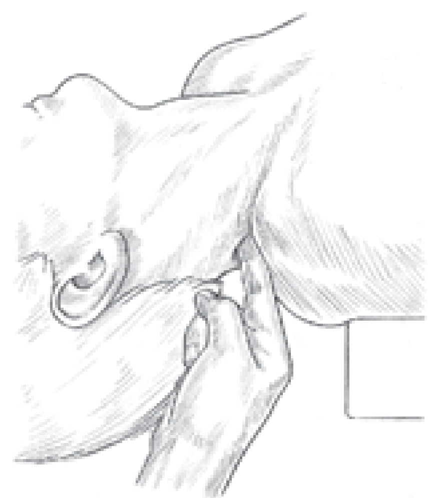


Figure 3.22A and B Extension strains of the lower cervical and upper thoracic spine usually require extension and slight side-bending, and rotation away from the painful side.

The Spencer shoulder sequence protocol

Note The Spencer sequence is extremely useful clinically as either an assessment or a treatment approach.

It should be obvious that instead of positional release methods, as described below, muscle energy techniques (MET), or other modalities can also be used to good effect.

The Spencer sequence derives from osteopathic medicine in the early years of the 20th century (Spencer 1916), and is taught at all osteopathic colleges in the USA. Over the years it has been modified to include treatment elements other than the original intent to achieve articulation and mobilization.

Research evidence (Knebl 2002)

A study involved 29 elderly patients with pre-existing shoulder problems. The patients were randomly assigned to a Spencer sequence osteopathic treatment or a control group.

The placebo group were placed in the same seven positions as those receiving the active treatment, but without MET ('corrective force') as part of the protocol.

Over 14 weeks there were a total of eight 30-minute treatment sessions during which time both groups demonstrated significantly increased ranges of motion and a decrease in perceived pain. However, following the end of the treatment period: 'Those subjects who had received OMT demonstrated continued improvement in ranges of motion, while that of the placebo group decreased.'

Choice

What has become clear is the clinical fact that the Spencer sequences, as described, can be transformed from assessment and articulation into a muscle energy approach, or into a positional release (SCS or functional) method, as the situation demands.

One key factor that would determine the choice of using articulation, or MET or SCS would be the relative acuteness of the condition, and the relative sensitivity of the patient. The more acute, and the more fragile and sensitive the individual, the more the choice would tilt towards SCS or functional positional release methodology.

Spencer sequence method

A number of the Spencer positions are described below (shoulder flexion, extension, internal rotation, circumduction – with compression and with distraction, as well as adduction and abduction).

Note There is no individual description of external rotation of the shoulder, although this movement is a part of the adduction sequence.

Method (Patriquin 1992)

- When assessing and treating the shoulder, the scapula is fixed firmly to the thoracic wall to focus on involvement of the glenohumeral joint, as a variety of movements are introduced, one at a time.
- In all Spencer assessment and treatment sequences, the patient is side-lying, with the side to be assessed uppermost, arm lying at the side with the elbow (usually) flexed.
- In all assessments the practitioner stands facing the patient, at chest level.

Assessment and PRT treatment of shoulder extension restriction

- The practitioner's cephalad hand cups the shoulder, firmly compressing the scapula and clavicle to the thorax while the patient's flexed elbow is held by the practitioner's caudad hand, as the arm is taken into passive extension towards the optimal 90° (Fig. 3.23).
- Any restriction in range of motion is noted, ceasing movement *at the first indication of resistance* or if any pain is reported resulting from the movement.
- When restriction is noted during movement towards extension of the shoulder joint, the soft tissues implicated in maintaining this dysfunction would be the shoulder flexors – anterior deltoid, coracobrachialis and the clavicular head of pectoralis major.
- Palpation of these (using drag or other evaluation methods) should reveal areas of marked tenderness.
- The most painful tender point (painful to digital pressure) elicited by palpation is used as a monitoring point.

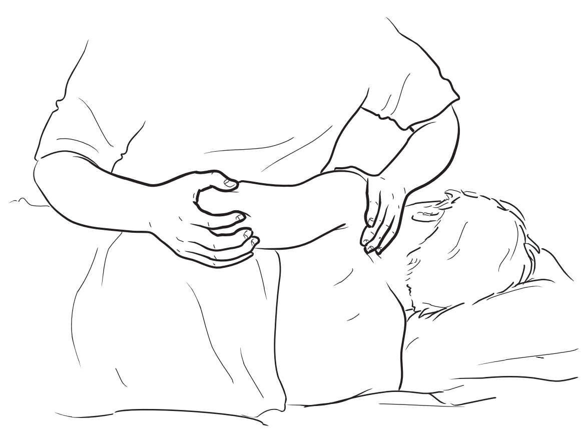


Figure 3.23 Spencer sequence treatment of shoulder extension restriction.

- Digital pressure on the point, sufficient to allow the patient to give this a value of '10' is followed by the arm being moved into a position that reduces that pain by not less than 70% – without creating any additional pain elsewhere.
- This position of ease usually involves some degree of flexion and fine-tuning to slacken the muscle housing the tender point.
- This ease state should be held for 90 seconds, before a slow return to neutral and a subsequent re-evaluation of the range of motion.

Assessment and PRT treatment of shoulder flexion restriction

- The patient and practitioner have the same starting position as in the previous test (Fig. 3.24).
- The practitioner's non-table-side hand grasps the patient's forearm while the table-side hand holds the clavicle and scapula firmly to the chest wall.
- The practitioner slowly introduces passive shoulder flexion in the horizontal plane, as range of motion toward 180° is assessed, by which time the elbow is fully extended.
- At the very first indication of restriction (or a report of pain as a result of the movement) the movement into flexion ceases.
- When a restriction towards flexion of the shoulder joint is noted, the soft tissues implicated in maintaining this dysfunction would probably be the shoulder extensors – posterior deltoid, teres major, latissimus dorsi, and possibly infraspinatus, teres minor and long head of triceps.
- Palpation of these (drag palpation or any other appropriate method) should reveal areas of marked tenderness.
- The most painful tender point (painful to digital pressure) elicited by palpation should then be used as a monitoring point by application of digital pressure that the patient registers as having a 'value' of '10'.
- The arm is then moved into a position that reduces the tender point pain by not less than 70%.
- This position of ease will probably involve some degree of extension and fine-tuning to slacken the muscle housing the tender point.
- This ease state should be held for 90 seconds before a slow return to neutral and a subsequent re-evaluation of range of motion.

Shoulder articulation and assessment of circumduction capability with compression or distraction

- The patient is side-lying with elbow flexed while the practitioner's cephalad hand cups the shoulder firmly, compressing the scapula and clavicle to the thorax (Fig. 3.25).
- The practitioner's caudad hand grasps the elbow and takes the shoulder through a slow clockwise (and subsequently an anticlockwise) circumduction, while adding compression through the long axis of the humerus.
- Subsequently the same assessment is made with light distraction being applied.
- If restriction or pain is noted in either of the sequences involving circumduction of the shoulder

Figure 3.24 Spencer sequence treatment of shoulder flexion restriction.

Figure 3.25 Spencer sequence assessment of circumduction capability with compression.

joint (clockwise and anticlockwise, utilizing compression or distraction), evaluate which muscles would be active if precisely the opposite movement were undertaken.

- For example, if on compression and clockwise rotation, a particular part of the circumduction range involves either restriction or discomfort/pain, cease the movement and evaluate which muscles would be required to contract in order to produce an active reversal of that movement (Chaitow 1996, Jones 1981, Walther 1988).
- In these antagonist muscles, palpate for the most 'tender' point and use this as a monitoring point as the structures are taken to a position of ease which reduces the perceived pain, or increased tone, by at least 70%.
- This is held for 90 seconds before a slow return to neutral, and retesting.

Assessment and PRT treatment of shoulder abduction restriction

- The patient is side-lying as the practitioner cups the shoulder and compresses the scapula and clavicle to the thorax with his cephalad hand, while cupping the flexed elbow with his caudad hand.
- The patient's hand is supported on the practitioner's cephalad forearm/wrist to stabilize the arm (Fig. 3.26).
- The elbow is abducted towards the patient's head as range of motion (and/or discomfort relating to the movement) is assessed.

Figure 3.26 Spencer sequence assessment and treatment of shoulder abduction restriction.

- Some degree of external rotation is also involved in this abduction.
- Pain-free easy abduction should be close to 180°.
- Note any restriction in range of motion, or report of pain/discomfort on movement.
- At the position of very first indication of resistance or pain, the movement is stopped.
- If there is a restriction towards abduction of the shoulder joint, the soft tissues implicated in maintaining this dysfunction would be the shoulder adductors – pectoralis major, teres major, latissimus dorsi, and possibly the long head of triceps, coracobrachialis, short head of biceps brachii.
- Palpation of these muscles (using drag palpation or other appropriate method) should reveal areas of marked tenderness.
- The most painful tender point (painful to digital pressure) elicited by this palpation should be used as a monitoring point by applied digital pressure, sufficient to allow the patient to ascribe a value of '10' to it.
- The arm is then moved and fine-tuned into a position that reduces the tender point pain by not less than 70%.
- This position of ease will probably involve some degree of adduction and internal or external rotation, to slacken the muscle housing the tender point.
- This ease state should be held for 90 seconds, before a slow return to neutral and a subsequent re-evaluation of range of motion.

Assessment and PRT treatment of shoulder adduction (and external rotation) restriction

- The patient is side-lying and the practitioner cups the shoulder and compresses the scapula and clavicle to the thorax with his cephalad hand, while cupping the elbow with his caudad hand.
- The patient's hand is supported on the practitioner's cephalad forearm/wrist to stabilize the arm.
- The elbow is taken in an arc, anterior to the chest, so that the elbow moves both cephalad and medially as the shoulder adducts and externally rotates.
- The action is performed slowly and any signs of resistance, or discomfort, are noted.
- If there is a restriction towards adduction of the shoulder joint, the soft tissues implicated in maintaining this dysfunction would be the shoulder abductors – deltoid, supraspinatus.
- Since external rotation is also involved, other muscles implicated in restriction or pain may include internal rotators such as subscapularis, pectoralis major, latissimus dorsi and teres major.

- Palpation of these, using drag palpation or other suitable method, should reveal areas of marked tenderness.
- The most painful tender point (painful to digital pressure) elicited by palpation should be used as a monitoring point.
- Apply digital pressure sufficient to allow the patient to ascribe a value of '10' to the discomfort.
- Then slowly move the arm into a position which reduces the tender point pain by not less than 70%.
- This position of ease will probably involve some degree of abduction together with fine-tuning involving internal rotation, to slacken the muscle housing the tender point.
- This ease state should be held for 90 seconds before a slow return to neutral and a subsequent re-evaluation of range of motion.

Assessment and PRT treatment of internal rotation restriction of the shoulder

- The patient is side-lying and her arm is flexed in order to evaluate whether the dorsum of the hand can be painlessly placed against the dorsal surface of the ipsilateral lumbar area (Fig. 3.27).
- This arm position is maintained throughout the procedure.
- The practitioner cups the shoulder and compresses the scapula and clavicle to the thorax with his cephalad hand, while cupping the flexed elbow with the caudad hand.

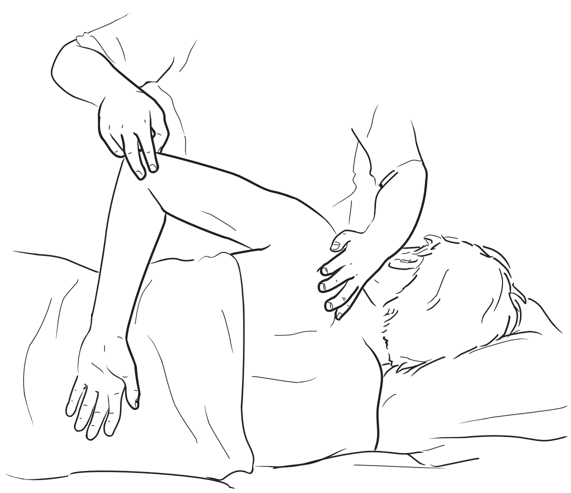


Figure 3.27 Spencer sequence assessment and treatment of internal rotation restriction.

- The practitioner slowly brings the elbow (ventrally) anteriorly, and notes any sign of restriction or reported pain resulting from the movement, as increasing internal rotation of the shoulder joint, proceeds.
- At the position of the very first indication of resistance, or reported pain, movement is stopped.
- If there is a restriction towards internal rotation, the soft tissues implicated in maintaining this dysfunction would be the shoulder external rotators – infraspinatus and teres minor – with posterior deltoid also possibly being involved.
- Palpation of these, using drag or other suitable assessment methods, should reveal areas of marked tenderness.
- The most painful tender point (painful to digital pressure) elicited by palpation should be used as a monitoring point.
- Digital pressure to the point should be sufficient to allow the patient to ascribe a value of '10' to the discomfort.
- The arm should then be moved into a position that reduces the tender point pain by not less than 70%.
- This position of ease will probably involve some degree of external rotation to slacken the muscle housing the tender point.
- This ease state should be held for 90 seconds before a slow return to neutral and a subsequent re-evaluation of range of motion.

Note All Spencer assessments should be performed passively in a controlled, slow, manner.

Specific muscle dysfunction – SCS applications

The description of SCS treatment methods for those muscles described below should be seen as representative, rather than comprehensive.

It is assumed that once the basic principles of SCS application have been understood, and the exercise methods already described in this chapter have been practiced, the following selection of muscles should present few problems.

In all descriptions it is assumed that a finger or thumb will be monitoring the tender point.

In some instances it is suggested that the practitioner should encourage the (intelligent and cooperative) patient to apply the monitoring pressure on the tender point, if two hands are needed by the practitioner to efficiently and safely position the patient into 'ease'.

The tender points may be used to treat the named muscles if these are hypertonic, painful or are in some way contributing to a joint dysfunction.

It is worth re-emphasizing that where chronic changes have evolved in muscles (e.g. fibrosis), positional release may be able to ease hypertonicity and reduce pain, but cannot of itself modify tissues which have altered structurally.

In all instances of treatment of muscle pain using SCS, the position of ease should be held for not less than 90 seconds, after which a very slow return is made to neutral.

No 'new' or additional pain should be caused by the positioning of the tender point tissues into ease.

Upper trapezius

The tender points are located approximately centrally in the posterior or anterior fibers (Fig. 3.28).

Method

- The supine patient's head is side-flexed towards the treated side while the practitioner uses the positioning of the ipsilateral arm to reduce reported tender point pain by at least 70%.
- The position of ease usually involves shoulder flexion, abduction and external rotation (Fig. 3.29).

Subclavius

The tender point lies inferior to central portion of clavicle, on its undersurface (Fig. 3.30A).

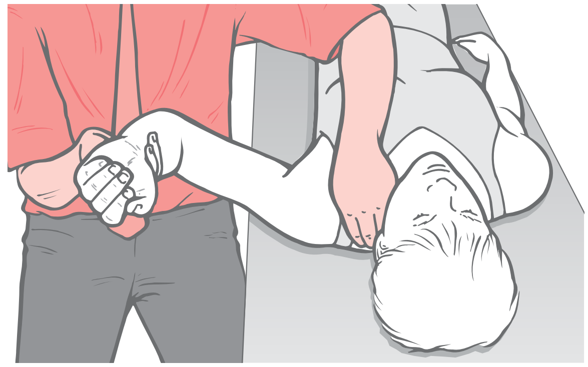


Figure 3.29 Treatment of trapezius tender point.

See the fiber direction of the muscle, and the structural layout, in Figure 3.30B. This should offer an awareness of the way 'crowding' of the tissues, to ease tenderness in the palpated point, requires that the clavicle be taken inferiorly and medially. Consider also tensegrity factors, as described in Box 3.1.

Method

- The patient is side-lying, with ipsilateral shoulder in slight extension, forearm behind patient's back.
- The practitioner applies slight compression to the ipsilateral shoulder in an inferomedial direction, with fine-tuning possibly involving protraction until

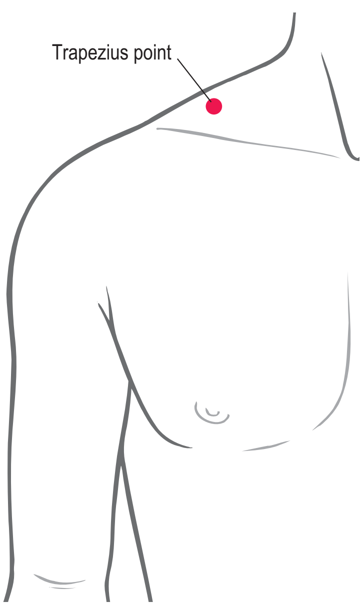


Figure 3.28 Trapezius tender point.

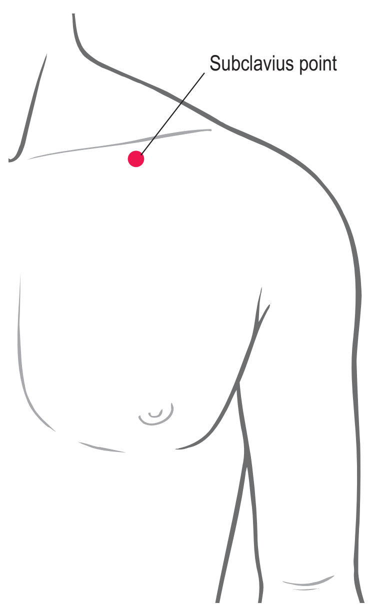


Figure 3.30A Subclavius tender point.

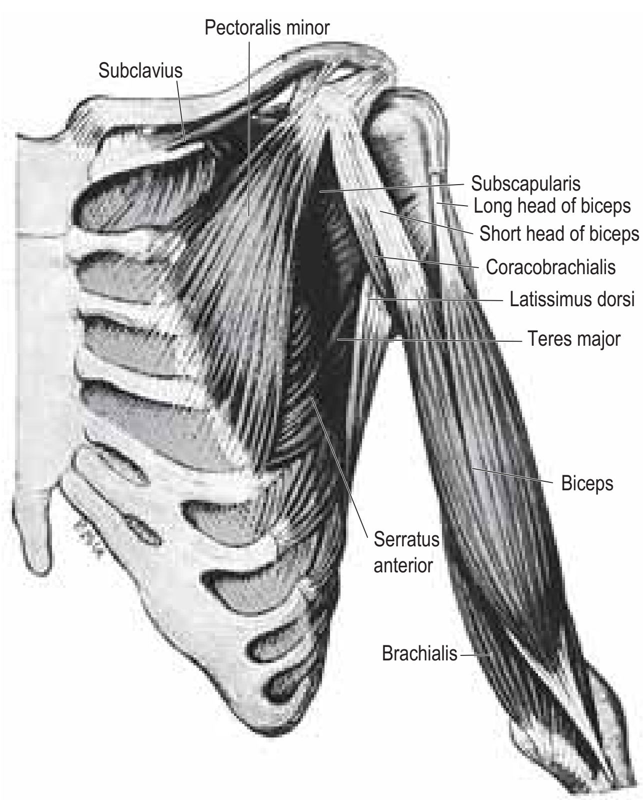


Figure 3.30B Deep muscles of the front of the chest and left arm. (From *Gray's Anatomy*, 39th edn.)

reported sensitivity in the palpated point drops by at least 70% (Fig. 3.31).

Subscapularis

The tender point lies close to the lateral border of the scapula, on its anterior surface (Fig. 3.32).

Method

- The patient lies close to the edge of the table with the arm held slightly (≈30°) in abduction, extension and internal rotation at the shoulder (Fig. 3.33).
- Slight traction on the arm may be used for fine-tuning, if this significantly reduces reported sensitivity.

Pectoralis major

The tender point lies on the muscle's lateral border close to the anterior axillary line (Fig. 3.34).

Method

- The patient lies supine as the ipsilateral arm is flexed and adducted at the shoulder, taking the arm across the chest (Fig. 3.35).

Figure 3.31 Treatment of subclavius tender point.

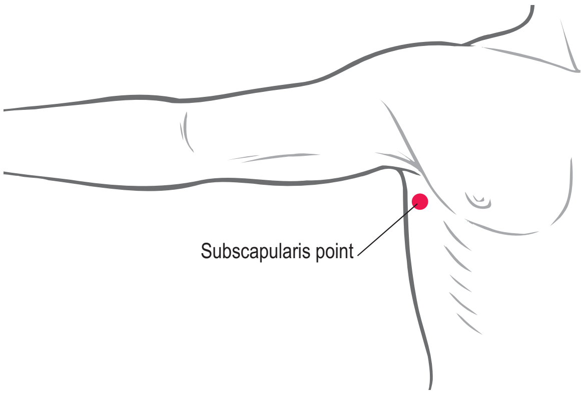


Figure 3.32 Subscapularis tender point.

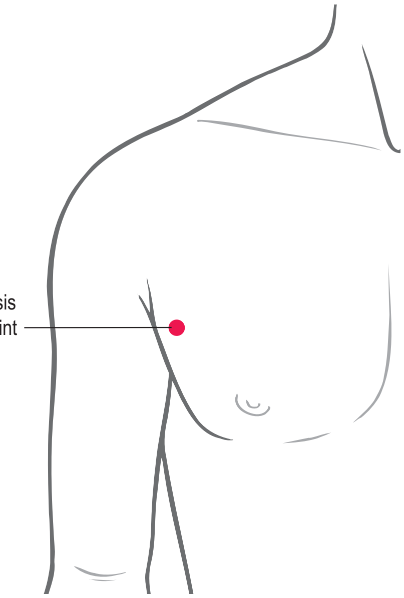


Figure 3.34 Pectoralis major tender point.

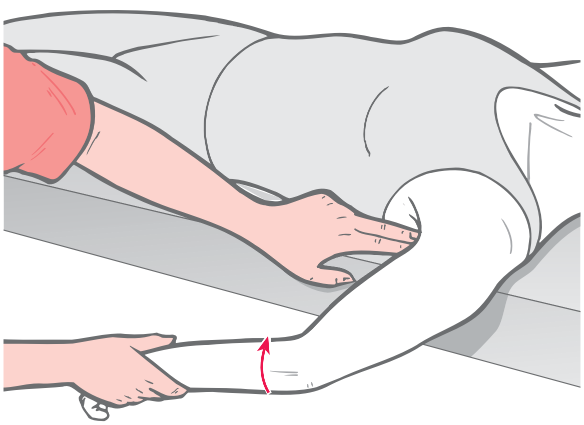


Figure 3.33 Treatment of subscapularis tender point.

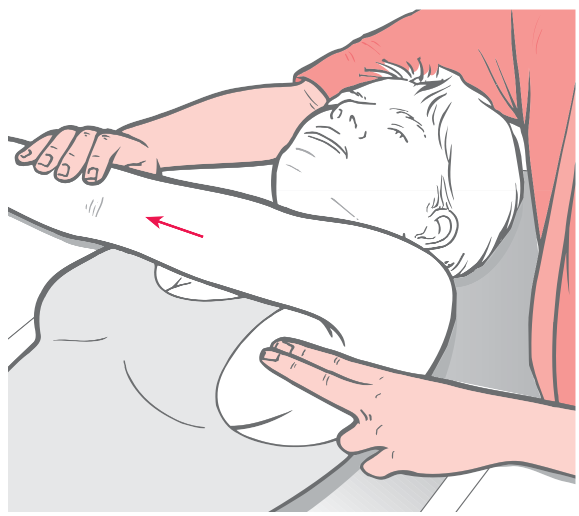


Figure 3.35 Treatment of pectoralis major tender point.

- Fine-tuning involves varying the degree of flexion and adduction, which can at times usefully be amplified by applied traction to the arm (but only if this reduces the reported sensitivity in the tender point).

Pectoralis minor

The tender point is just inferior and slightly medial to the coracoid process (and also on the anterior surfaces of ribs 2, 3 and 4 close to the mid-clavicular line) (Fig. 3.36).

Method

- The patient is seated and the practitioner stands behind. The patient's arm is taken into extension and internal rotation, bringing the flexed forearm behind the back (Fig. 3.37).
- The hand which is palpating the tender point is used to introduce protraction to the shoulder while at the same time compressing it anteromedially to fine-tune the area and reduce reported sensitivity by at least 70%.

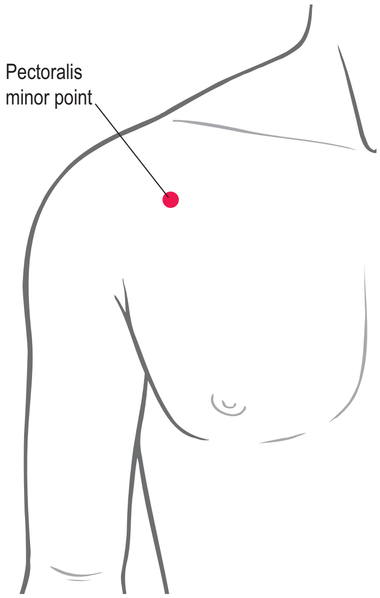


Figure 3.36 Pectoralis minor tender point.

Figure 3.37 Treatment of pectoralis minor tender point.

Rib dysfunction

Assessment of elevated first rib

Among the commonest rib dysfunctions is that of an elevated first rib (see Fig. 3.10B). Assessment of this is as follows:

- The patient is seated and the practitioner stands behind (Fig. 3.38).

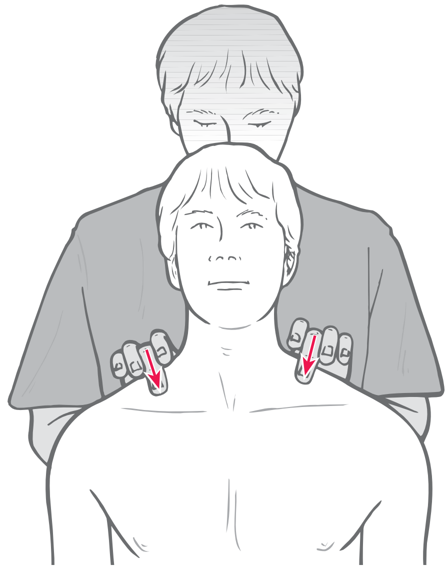


Figure 3.38 Position for assessment of elevated first rib.

- The practitioner places his hands so that the fingers can draw the upper trapezius fibers lying superior to the first rib, posteriorly.
- The tips of the practitioner's middle and index, or middle and ring fingers, should be eased caudally until they rest on the superior surface of the posterior shaft of the first rib.
- Symmetry should be evaluated as the patient breathes normally.
- The commonest dysfunction relates to one of the pair of first ribs becoming 'locked' in an elevated position (i.e. it is locked in inhalation phase, unable to fully exhale).
- The superior aspect of this rib will palpate as tender and attached scalene structures are likely to be short and tight (Greenman 1996). (The various ways in which rib dysfunctions are described are summarized in Box 3.10.)

Or:

- The patient is seated and the practitioner stands behind.
- The practitioner places his hands so that the fingers can draw the upper trapezius fibers lying superior to the first rib, posteriorly.
- The tips of the practitioner's middle and index, or middle and ring fingers, should be eased caudally until they rest on the superior surface of the posterior shaft of the first rib.

Box 3.10 The semantics of rib dysfunction descriptions

A rib that is unable to move into full exhalation can be described as being:

- *locked in its inhalation phase*
- *elevated* – unable to move to its exhalation position
- an *inhalation restriction* (osteopathic terminology).

Therefore, if one of a pair of ribs fails to descend as far as its pair on exhalation, it is described as an elevated rib, unable to move fully to its end of range on exhalation ('inhalation restriction' or 'restricted in inhalation').

A rib that is unable to move into full exhalation can be described as being:

- *locked in its exhalation phase*
- *depressed* – unable to move to its inhalation position
- an *exhalation restriction* (osteopathic terminology).

Therefore, if one of a pair of ribs fails to rise as far as its pair on inhalation, it is described as a depressed rib, unable to move fully to its end of range on inhalation ('exhalation restriction' or 'restricted in exhalation').

To avoid confusion the two shorthand terms *elevated* and *depressed* are most commonly used to describe these two possibilities.

- The patient exhales fully, and shrugs his shoulders and as he does so the palpated first ribs should behave symmetrically.
- If they move asymmetrically (one moves superiorly more than the other), this suggests either that the side that moves most cephalad is elevated, or that the side that does not rise as far as the other is locked in a depressed (exhalation phase) position.
- The commonest restriction of the first rib is into elevation and the likeliest soft-tissue involvement is of shortness of the anterior and medial scalenes (Goodridge & Kuchera 1997).

Notes on rib dysfunction

- Unless direct trauma has been involved in the etiology of dysfunctional rib restriction patterns, it is very unusual for a single rib to be either elevated or depressed.
- Most commonly groups of ribs are involved in any dysfunctional situation of this sort.
- As a general rule, based on clinical experience, the most superior of a group of depressed ribs, or the most inferior of a group of elevated ribs, is treated first.
- If this 'key rib' responds to treatment (using positional release or any other form of mobilization), the remainder of the group commonly release spontaneously.
- Positional release methods, as described in this chapter, are remarkably effective in normalizing rib restrictions, often within a matter of minutes.
- As with almost all musculoskeletal problems, whether such normalization is retained depends largely on whether the cause(s) of the dysfunction is ongoing (breathing pattern disorders, asthma, repetitively imposed stress – as examples) or not.

Treatment of elevated first rib

- The patient is seated and the practitioner stands behind with his contralateral foot on the table, patient's arm draped over practitioner's knee (Fig. 3.39).
- The practitioner's ipsilateral hand palpates the tender point on the superior surface of the first rib.
- Digital pressure to the point should be sufficient to allow the patient to ascribe a value of '10' to the discomfort.

Figure 3.39 Position for treatment of elevated first rib.

- Using body positioning, the practitioner induces a side-shift (translation) of the patient *away* from the treated side.
- At the same time, using his contralateral hand, the practitioner eases the patient's head into slight extension, side-flexion away from, and rotation towards, the tender point, in order to fine-tune until tenderness in the palpated point reduces by at least 70%.
- This is held for not less than 90 seconds.

Assessment and treatment of elevated and depressed ribs (2 to 12)

Identification of rib dysfunction is not difficult.

Restrictions in the ability of a given rib to move fully (as compared with its pair) during inhalation indicates a *depressed* status, while an inability to move fully (as compared with its pair) into exhalation indicates an *elevated* status as discussed in Box 3.10 (Fig. 3.40).

Assessment of rib status – ribs 2 to 10

- The patient is supine, and the practitioner stands at waist level facing the patient's head, with a single finger contact on superior aspect of one pair of ribs.
- The practitioner's dominant eye determines the side of the table from which he is approaching the observation of rib function – right eye dominant calls for standing on the patient's right side.
- The fingers are observed as the patient inhales and exhales fully (eye focus is on an area between the palpating fingers so that peripheral vision assesses symmetry of movement).
- If one of a pair of ribs fails to rise as far as its pair on inhalation it is described as a depressed rib, unable to move fully to its end of range on inhalation ('exhalation restriction'). See Box 3.10.
- If one of a pair of ribs fails to fall as far as its pair on exhalation it is described as an elevated rib, unable to move fully to its end of range on exhalation ('inhalation restriction'). See Box 3.10.

Assessment of rib status – ribs 11 and 12

- Assessment of the eleventh and twelfth ribs is usually performed with the patient prone, with a hand contact on the posterior shafts in order to evaluate the range of inhalation and exhalation motions (Fig. 3.41).
- The eleventh and twelfth ribs usually operate as a pair, so that if any sense of reduction in posterior motion is noted on one side or the other, *on inhalation*, the pair are regarded as depressed, unable to fully inhale ('exhalation restriction'). See Box 3.10.
- If any sense of reduction in anterior motion is noted on one side or the other, *on exhalation*, the pair are regarded as elevated, unable to fully exhale ('inhalation restriction'). See Box 3.10.
- Depressed rib strains produce points of tenderness on the anterior thorax, commonly close to the

Figure 3.40 Position for assessment of rib status – ribs 2 to 10.

Figure 3.41 Position for assessment of rib status – ribs 11 and 12.

anterior axillary line while elevated ribs produce points of tenderness posteriorly, in the intercostal spaces close to the angles of the ribs.

Treatment of elevated ribs 2 to 10 (See Figs 3.10B and 3.10F.)

- Elevated ribs produce tender points on the posterior thorax, commonly in the intercostal space above or below the affected rib, at the angle of the ribs posteriorly (see Fig. 3.10B).
- In order to gain access to these for palpation or treatment purposes, the scapula requires distraction or lifting.
- This is done by the arm of the affected side of the supine patient being pulled across the chest, or the shoulder being raised by a pillow (Fig. 3.42A).
- The practitioner/therapist stands on the side of the disorder, and palpation of the tender point, once identified, is continuous, as positional change is engineered.
- The patient's knees should be in a flexed position during treatment of elevated ribs, and should be allowed to move toward the side of the dysfunction.
- If this fails to achieve ease (perceived either as palpated change or a reduction in sensitivity of the palpated tender point), the knees are moved towards the opposite side, in order to evaluate the effect on palpated pain, and tissue tone.
- As a rule, reported pain from the tender point will reduce by around 50% as the knees fall to one side or the other.
- The head may then be turned towards, or away, from the affected side to further fine-tune and release the stress in the palpated tissues.
- Additional fine-tuning for elevated ribs may be accomplished by raising the arm or shoulder cephalad, in effect exaggerating the positional deformity.
- The influence of respiratory function should also be used to evaluate which stage of the breathing cycle reduces discomfort (in the tender point) most.
- If identified the patient is asked to maintain that phase for as long as is comfortable.

Figure 3.42A Positional release of an elevated rib while monitoring a tender point on the posterior surface close to the angle of the ribs in an interspace above or below the affected rib. The ease position may involve the flexed knees being allowed to fall to one side or the other, with fine-tuning involving positioning of the head, neck and/or the arms. Assessment of the influence of respiratory function on the tender point pain is also used.

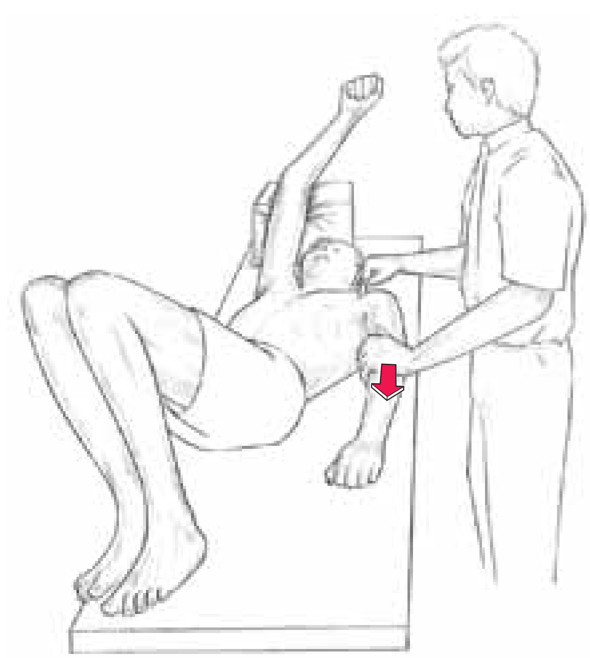


Figure 3.42B Positional release of a depressed rib involves the monitoring of a tender point on the anterior axillary line, in an interspace above or below the affected rib. Ease is achieved by positioning of flexed legs, head and/or arms, as well as use of the respiratory cycle, until a position is found in which the palpated pain eases by at least 70%, or vanishes from the tender point.

Treatment of depressed ribs 2 to 10

- The tender points for a depressed rib are located in the intercostal spaces above or below the affected rib, on the anterior axillary line (see Figs 3.10A and 3 10H).
- For treatment of depressed ribs, the patient may be supine or in a partially seated, recumbent position.
- If supine, the knees are flexed and falling to one side or the other, whichever produces better release in the tissues being palpated at the anterior axillary line.
- Depending on the response of the tissues and the reported levels of discomfort in the tender point, the head may be turned towards, or away from, the affected side to further fine-tune and release the stress in the palpated tissues.
- For additional fine-tuning, the practitioner/therapist stands on the side of dysfunction and draws the patient's arm, on the side of dysfunction, caudad until release is noted.
- In some cases the other arm may need to be elevated, and even have traction applied, to enhance release of tender point discomfort (Fig. 3.42B).
- Once the tender point being monitored reduces in intensity by 70% or more, this is held for not less than 90 seconds.

Alternatively:

- The patient may be seated (Fig. 3.43) and resting against the support offered by the practitioner's flexed leg (foot on table) and trunk.
- The practitioner palpates the tender point with one hand and uses the other to support the head, guiding it into rotation for fine-tuning, as a combination of flexion and side-flexion/rotation is encouraged by modification of the position of the supporting leg.
- Once the tender point being monitored reduces in intensity by 70% or more, this is held for not less than 90 seconds.
- A notable improvement in respiratory function is commonly noted after this simple treatment method, with an obvious increase in the excursion of the thoracic cage and subjective feelings of 'ease of breathing' being reported.

Interspace dysfunction

(See Figs 3.10G and 3.10H.)

- Tender points for strains of the interspace tissues lie between the insertions of the contiguous ribs into the cartilages, close to the sternum.

Figure 3.43 Alternative position for treatment of depressed ribs (see text).

- Ribs may be noted to be over-approximated, and the pain reported when the tender points are palpated may be very strong.
- The more recent the strain (frequently a sequel of excessive coughing), the more painful the points.
- Edema and induration may be palpable.
- In chronic conditions, pressure on these soft tissues produces a reactivation of the extreme tenderness noted in more recent strains.
- These strains are found in costochondritis, the persistent pain noted in cardiac patients.
- Tenderness in these points may well relate to respiratory dysfunction, and their release assists (together with breathing pattern rehabilitation) in normalization.
- These areas of tenderness are common in people with asthma and following bronchitis, as well as the all-too-common pattern of upper chest breathing relating to patent or incipient hyperventilation, which produces major stress of the intercostal structures and the likelihood of such tender points being located on palpation (Perri & Halford 2004, Sachse 1995).

Treatment of interspace dysfunction and discomfort

- Treatment involves placing the patient supine while the tender point is contacted by the practitioner/therapist, *or the patient* (Fig. 3.44).

Figure 3.44 Treatment of interspace dysfunction involves flexion of the head and neck and usually the thoracic spine towards the palpated tender point, which lies close to the sternum. A seated position (not illustrated) offers an alternative for achieving this positioning.

- The practitioner/therapist should be on the side of dysfunction with his caudad hand providing contact on the point, unless the patient is performing this function.
- The cephalad hand cradles the patient's head/neck and flexes this, and eases it towards the side of dysfunction, at an angle of approximately 45° towards the foot of the bed.
- If fine-tuning is efficient, the pain on palpation will ease rapidly, and the position of ease should then be maintained for 90 seconds.

Alternatively:

- This same procedure for release of interspace dysfunction tender points can be achieved in a seated position, and can be taught as a home treatment to the patient.
- The point is located and the patient – on her own, or with assistance – is flexed gently towards the side of pain until it vanishes.
- This position is held for 90 seconds, after which another point can be located and treated.

It is hard to envisage a simpler protocol.

Additional rib techniques are described in Chapter 4, especially where thoracic function has been disturbed by surgical procedures.

A note on induration technique

Chapter 1 contains a description of Morrison's 'induration' technique, a superb method using SCS concepts for treatment of the spine, particularly in the care of fragile, sensitive individuals. See Figure 1.1.

That method can usefully accompany the various SCS treatment applications for spinal dysfunction described in this chapter.

Flexion strains of the thoracic spine

- According to Jones et al (1995), the tender point for a flexion strain of the first thoracic segment is located on the superior surface of the manubrium, on the midline (see Fig. 3.10G).
- Tender points for flexion strains of the second to the sixth thoracic segments lie on the sternum approximately $\frac{1}{2}$ to $\frac{3}{4}$ of an inch (1 to 2 cm) apart (see Fig. 3.10G).
- Anterior T7 point lies close to the midline, bilaterally under the xiphoid. Other anterior T7 tender points are found on the costal margin close to the xiphoid.
- T8 to T11 anterior (flexion strain) dysfunction produces tender points which lie in the abdominal wall, approximately 1 inch (2.5 cm) lateral to the midline (see Fig. 3.10A).
- A horizontal line $\frac{1}{2}$ inch (1 cm) below the umbilicus locates the 10th thoracic anterior (flexion) strain tender point.
- 1 and 3 inches (2.5 to 7.5 cm) above T10 lie the points for T9 and T8 respectively.
- $1\frac{1}{2}$ inches (3 cm) below the T10 point is T11.
- The T12 point lies on the crest of the ilium at the mid-axillary line (see Fig. 3.10A).

Note In a rotation strain of the mid-thoracic region, it is possible for extension and flexion strains to coexist, say flexion (anterior) strain on the left and extension (posterior) strain on the right.

Treatment for anterior thoracic flexion strains

Upper thoracic flexion strains, semi-seated or supine:

- Treatment of upper thoracic flexion strains (T1 to T6) may be carried out with the patient semi-seated or supine on the treatment table.
- The patient should be supported by cushions to enhance upper thoracic flexion, while the tender point is monitored by one hand, and the practitioner's other hand assists in fine-tuning to the position of ease (Fig. 3.45A).

Alternatively:

- If treated without cushions for support, the supine patient's head is flexed towards the chest while

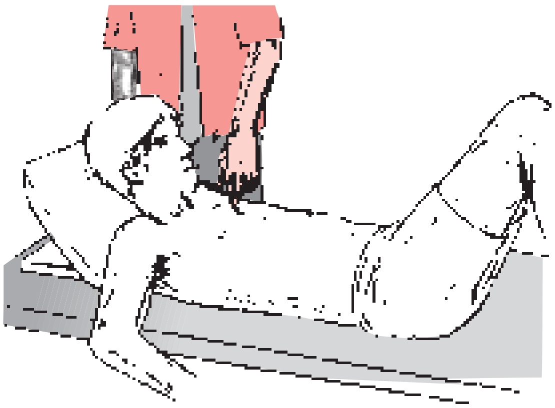


Figure 3.45A Treatment of upper thoracic spinal flexion strain. Fine-tuning may involve positioning of the head-neck in rotation and or side-flexion in addition to flexion.

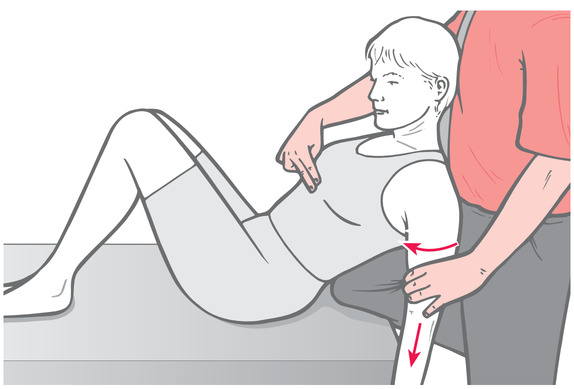


Figure 3.45B Semi-seated position for assessment and treatment of T2 to T6 flexion strain.

the tender point is contacted as a monitor of ease. (This is a very similar position to that used to treat interspace dysfunction – Fig. 3.44.)

- Fine-tuning is usually by slight rotation of the chin towards or away from the side of dysfunction. The head may be supported in flexion by the practitioner/therapist's thigh for the necessary 90 seconds of release time.

Semi-seated:

- Jones's method for dealing with flexion strain of the upper thoracic spine, in non-bed-bound patients, had the patient seated on a treatment table, leaning back onto the practitioner/therapist's chest/abdomen, so that forced flexion of the upper body can easily be achieved as shown in Figure 3.45B.
- A variety of changes in the position of the patient's arms may then be used as part of the fine-tuning process in order to introduce 'ease' into different thoracic segments.
- The practitioner palpates the tender point with one hand and utilizes the other to add fine-tuning variations.

Lower thoracic flexion strains:

- For treatment of lower thoracic flexion strains (Fig. 3.46A, B), a pillow should be placed under the supine patient's neck and shoulders.
- If helpful in reducing sensitivity in the tender point, another pillow should be placed under the buttocks, allowing the lower spine to move into flexion, or the patient's knees should be flexed and supported by the practitioner/therapist's (hand or thigh), standing at waist level while palpating the tender point.
- Fine-tuning is achieved by movement into side-bending and/or rotation, one way or the other, using the patient's legs as a lever (for treatment of T8).
- T9 to T12 flexion strains involve the same position – patient's head and buttocks on a pillow, or the patient's flexed knees supported by the practitioner/therapist, while the practitioner's caudad hand palpates abdominal tender point.
- Fine-tuning is by means of a movement that introduces slight side-bending, or which slightly alters the degree of flexion (Figs 3.46A and B).
- The tender point should be constantly monitored and tenderness should reduce by at least 70%.
- T12 treatment requires more side-bending than other thoracic strains.
- Once a position has been found where tenderness reduces by 70% or more, this is maintained for 90 seconds

See Box 3.11 for Schwartz's (1986) suggestions regarding treating these points in a bed-bound patient.

Jones describes the treatment of lower thoracic flexion strains as follows:

> *This one procedure is usually effective for any of this group. To permit the supine patient to flex at the thoracolumbar region, a table capable of being raised at one end is desirable [Fig. 3.46]. A flat table may be used if a large pillow is placed under the patient's hips, raising them enough to permit flexion to reach the desired level of the spine. With the patient supine, the physician raises the patient's knees and places his own thigh below those of the patient [as in Fig. 3.48]. By applying cephalad pressure on the patient's thighs, he produces marked flexion of the patient's thoracolumbar*

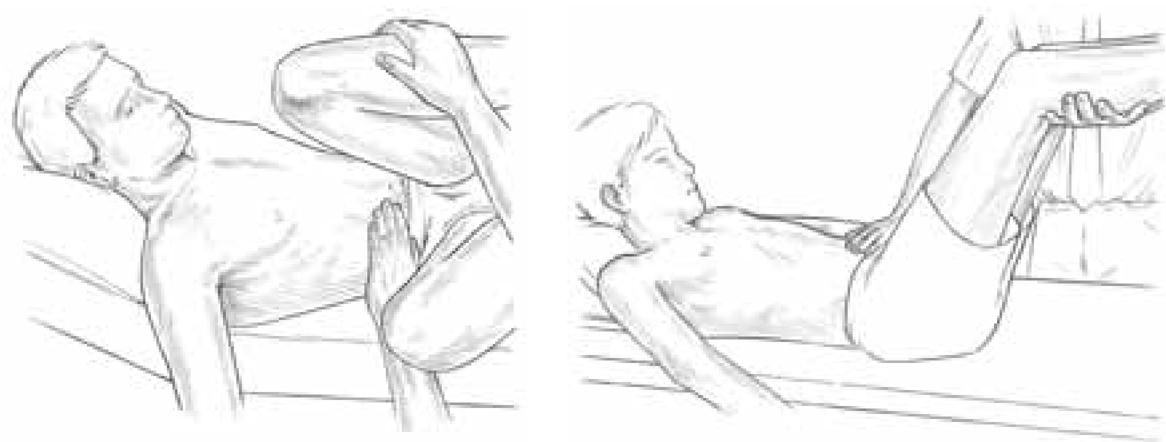


Figure 3.46A and B Lower thoracic flexion strains involve positioning the supine patient into flexion while the tender point on the abdominal wall is palpated.

Box 3.11 SCS and the bed-bound patient

The use of SCS in hospital settings is described in Chapter 4.

Schwartz's description of the tender point

Schwartz (1986) described the tender points used as monitors in SCS application as being:

Pea-sized bundles or swellings of fascia, muscle tendrils, connective tissue and nerve fibers as well as some vascular elements.

Interestingly, unlike many other authors, he notes that:

Generally, but not always, pressure on the tender point will cause pain at a site distant to the point itself.

This description of course defines such a point as a trigger point, as well as a tender point (see Chapter 5).

He acknowledges that: '"Tender points" resemble both Chapman's neurolymphatic reflexes and Travell's myofascial trigger points' (Owens 1982, Travell & Simons 1983).

Schwartz highlights the difference between SCS and other methods that use such points in treatment by saying:

Other methods invade the point itself, for example by needle in acupuncture, injection of lidocaine into the point, or the use of pressure or ultrasound to destroy the tender point.

He suggests that when using SCS, if a position of ease is achieved and tenderness vanishes from the palpated point, one of a number of sensations may become apparent to the practitioner/therapist, a 'sudden release', or a 'wobble', or a 'give', or a 'melting away', all of which indicate a change in the tissues in response to the positional change which has been brought about by the practitioner/therapist.

The two phases of the positioning process are emphasized, the first being 'gross' movement, which takes the area or the patient to the approximate position of ease, and 'fine-tuning', which takes the remainder of the pain from the tender point.

Special positions for bed-bound patients

Many spinal structure tender points have already been described in detail in this chapter, therefore in the summary (below) of Schwartz's suggestions for bed-bound patients, only the particular modifications necessary in such a setting are emphasized.

Anterior cervical

- The anterior cervical points located around the tips of the transverse processes are easily accessible in a bed-bound patient, as are the positions of ease (Fig. 3.18A), which almost all require a degree of flexion and side-bending rotation, usually away from the side of pain.

Note The author suggests that rotation *toward* the pain is commonly more useful, and urges readers to experiment with what offers best results.

Posterior cervical

- The posterior cervical points lie on or around the tips of the spinous processes and require extension of the head on the neck, and/or the neck as a

Box 3.11 Continued

whole (Fig. 3.22A), which is more easily achieved in bed-bound patients if they are side-lying, with – it is suggested – the painful side uppermost, since (according to Schwartz's guidelines) the main side-bending and rotation into 'ease' needs to be towards the pain side, which would be difficult were the patient lying on that side.

- The C3 posterior point may require extension or flexion to create ease and both directions should be gently attempted until the greatest reduction in sensitivity is achieved.

Posterior thoracic and lumbar spinal

- Posterior thoracic and lumbar spinal tender points lie close to the spinous processes in the upper thoracic area, and become increasingly lateral, lying on or around the transverse processes in the lower thoracic and lumbar vertebrae.
- The upper four thoracic segments are best treated with the patient side-lying with the arms resting, if possible, at the level of the shoulders (Fig. 3.47B) and with the upper arm supported by a pillow in order to avoid the introduction of rotation.
- The patient should bend backwards to the level of the tender point in order to remove the palpated tender point pain.
- For the middle thoracic vertebrae, posterior points are also treated with the patient side-lying, but this time the arms are held above the head as the patient moves into extension.
- The lower four thoracic vertebrae are treated for posterior tender points (extension strains) with the patient supine and the practitioner/therapist standing on the dysfunctional side, with one hand under the patient to palpate the point.
- The patient's hand on the side opposite the pain is held, and the arm drawn across the chest towards the practitioner, so that the shoulder on that side lifts 30–45° from the bed, at which time fine-tuning should remove residual pain.
- If the patient's condition means that turning onto the side is not possible, then the method suggested for the lower thoracic vertebrae can be substituted for the side-lying posture outlined above.

Posterior lumbar tender points

- Posterior lumbar tender points which are described and illustrated in this chapter, and which are usually treated with the patient prone, can also be efficiently dealt with in the side-lying position.
- L1, L2, L3 and L4 involve the side-lying patient, dysfunction side uppermost.
- L1 and L2 (Fig. 3.49B) require the upper leg being taken into straight extension and then either abduction or adduction, and/or rotation (of the leg) one way or the other, whichever combination provides the greater ease.
- In treatment of L3 and L4, as well as upper-pole L5 (lying between the fifth lumbar spinous process and the first sacral spinous process – see Fig. 3.10B) and the lower-pole L5 point (located midway on the body of the sacrum – see Fig. 3.10B), abduction and extension of the leg is introduced, and fine-tuning is achieved by variations in the degree of extension, as well as by the introduction of rotation internally or externally of the foot.
- For treatment of what is known as the middle-pole L5 tender point (in the superior sulcus of the sacrum), the side-lying patient's upper leg (dysfunction side) is flexed at hip and knee and this rests on the practitioner/therapist's thigh.
- This is fine-tuned by movement of the leg into greater or lesser degrees of hip flexion (Fig. 3.49C) and by the degree of abduction or abduction needed to produce ease.
- The patient's ipsilateral arm may then be used in fine-tuning by having it hang forward and down over the edge of the bed.

Anterior thoracic strains

Anterior thoracic tender points lie on the anterior or surface of the thorax, the first six on the midline and the lower ones slightly lateral to it, bilaterally at approximately 1–2 cm (half to 1 inch) intervals, so that from T8 onwards the tender points lie in the abdominal musculature.

- These points relate directly to respiratory dysfunction and respond dramatically quickly to SCS methodology.
- The improvement in breathing function is commonly immediately apparent to the patient.
- In bed-bound patients, the patient is supine and there is usually a need for pillows or bolsters to assist in supporting them as flexion is introduced (Fig 3.45A).
- For the first six anterior thoracic tender points (lying on the sternum) the patient's arms are allowed to rest slightly away from the body, and the knees and hips are flexed, feet resting on the bed. The only movement usually needed to ease tenderness is flexion of the head and neck towards the chest (the lower the point the greater the degree of flexion).
- Fine-tuning involves movement of the head slightly towards or away from the palpated pain site.

Box 3.11 Continued

- For tender point treatment from T7 onwards, the patient's buttocks are rested on a pillow so that the segment involved is unsupported, allowing it to fall into flexion.
- Alternatively, the practitioner/therapist can support the flexed knees and bring them towards the head, so flexing the lumbar and thoracic spine (Fig. 3.46B).
- Fine-tuning may involve crossing the patient's ankles or side-bending to or away from the side of palpated tenderness, whichever combination reduces sensitivity more.

Anterior lumbar
Anterior lumbar (see Fig. 3.10A) tender points require a similar positioning to that called for by the thoracic points.

Rib dysfunction and interspace dysfunction
The appropriate treatment for rib dysfunction and interspace dysfunction are described in this chapter and can be applied to bed-bound patients without any modification.

Schwartz (1986) reports that:

Interspace dysfunctions are implicated in costochondritis, the persistent chest pain of the patient who has suffered acute myocardial infarction, 'atypical' angina and anterior chest wall syndrome. They are strongly implicated along with depressed and elevated ribs in restricted motion of ribs … and thus contribute to the etiology and morbidity of many respiratory illnesses.

spine. Usually, the best results come from rotation of the knees moderately towards the side of tenderness. These joint dysfunctions account for many low-back pains that are not associated with tenderness of the vertebrae posteriorly. The pain is referred from the anterior dysfunction, into the low lumbar, sacral and gluteal areas. Treatment directed to the posterior pain sites of these dysfunctions, rather than to the origins of the pain, has been disappointing. (Jones et al 1995)

To summarize:

- Treatment for flexion strains involving the ninth thoracic to first lumbar level is usually achieved by placing the patient supine in flexion, using a cushion for the upper back and flexing the knees and hips, which are usually rotated towards the side of dysfunction (see Figs 3.46A,B and 3.48).
- Tender points will be found close to the abdominal midline, or slightly to one side (see Fig. 3.10A), and should be palpated during this maneuver.
- The practitioner/therapist's cephalad hand palpates the tender point while the patient's position is modified until tenderness in the point reduces by 70% or more.
- This position is held for 90 seconds, after which a slow return is made to a neutral position.
- The position of ease usually involves marked flexion through the joint, as well as appropriate side-bending and rotation, resulting in reduction of sensitivity in the tender points on the anterior body surface.

Extension strains of the thoracic spine

- These strains are treated in a similar manner to that used for extension strains of the cervical spine.
- Tender points are usually found on, or close to, the spinous processes, bilaterally, or in the lateral paravertebral muscle mass.
- It is usual to find that the lower the strain, the closer is the tender point to the transverse process (see Fig. 3.10F).
- Direct extension (backwards-bending) is the usual method used for SCS treatment of this region, with the patient side-lying, seated, supine or prone.

Prone:

- Figure 3.47A illustrates SCS treatment of an extension strain in the upper thoracic region, with the patient prone.

Side-lying:

- If the patient is side-lying the patient's arms should be placed resting on a pillow to avoid rotation of the spine (Fig. 3.47B).
- See Box 3.11 for Schwartz's (1986) suggestions regarding treating these points in relation to a bed-bound patient.
- For the T5 to T8 thoracic spine levels the arms are usually placed slightly above head level, to increase extension.

Seated:

- Any thoracic spine extension strains may be treated with the patient seated, either on the treatment table or on a stool, with the therapist standing to one side (Fig. 3.47C).

- Ideally, the patient's feet should be on the floor for stability.
- One of the practitioner's hands palpates the tender point located in relation to a particular segmental strain area, while the other hand fine-tunes the patient into a position where 'ease' is achieved, and tenderness in the point drops by at least 70%.
- After 90 seconds a slow return to a neutral position should be made.

Flexion strains of the lumbar spine

- Gross positioning is virtually the same as for thoracic flexion strains, with tender points on the anterior surface (abdomen mainly) and the ease position involving taking the patient into flexion. (See Fig. 3.10A for the positions of these points.)
- L1 has two tender points: one is at the tip of the anterior superior iliac spine and the other on the medial surface of the ilium just medial to the anterior superior iliac spine (ASIS).
- The tender point for second lumbar anterior strain is found lateral to the anterior inferior iliac spine (AIIS).
- The tender point for L3 is not easy to find but lies on the lateral surface of the AIIS, pressing medially.
- L4 tender point is found at the insertion of the inguinal ligament on the ilium.

Figure 3.47A Position of ease for tender points relating to extension strains of the upper thoracic region of the spine when treating prone patient.

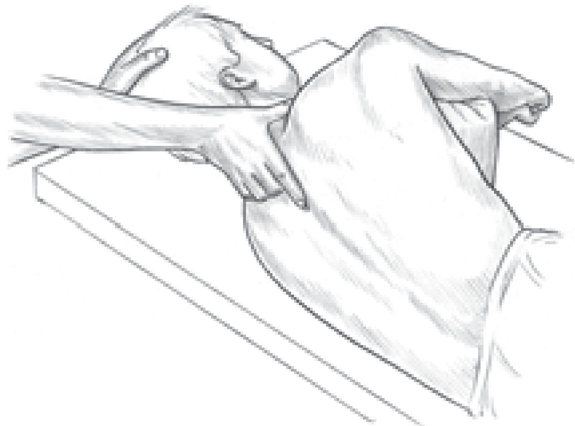


Figure 3.47B Side-lying position for treatment of thoracic extension strains.

Figure 3.47C Seated patient with practitioner to one side.

- L5 points are on the body of the pubes, just to the side of the symphysis.

SCS method

- Treatment for all of these points is similar to that used for thoracic flexion strains except that the patient's knees are placed together (Fig. 3.48).

- In bilateral strains both sides should be treated.
- L3 and L4 usually require greater side-bending in the fine-tuning process.

Extension strains of the lumbar spine

See also various treatment options for this region, described in Chapter 7 on facilitated positional release and Chapter 6 on functional technique.

L1, L2

- L1 and L2 tender points are located close to the tips of the transverse processes of the respective vertebrae (see Fig. 3.10B).
- Extension strains relating to these joints may be treated with the patient prone, seated or side-lying, using the tender points to monitor changes of discomfort as the ease position is sought.

Prone (Fig. 3.49A):

- If the patient is prone, the practitioner/therapist stands on the side opposite the strain, grasping the leg on the side of the dysfunction/tender point, just above the knee, bringing it into extension and adducting it towards the practitioner/therapist, in a scissor-like movement.

Side-lying (Fig. 3.49B):

- If the patient is side-lying, with the side of dysfunction uppermost, the upper leg can be extended to introduce extension into the region of the strain, while fine-tuning is accomplished by slightly adducting or abducting the leg.
- When an ease position has been established with the palpated tender point less painful by at least 70%, or when a marked degree of tissue change is noted, this should be maintained for 90 seconds, before a slow return to neutral.

See Box 3.11 for Schwartz's (1986) suggestions regarding treating these points in a bed-bound patient.

Side-lying alternative (Fig. 3.49C):

- In some cases of low-back dysfunction relating to extension strains, a tender point is located on the sacral sulcus (see Fig. 3.10B).
- Rather than using hip extension (as in Figs 3.49A and B) hip flexion may be helpful in achieving ease (Fig. 3.49C).
- Fine-tuning to achieve ease may involve adduction or abduction of the leg, or altering the degree of rotation in the upper body.

L3, L4

- The tender point for extension strain of L3 is found about 3 inches lateral to the posterior superior iliac spine, just below the superior iliac spine. L4 tender point lies an inch or two lateral to this following the contour of the crest (see Fig. 3.10B).

Figure 3.48 Position of ease for flexion strain of segments from T9 to the lower lumbar regions usually require positioning into flexion, side-bending and rotation, until ease is achieved in monitored tender point on the lower abdominal wall or the ASIS area.

- Treatment of L3 and L4 extension strains is accomplished with the patient prone, practitioner/therapist on the side of dysfunction, or in side-lying (Figs 3.49A, B and C).
- The practitioner/therapist's knee or thigh can be usefully placed under the raised thigh of the patient to hold it in extension while fine-tuning it, accomplished usually by means of abduction and external rotation of the foot.
- This procedure can also be performed with the patient side-lying, dysfunction side uppermost.
- The practitioner/therapist's foot should be placed on the bed behind the patient's lower leg.
- The patient's uppermost leg is raised and the extended thigh of this leg can then be supported on the practitioner/therapist's thigh.
- Rotation of the foot and positioning of the patient's leg in a more anterior or posterior plane, always in a degree of extension, is the fine-tuning mechanism to reduce or remove pain from the palpated tender point during this process.

Figure 3.49A Position of ease for a tender point associated with an extension strain of the lumbar spine usually requires use of the legs of the prone patient as means of achieving extension and fine-tuning.

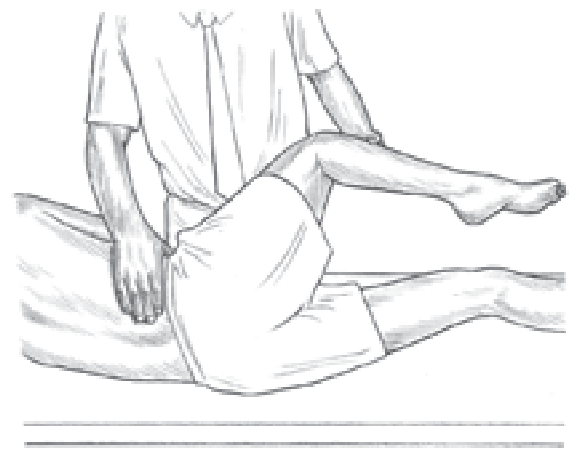


Figure 3.49C Some lumbar extension strains, where, for example, the tender point lies in the superior sacral sulcus, may ease if the hip is flexed in the side-lying position as illustrated.

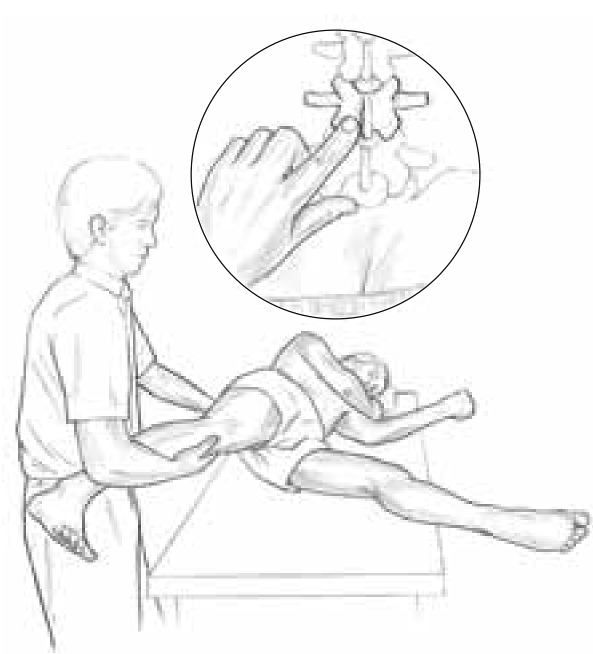


Figure 3.49B Side-lying position for treatment of lumbar extension strains.

L5

- There are various L5 tender points for extension strain as shown in Figure 3.10B.
- These are all treated as in extension strains of L1 and L2 (Figs 3.49A, B and C) using scissor-like extension of the prone patient's leg on the side of the dysfunction, and fine-tuning by variation in position (or treated in side-lying).
- In some cases the contralateral leg may be placed in flexion (over the edge of the table) to achieve ease of the tender point.
- As in all SCS protocols, once a 70% reduction in sensitivity of the tender point has been achieved, this should be held for 90 seconds before slowly returning to neutral.

SCS for psoas dysfunction (and for recurrent sacroiliac joint problems)

- The tender point for iliopsoas is located approximately 2 inches (5 cm) medial, and slightly inferior, to the anterior superior iliac spine.
- The practitioner stands on the side contralateral to that being treated.
- With the widely separated knees of the supine patient (Fig. 3.50) flexed, and the ankles crossed, the limbs are raised by flexing the hips – supported by the practitioner's leg.
- The process involves finding the amount of hip flexion that reduces palpated pain in the tender point markedly, at which time fine-tuning is introduced in which small amounts of side-flexion or rotation are introduced to assess the effects on tenderness.
- When tenderness drops by at least 70% the position is maintained for not less than 90 seconds, before slowly returning the patient to neutral.

Jones reports:

Any time there is a knee complaint place that leg's foot on top [in the leg crossing stage]. This treatment produces flexion, marked external rotation and abduction of the femoral joint. Whenever you have a patient with a sacro-iliac problem that keeps recurring, be sure to check for this dysfunction. It is also common when there are no sacro-iliac dysfunctions. (Jones et al 1995)

In Chapter 4 a variation for treating a dysfunctional psoas is outlined, based on the work of Goodheart (1985).

Sacral foramen tender points and low back pain

In 1989 osteopathic physicians Ramirez, Hamen and Worth identified a series of 'new' tender points, collectively known as medial sacral tender points. These tender points were found to relate directly to low back and pelvic dysfunction and were found to be amenable to very simple SCS methods of release (Ramirez et al 1989).

A few years later Cislo et al (1991) described additional sacral foramen tender points which they identified as being related to sacral torsions. Cislo et al have provided clear guidelines as to the usefulness of these in treatment of low back pain associated with sacral torsion, using counterstrain methods.

The original identification of the 'new' medial sacral points occurred when a patient with chronic low back pain and pelvic hypermobility was being treated (Ramirez et al 1989). Use of counterstrain methods was found to be efficient using anterior and posterior lumbar tender points; however, despite relative comfort, the patient was left with 'tender points in the middle of the sacrum, associated with no problems'. These were originally ignored but when the patient's back pain recurred, the sacral points were re-evaluated and a number of release positions were attempted. Recognizing that the usual 'crowding' or 'folding' of tissue to induce ease in tender points was impossible in the mid-sacral area, the researchers then experimented with application of pressure to various areas of the sacrum.

Ramirez et al (1989) explained their progress from then on:

In the 3 weeks following this initial encounter with the unnamed sacral tender points, 14 patients with the presenting complaint of low back (sacral or lumbar, with or without radicular) pain demonstrated tenderness at one or more of the new sacral tender points. Ultimately we found six new tender points, all of which were relieved by positional release techniques to the sacrum.

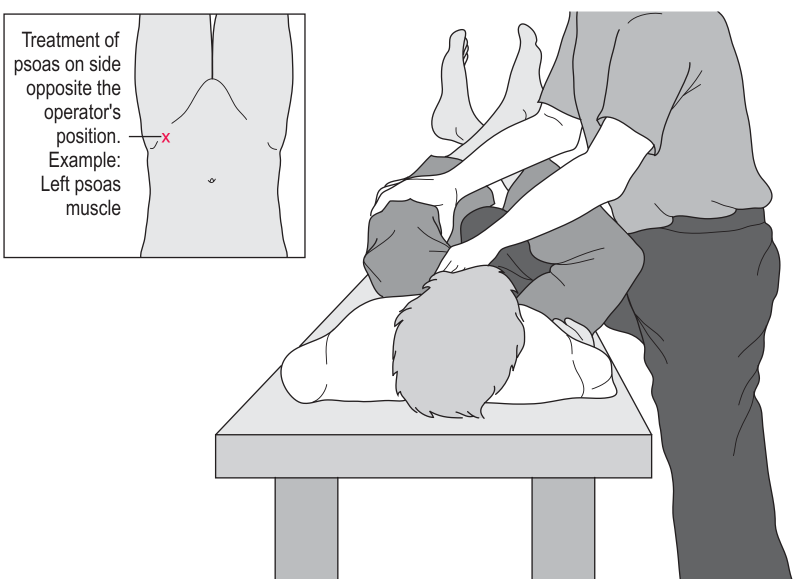


Figure 3.50 Positional release for psoas dysfunction.

Location of the new sacral medial tender points

Collectively known as the 'medial sacral tender points', these are located as follows:

- There are two possible cephalad tender points that lie just lateral to the midline, approximately 1.5 cm medial to the inferior aspect of the posterior superior iliac spine (PSIS) bilaterally, and they are known as PS1 (for posterior sacrum). See Figure 3.51, where these two points (left and right) are identified by the letter A.
- The caudad two tender points are known as PS5 and may be located approximately 1 cm medial and 1 cm superior to the inferior lateral angles of the sacrum, bilaterally. See Figure 3.51, where these two points (left and right) are identified by the letter E.
- The remaining two tender points may be located on the midline: one (PS2) lies between the first and second spinous tubercles of the sacrum, identified as being involved in sacral extension, and the other (PS4) lies on the cephalad border of the sacral hiatus, which is identified as a sacral flexion point. See Figure 3.51, where these two points (superior and inferior) are identified by the letters B and D.
- Schwartz identified a seventh point lying between the second and third sacral tubercles (PS3), which relates to sacral extension. See Figure 3.51, where this point is identified by the letter C.

How to identify medial sacral tender points

Cislo et al (1991) note that when they first started trying to identify the precise locations of the sacral tender points they used drag palpation, as described earlier in this chapter and more fully in Chapter 2.

However, they state:

We have found that when these tender points occur in groups the associated sudomotor change is frequently confluent over the mid-sacrum. For this reason, we have begun to check all six points on all patients with low back pain, even in the absence of sudomotor changes.

They report that this process of localization can be rapid if the bony landmarks are used during normal structural examination.

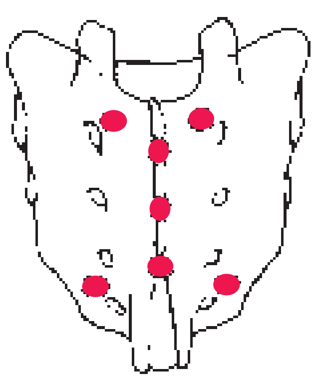


Figure 3.51 Positions of tender points relating to sacral and low back dysfunction.

Treatment of medial sacral tender points (Fig. 3.52)

- With the patient prone, pressure on the sacrum is applied according to the location of the tender point being treated.
- Pressure is always straight downwards, in order to induce rotation around a perceived transverse or oblique axis of the sacrum.
- The PS1 tender points require pressure to be applied at the corner of the sacrum *opposite the quadrant in which the tender point lies*, i.e. left PS1 requires pressure at the right inferior lateral angle of the sacrum.
- The PS5 tender points require pressure to be applied *near the sacral base, on the contralateral side*, i.e. a right PS5 point requires downward – to the floor – pressure on the left sacral base just medial to the sacroiliac joint.
- The release of PS2 (sacral extension) tender point requires downwards pressure (to the floor) *at the apex of the sacrum in the midline*.
- The lower PS4 (sacral flexion) tender point requires pressure to *the midline of the sacral base*.
- Schwartz tender point PS3 (sacral extension) requires the same treatment as for PS2 described above.

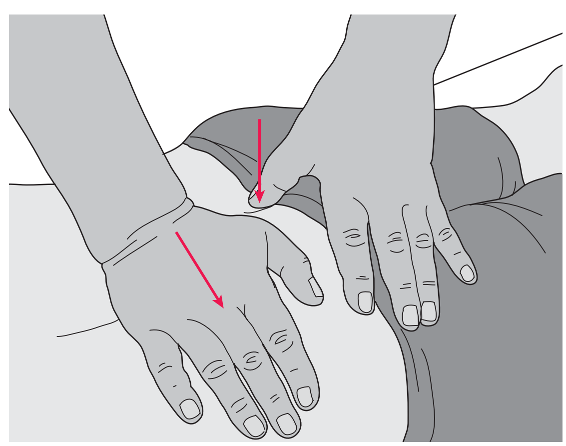


Figure 3.52 SCS treatment of medial sacral tender points relating to sacral and low back dysfunction.

- In all of these examples it is easy to see that the pressure is attempting to *exaggerate the existing presumed distortion* pattern relating to the point, which is in line with the concepts of SCS and positional release as explained earlier.

Jones is on record as describing his approach to the use of the sacral tender points identified by Ramirez et al (1989):

> *To keep this simple and practical, I search for the tender points. When one is found I press on the sacrum as far away from the tender point as possible. (Jones et al 1995, p. 84)*

What if medial sacral points are too sensitive?

From time to time, pressure on the sacrum itself was found to be too painful for particular patients, and a refinement of the techniques of SCS was therefore devised for the medial points (not the midline ones).

- The patient is placed on a table, prone, with head and legs elevated (an adaptable McManus-type table can achieve this, as can appropriately sited pillows and bolsters), inducing extension of the spine, which usually relieves the palpated pain by approximately 40%.
- Different degrees of extension (and sometimes flexion) are then attempted to find the position which reduces sensitivity in the point(s) most effectively.
- When this has been achieved, side-bending the upper body or the legs away from the trunk is carefully introduced, to assess the effects of this on the palpated pain.
- As in all SCS procedures, the final position is held for 90 seconds once pain has been reduced by at least 75% in the tender point(s).

Identification of sacral foramen tender points

Additional tender points were later identified as a result of problems attempting to treat a 'difficult' patient (Cislo et al 1991) (Fig. 3.53).

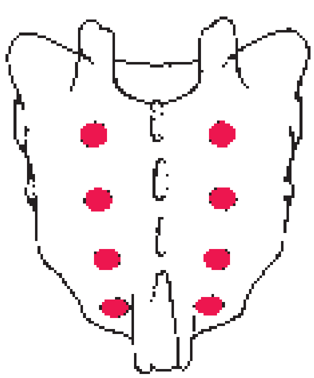


Figure 3.53 Sacral foramen tender points as described in the text.

A patient with low back pain, with a recurrent sacral torsion, was being treated using SCS methods with poor results. When muscle energy procedures were also found to be inadequate, a detailed survey was made of the region, and an area of sensitivity that had previously been ignored was identified in one of the sacral foramina.

Experimentation with various release positions for this tender point resulted in benefits and also in the examination of this region in other patients with low back pain and evidence of sacral torsion.

> *All the patients [who were examined] demonstrated tenderness at one of the sacral foramina, ipsilateral to the engaged oblique axis [of the sacrum]. (Cislo et al 1991)*

These foramen tender points have been named according to their anatomic position and are to be differentiated from sacral border tender points previously identified by Jones, and from the medial tender points as discussed above.

Clinically, these tender points are located by their positions relative to the posterior superior iliac spine.

- The most cephalad of the points (SF1 – sacral foramen tender point 1) is 1.5 cm (1 inch) directly medial to the apex of the PSIS.
- Each successively numbered sacral foramen tender point (SF2, SF3, SF4]) lies approximately 1 cm below the preceding tender point location.

Locating sacral foramen tender points

Evaluation of the sacral foramina should be a fairly rapid process.

- If a sacral torsion is identified, the foramina on the ipsilateral side should be examined by palpation and the most sensitive of these is treated as described below.
- A left torsion (forward or backward) involves the foramina on the left side.
- Alternatively, palpation of the foramina using the skin-drag method (see Chapter 2) may reveal dysfunction, even if the precise nature of that dysfunction is unclear.
- If there is obvious skin-drag over a foramen, and if compression of that foramen is unduly painful, some degree of sacral torsion is suggested – on the same side as the tender foramen.

Treatment protocol for sacral foramen points

For treatment of a tender point located over a left-side sacral foramen (Fig. 3.54):

- The patient lies prone with the practitioner/therapist on the side of the patient contralateral to the foramen tender point to be treated – right side in this example.

- The right leg (in this example) is abducted to about 30°.
- The practitioner/therapist, applies pressure to the sensitive foramen with his left hand (in this example) with the patient ascribing a value of '10' to the resulting discomfort.

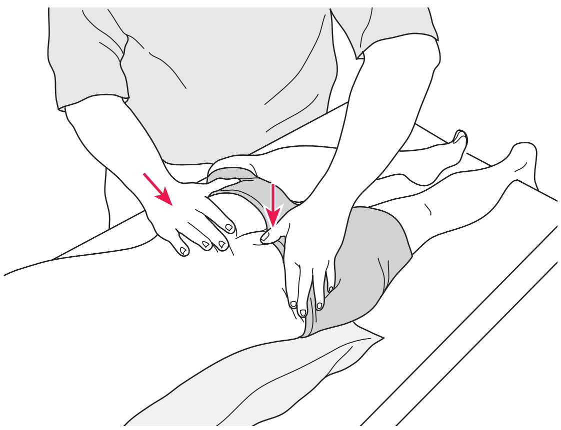


Figure 3.54A SCS treatment of sacral foramen tender points relating to sacral torsion dysfunction.

- The practitioner/therapist then applies pressure to the ilium a little lateral to the patient's right PSIS, directed anteromedially, using his right forearm or hand (in this example). This should reduce reported levels of sensitivity from the tender point.
- Variations in angle of pressure and slight variations in the position of the right leg are used for fine-tuning.
- The degree of reduction of sensitivity in the palpated sacral foramen tender point should achieve 70%.
- The position of ease is held for 90 seconds before a slow return to neutral (leg back to the table, contact released) is passively brought about.
- Whether the sacral torsion is on a forward or backward axis, it should respond to the same treatment protocol as described.

Tensegrity and the pelvis

Earlier in this chapter there was a description of tensegrity.

When envisaging the internal biomechanics of the effects of treating medial sacral points, or sacral foramen points, as described above, it may be helpful to keep the balance between compression and tension forces and other tensegrity concepts in mind (Figs 3.54B and C).

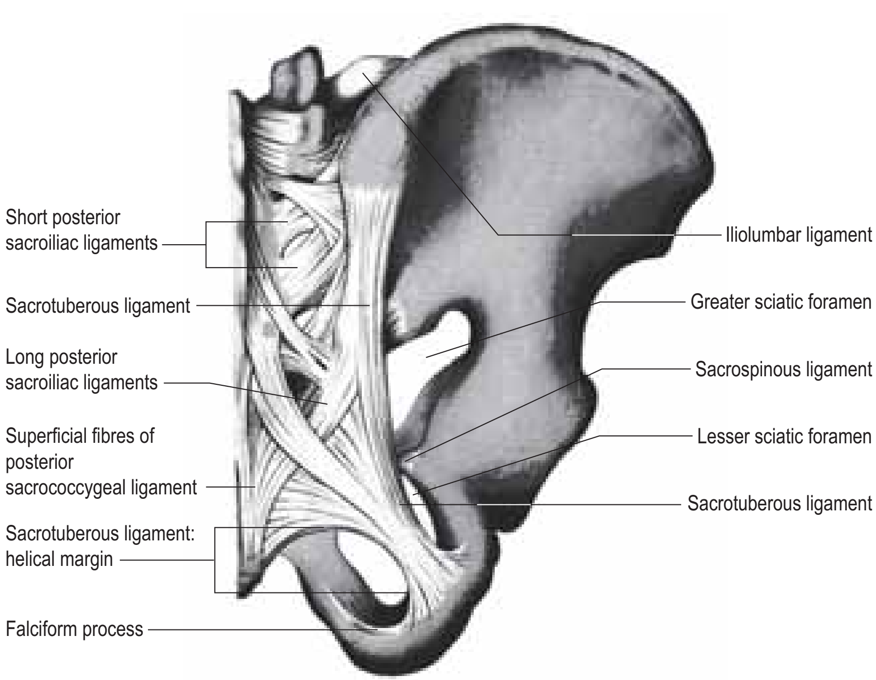


Figure 3.54B Joints and ligaments on the posterior aspect of the right half of the pelvis and fifth lumbar vertebra. (From *Gray's Anatomy*, 38th edn.)

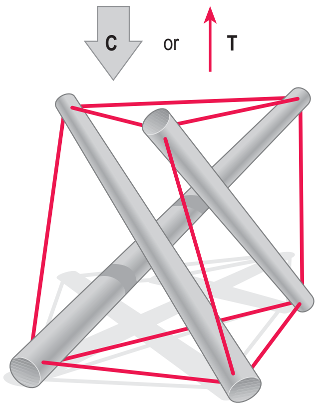


Figure 3.54C A simple model of a tensegrity structure in which internal tensions (T) and externally applied compression (C) forces are absorbed by the component solid and elastic structures by adaptation of form. (From Chaitow 1999.)

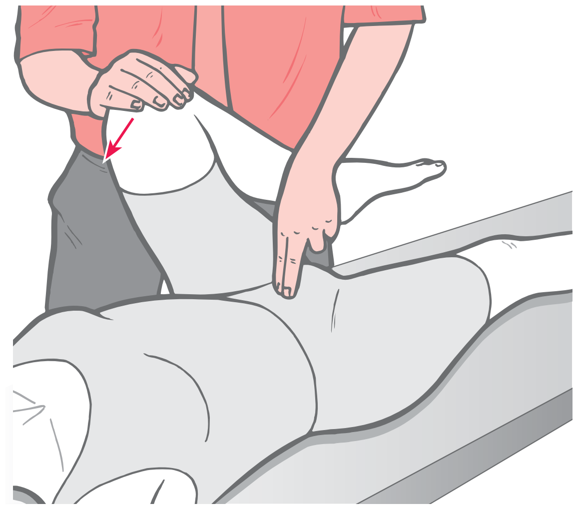


Figure 3.56 Treatment of pubococcygeus dysfunction.

Pubococcygeus dysfunction

The tender point for pubococcygeus dysfunction lies on the superior aspect of the lateral ramus of the pubis, approximately a thumb width from the symphysis (Fig. 3.55).

Method

- The patient lies supine as the ipsilateral leg is flexed (Fig. 3.56) until sensitivity in the palpated point drops by at least 70%.
- Long-axis compression through the femur towards the pelvis may be useful as part of fine-tuning.

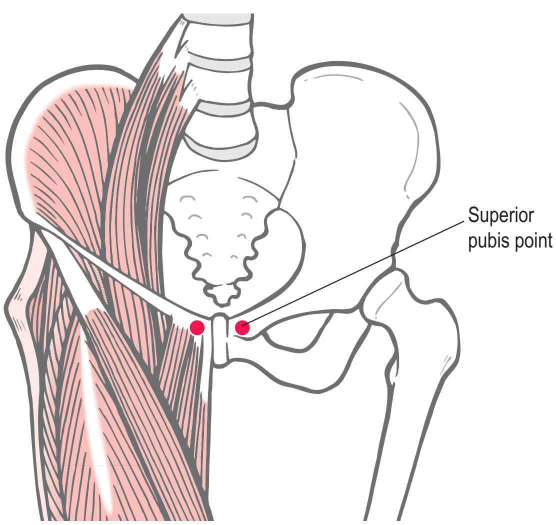


Figure 3.55 Pubococcygeus tender point.

Gluteus medius

The tender point for gluteus medius dysfunction lies laterally, on the posterior superior iliac spine (Fig. 3.57).

Method

- The prone patient's ipsilateral leg is extended at the hip and abducted (Fig. 3.58), until reported pain reduces by at least 70%.

Medial hamstring (semimembranosus)

The tender point for the medial hamstrings is located on the tibia's posteromedial surface on the tendinous attachment of semimembranosus (Fig. 3.59).

Method

- The patient lies supine, with the affected leg off the edge of the table, so that the thigh is extended and slightly abducted, and the knee is flexed (Fig. 3.60).
- Internal rotation of the tibia is applied for fine-tuning to reduce reported sensitivity in the tender point by at least 70%.

Lateral hamstring (biceps femoris)

The tender point for the lateral hamstring is found on the tendinous attachment of biceps femoris on the posterolateral surface of the head of the fibula (Fig. 3.61).

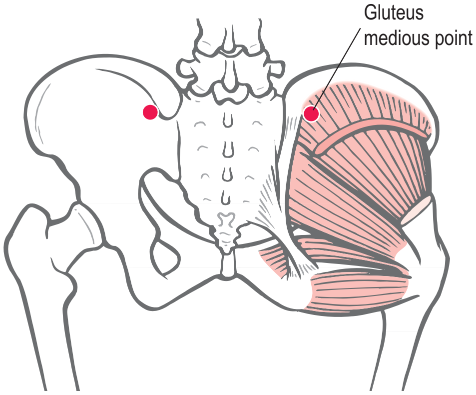


Figure 3.57 Gluteus medius tender point.

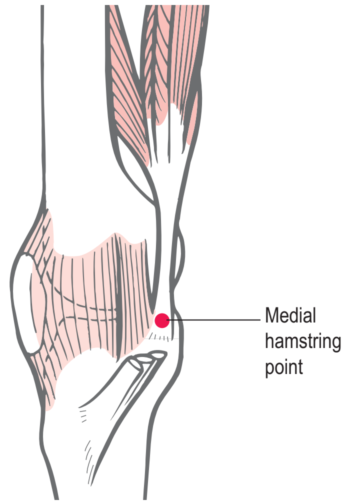


Figure 3.59 Medial hamstring tender point.

Figure 3.58 Treatment of gluteus medius dysfunction using the tender point as a monitor of discomfort.

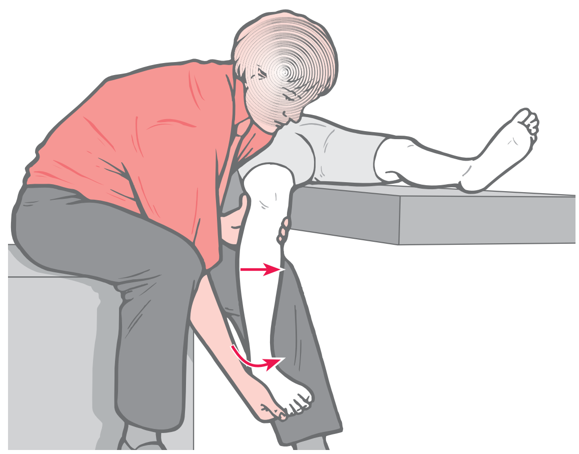


Figure 3.60 Treatment of medial hamstrings using the tender point as a monitor of discomfort.

Method

- The patient lies supine, with the affected leg off the edge of the table so that the thigh is extended and slightly abducted, and the knee is flexed (Fig. 3.62).
- Adduction or abduction, as well as external or internal rotation of the tibia, is introduced for fine-tuning, to reduce reported sensitivity in the tender point by at least 70%.

Tibialis anterior

The tender point for tibialis anterior is found in a depression on the talus, just medial to the tibialis anterior tendon, anterior to the medial malleolus (Fig. 3.63).

Method

- The prone patient's ipsilateral knee is flexed as the foot is inverted and the ankle internally rotated to fine-tune (Fig. 3.64), until reported sensitivity in the palpated tender point reduces by at least 70%.

Reactions following SCS

Despite the extreme gentleness of the methods involved in the application of all positional release in general, and SCS in particular, in about one-third of patients there is likely to be a reaction in which

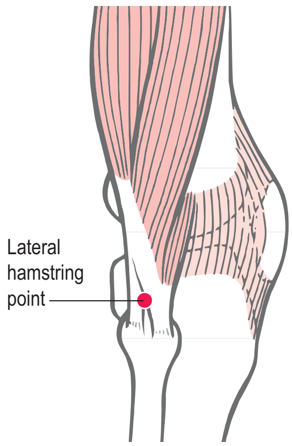


Figure 3.61 Lateral hamstring tender point.

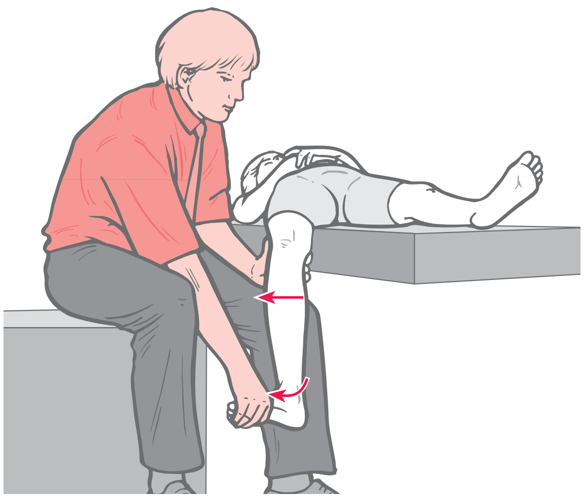


Figure 3.62 Treatment of the lateral hamstring using the tender point as a monitor of discomfort.

soreness, or fatigue may be experienced, just as in more strenuous therapeutic measures.

This reaction is considered to be the result of homeostatic adaptation processes in response to the treatment, and is a feature of many apparently very light forms of treatment. Since the philosophical basis for much bodywork involves the concept of the treatment itself acting as a catalyst, with the normalization or healing process being the prerogative of the body itself, the reaction described above is an anticipated part of the process.

It is logical and practical to request that the patient refrains from excessive activity for some hours following SCS treatment to avoid disturbing any 'resetting' of tone that may have occurred.

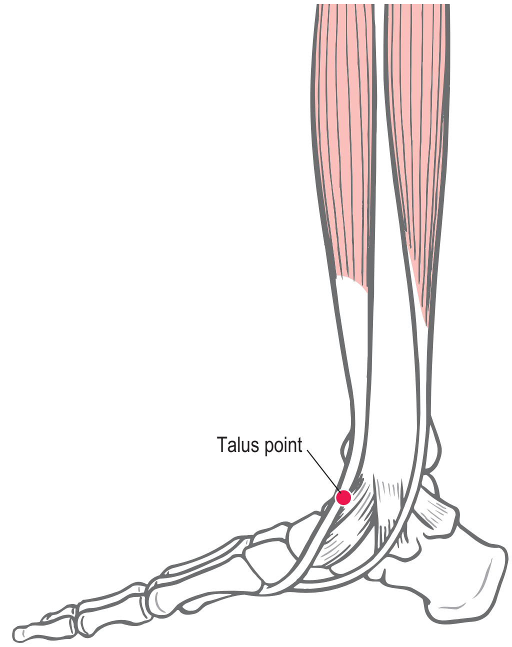


Figure 3.63 Tibialis anterior tender point.

Figure 3.64 Treatment of tibialis anterior using the tender point as a monitor of discomfort.

Other body areas

The summary of SCS tender point locations and suggested positions of ease provided in this chapter is not comprehensive.

The author strongly believes that once the basic concepts of the methodology and underlying mechanisms of SCS are understood, a competent practitioner/therapist with good basic palpation and manual skills should be able to apply the method to almost any condition, in most clinical situations, acute and chronic, mild and severe.

A thorough reading of Jones's (1981) text is recommended, along with attendance at postgraduate lectures, seminars and workshops that teach the essence and detail of the method.

In the next chapter some further applications and refinements of SCS are described – in particular the guidelines offered by Goodheart (1985) that markedly simplify SCS, as well as Goodheart's remarkable 'coccygeal lift' method and Morrison's useful pelvic treatment approach ('inguinal lift') – that complement the treatments outlined in this chapter.

In Chapter 5 PRT (including SCS) for use in treatment of myofascial trigger points is described.

Clinical reasoning

With the information in this and subsequent chapters, and using the basic principle of identifying areas of tenderness in shortened structures, and easing these by positioning, it should be possible for the reader to become familiar with the clinical possibilities offered by PRT in general and SCS in particular, without becoming bound by rigid formulaic procedures.

At its simplest, SCS suggests the following procedures if tissues are restricted or painful, with some tissues displaying 'tightness', and others 'looseness':

- Consider the tight structures as primary sites for tender point location (see Chapter 2).
- Locate the most tender point using simple palpation such as 'drag' (see Chapter 3).
- Monitor this point while positioning and fine-tuning the tissues to reduce the perceived pain by not less than 70%.
- Hold the position of comfort/ease for not less than 90 seconds.
- Slowly return to neutral, and reassess.
- Anticipate an instant functional improvement (greater range of motion, for example) and some reduction in pain/discomfort that should commonly continue and increase over the coming hours and days.

Goodheart's guidelines as explained in Chapter 4 are particularly helpful in clinical decision-making when confronted with complex or acute conditions, building as they do on the basic formulation of 'exaggerating distortion' and 'reproducing positions of strain' – as explained in Chapter 1.

The reader is urged to revisit the various boxes in this chapter that cover different aspects of clinical decision-making. The boxes most relevant to clinical reasoning are:

- Box 3.2: Ideal settings for the application of SCS/PRT
- Box 3.3: SCS application guidelines
- Box 3.4: Positioning guidelines
- Box 3.5: Timing and SCS
- Box 3.6: Which points to treat first?
- Box 3.7: Some of the effects of sustained compression
- Box 3.8: SCS: contraindications and cautions
- Box 3.9: Indications for SCS (alone or in combination with other modalities)
- Box 3.11: SCS in treating the bed-bound patient.

SCS and other positional release methods are most appropriate in acute and subacute settings. They can also offer major benefits in chronic conditions, but by their noninvasive, indirect, nature are not capable of modifying structural changes (fibrosis, etc.).

The end-result of such positioning, if painless, slowly performed and held for an appropriate length of time (Box 3.5), is:

- a reduction in hyperreactivity of the neural structures
- a resetting of these to painlessly allow a more normal resting length of muscle to be achieved
- reduced nociceptor activity (see Chapter 1)
- reduction in fascial (di)stress
- enhanced circulation.

Hopefully, the detailed explanations in this chapter will have produced sufficient awareness to allow experimentation with the principles involved, in clinical settings, of both the areas presented and others.

As long as the guiding principles of producing no additional pain while also relieving pain from the palpated tender point during the positioning and fine-tuning are adhered to, no damage can possibly be done, and a profound degree of pain relief and functional improvement is possible.

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