

## CHAPTER ONE

# Myofascial and other pain



Pain is unpleasant, both physically and emotionally, and the more anxious a person is about a pain, the worse the pain will seem.

Pain is by far the commonest reason for anyone seeking advice and/or help from a healthcare provider – whether mainstream or complementary, and low back pain is the second most common reason for anyone consulting a physician in the USA (Merskey & Bogduk 1994).

We feel most pain in our muscles, fascia, ligaments, etc., the soft parts of the musculoskeletal system, which is the body's largest organizational system, and its greatest energy user (Deyo & Weinstein 2001).

It is this system, under the control of the nervous system, that supports, stabilizes and moves the joints and bones of the body, allowing us to walk, talk, dance, run, type and to generally express our human condition (Korr 1986).

This is why pain or dysfunction in the musculoskeletal system has the ability to impact on our lives so greatly.

For more than any other reason, pain takes people to a physician or other healthcare provider, for help and advice. Pain can be mysterious, with no obvious cause, and this is the most worrying of all. Imagination can take hold, and an ache that is the result of nothing more than poor posture can escalate into something very serious in the person's mind.

This sort of 'catastrophizing' is even more likely when pain is felt in an area where there really is nothing 'wrong'. A pain in the face and head might be the direct result of a trigger point in the muscles of the neck area (such as upper trapezius or sternomastoid) – but because the pain is in the face, around the ear, or in the eyes, it is in those areas that the sufferer might imagine serious problems to exist.

Understanding that the pain is actually in the neck and shoulder muscles, removes the anxiety. After that, all that needs to be done is to deactivate the trigger points (see Chapter 7) and to see what can be done to prevent the same postural stresses from creating new ones!

Whether pain in soft tissues arises because of overload, overuse or injury, there is a strong chance that part of the pain process will involve the presence of hyperirritable areas of tissue known as myofascial trigger points (Wall & Melzack 1990).

- A myofascial trigger point is a hyperirritable spot, usually lying within a taut band of skeletal muscle, or in the muscle's fascia.
- This irritable spot (trigger point) will be painful on pressure, and often gives rise to referred or radiating pain and tenderness (Simons et al 1999)
- Chronic strain can affect any of the body's skeletal muscles, and so any muscle can develop myofascial trigger points.
- Myofascial pain syndromes are conditions of widespread pain that are both caused and maintained by one or more active trigger points.
- While the trigger point is the actual pain generator that causes the pain, other factors are the cause of the trigger point's activities.
- This makes it obvious that getting rid of myofascial pain requires that we either get rid of the trigger point(s) or the reasons for their existence.

Trigger points, what causes them, and the problems they can cause, will be described in detail in this and the next two chapters.

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### ACUTE AND CHRONIC PAIN

One definition of acute pain is that it is new, of recent onset (a matter of weeks) (Kolt & Andersen 2004). Another definition is that, even if not new, pain may be so severe as to be described as acute, even though it has been present for some time.

*Acute pain* usually involves a degree of tissue damage, and starts with what is called a phasic response. There may or may not be a verbal 'ouch', but there will almost always be a non-verbal response – for example contorting the face, or swiftly taking a hand away from a flame (Kolt & Andersen 2004).

The acute phase of a painful experience involves increased sympathetic nervous system activity, the degree of which is directly linked to how much fear or anxiety is associated with the pain (Craig 1994, Crombez 1998).

Pain in general – particularly acute pain – frequently has protective value, preventing the use of an area that has been injured, so allowing a period of rest for normal recovery to take place – after a strain, for example.

But even when pain does not last for very long, and although it may be useful in a protective way, it is not pleasant. However, such pain will have a meaning, it needs to be understood.

And pain that you understand is easier to cope with than pain that is mysterious, of unknown origin, and that feels threatening (Wall & Melzack 1990).

*Chronic pain* is generally defined as having been present for months rather than weeks. Chronic pain usually has a different character, compared to acute pain, aching and deep, rather than sharp or burning – although this is not always the case – for there are hundreds of words used to describe the quality of a pain (Wall & Melzack 1990).

The ache of chronic pain may be linked to the increased sympathetic tone that started as an acute episode (after lifting, for example), but which continues long after the healing of tissue damage has taken place.

This continuation of pain may increase levels of anxiety, fear and/or depression – especially if the reasons for the pain are not understood, or if treatment fails to ease the pain (Craig 1994).

It is important for therapists and practitioners to be able to explain to their clients/patients the probable cause(s) of any pain that is being experienced, and what can be done about it, using language that is simple yet accurate.

This is particularly true of pain deriving from myofascial trigger points, about which the public knows relatively little.

### PAIN THAT STARTS SLOWLY

Pain does not always start as an acute experience, of course.

It sometimes develops slowly, starting as discomfort, only gradually becoming really painful over a period of months or years, as a result of such factors as poor posture, overuse, under-exercising (deconditioning), etc.

The process of slow-onset, microtrauma-induced dysfunction often includes the development of irritable, extremely sensitive areas in the soft tissues, known as myofascial trigger points (Simons et al 1999).

The pain symptoms associated with different types of trigger points, active, latent, embryonic, etc. are described in Box 1.1, while their special characteristics are outlined in Chapters 2 and 3.

### PAIN IN CONTEXT

Pain and restriction should be seen in relation to the degree of acuteness or chronicity.

- Is it new? Has it been present for days, weeks, months or years? Has it changed recently? If so why?

Pain should also be seen in its association with the rest of the body.

- Is it worse/better when standing, sitting, lying ... and if so why?
- What movements or other parts of the body seem to influence the pain?

It is also necessary to take account of the emotional and nutritional status, as well as the multiple environmental, occupational, social and other factors that affect the person.

- Are you settled in your work, relationships, home life, economically?
- Do you eat a balanced diet, drink enough water, get enough sleep, exercise? Do you have any habits that might be negatively influencing your health (smoking, alcohol)?
- Are you taking any prescription medication?

A patient who is enduring social, economic and emotional worries, who is not getting enough exercise or sleep, whose diet is problematic ... and who happens to report muscular pain and backache, is likely to achieve only short-term benefit from manual

### Box 1.1 Pain characteristics of different types of trigger points: active, latent, embryonic and satellite (Kuchera 1997, Simons et al 1999, Travell & Simons 1992)

NOTE: The full list of the characteristics of trigger points is to be found in Chapter 2; this list only looks at the different types of pain and sensation characteristics of the three main types of trigger point: active, latent and embryonic.

The pain characteristics of an active myofascial trigger point are:

- The area in which an active trigger point is located may already be sensitive before it is touched.
- When pressure is applied active trigger points are painful and either refer (i.e. symptoms are felt at a distance from the point of pressure) or radiate (i.e. symptoms spread from the point of pressure).
- Symptoms that are referred or radiated include pain, tingling, numbness, burning, itching or other sensations, and most importantly, these symptoms are recognizable (familiar) to the person.
- There are other signs of an active trigger point ('jump sign', palpable indications such as a taut band, fasciculation, etc.) and these will be described in Chapter 2.

Questions asked on application of pressure are:

1. 'Does this hurt?'
2. 'Does this hurt anywhere other than where I am pressing?'
- 3a. 'Do you recognize the pain?' or
- 3b. 'Is this the pain you have been experiencing?'

If the answers to questions 1, 2 and 3 are all 'yes', this is an *active myofascial trigger point*.

The pain characteristics of a latent myofascial trigger point are:

- Commonly the individual is not aware of the existence of a latent point until it is pressed (that is, unlike an active point, a latent one seldom produces spontaneous pain).
- When pressure is applied to a latent point it is usually painful, and it may refer (i.e. symptoms are felt at a distance from the point of pressure), or radiate (i.e. symptoms spread from the point of pressure).
- If the symptoms, whether pain, tingling, numbness, burning, itching or other sensations, *are not familiar*, or perhaps are sensations that the person used to have in

the past, but has not experienced recently, then this is a *latent myofascial trigger point*.

The questions asked of the patient are of course the same, but if the answers to questions 1 and 2 are 'yes', and the answer to question 3 is 'no', the point is defined as latent, not active.

**Progression from latent to active**

Latent trigger points may become active trigger points at any time, perhaps becoming a 'common, everyday headache' or adding to, or expanding, the pattern of pain already being experienced for other reasons.

The change from latent to active may occur when the tissues are overused, strained by overload, chilled, stretched (particularly if this is rapid), shortened, traumatized (as in a motor vehicle accident or a fall or blow) or when other perpetuating factors (such as poor nutrition or shallow breathing) provide less than optimal conditions for tissue health.

Active trigger points may become latent trigger points with their referral patterns subsiding for brief or prolonged periods of time. They may then be reactivated with their referral patterns returning for no apparent reason.

**Embryonic points**

Any sensitive point in the soft tissues that hurts unusually on pressure, but which does not radiate or refer, is termed an *embryonic* trigger point.

This is a disturbed or dysfunctional region of soft tissue that, over time, with sufficient additional stress input (overuse, etc.), may become first a latent, and eventually, an active trigger point.

Embryonic points may evolve in the referral or radiation zone (the area influenced by an active or latent point – see above for descriptions of these). In that case the new, potential, trigger is known as a *satellite* point.

When a trigger point is situated near the center (belly) of a muscle, near the motor endpoint, it is known as a central point. When it is situated close to the insertion/attachment of a muscle, it is known as an *attachment* point. These are treated quite differently because of the characteristics of the tissues in which they lie. This will be fully explained in Chapter 7.

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treatment if no account is taken of the many stresses being experienced.

What would often help most may not be possible: a new job, a new home, a new spouse (or removal of the present one), for example.

In such cases the therapist may at best be able to reduce the intensity of a patient's symptoms, but not be able deal with causes.

Or there may be a variety of simple changes that are possible – improved exercise and sleep patterns, better diet and stress management (relaxation and breathing exercises perhaps). If advice on such changes can be given, manual treatment of pain and dysfunction is likely to be more successful.

The lesson this offers is that dealing with the obvious (symptoms such as pain) may only be part of what is needed; the context, the background, often also needs attention.

And of course referral to specialist healthcare providers is the best choice where background causes are beyond the scope of practice of a therapist.

### WHAT IS FACILITATION?

Trigger points can be described as 'locally facilitated' areas (Korr 1978, 1981).

Facilitation (or sensitization) involves pain-reporting (nociceptive) nerve cells (neurons) that are maintained in a hyperirritable state (Patterson 1976).

Nerve cells become sensitized when they have been repeatedly irritated.

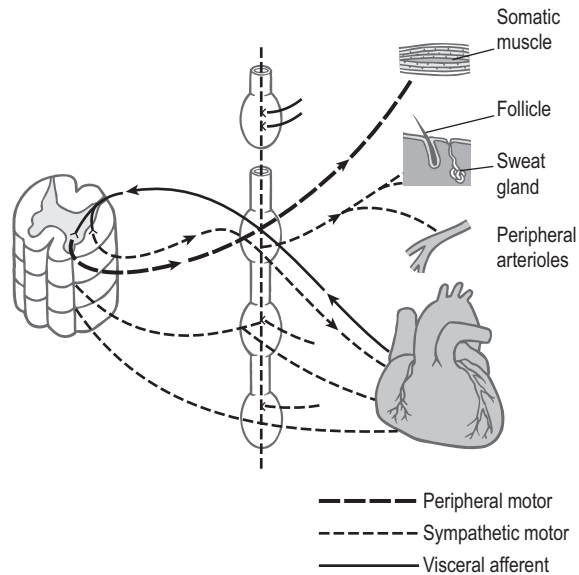
Once nerve cells are sensitized they will be affected by even low levels of additional irritation.

This process is called 'facilitation' in osteopathic medicine (Korr 1986).

Facilitation/sensitization can take place in spinal soft tissues (where the process is known as 'segmental facilitation'), or it can occur in soft tissues anywhere else in the body, in the form of myofascial trigger points.

In some cases spinal (segmental) facilitation is the result of organ dysfunction or disease. For example, a facilitated area in the upper back (thoracic spinal levels 2 to 5) may be the result of heart problems, where 'feedback' to the spine along the nerve tracts that service the heart are responsible for the irritation of that area. This does not mean that treating the spinal segment could influence heart disease, but that the facilitated area is likely to remain a problem for as long as the heart is a problem (Kuchera 1997). See Figure 1.1.

The causes of increased sensitivity/facilitation can also include overuse of an area through persistent habitual patterns of use, posture, etc.



**Figure 1.1** Schematic representation of the neurological influences involved in the process of facilitation resulting from visceral dysfunction (cardiac disease in this example). Hyperirritable neural feedback to the CNS will result, which influences muscle, skin (both palpable) and venous structures in associated areas, as well as the neural supply to the organ itself. (From Chaitow 2001.)

Areas of facilitation, whether local trigger points or spinal segments, have a different 'feel' (congested, indurated, fibrous/'stringy', tense, etc.) and will also usually be sensitive and be less flexible/elastic.

As will become clear in Chapter 6, these feelings of being 'different' from surrounding, more normal tissues are very useful when trying to identify trigger points.

### EDEMA AND TRIGGER POINT SENSITIZATION

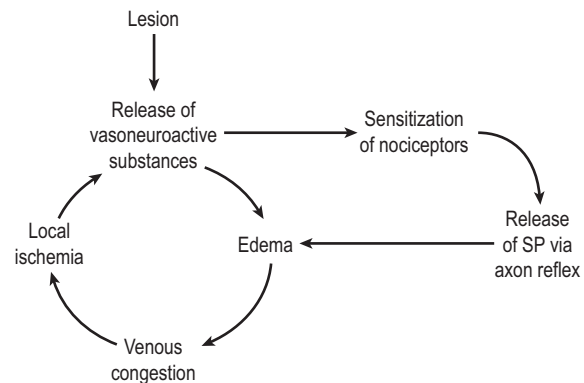
A part of the process that encourages facilitation of local nerve structures, leading to increasing sensitivity and pain, involves the release of irritating chemicals, as described below.

A sequence is thought to take place as follows (Mense & Simons 2001):

- 'Something happens' to muscle tissue – this could be a sudden strain, or a blow, a chill, a rapid stretch, or a series of repetitive micro-injuries brought about by overuse, for example.
- The 'something' that happens causes the release of highly irritating chemicals.

- These include *vaso-neuro-reactive* substances (such as bradykinin, prostaglandin, interleukin-1 and substance P – see Box 2.4, Chapter 2 for more about these chemicals and how they help create trigger points).
- These chemicals increase the sensitivity of local nerve cells that report pain to the central nervous system and brain (called nociceptors).
- These chemicals also cause the local blood vessels to swell, and encourage increased permeability (the ease with which substances can pass through their walls), creating localized swelling, congestion, edema.
- The swollen tissues press on tiny blood vessels and reduce the free flow of blood, causing ischemia (literally 'lack of blood').
- Because of ischemia there will be reduced oxygen levels in the tissues.
- Tissues depend on oxygen to function, and to be able to produce energy.
- Ischemia increases the release of substance P, and this adds to the irritation of nerve structures.
- After a while the pain-receptor nerve cells (nociceptors) will become sensitized, and will have a reduced tolerance/threshold, making them more easily irritated than before.
- Imagine the loudspeaker of a hi-fi system on which the volume has been turned up, so that what was previously heard as low level sound is now very loud.
- This is how a sensitized, facilitated, pain receptor behaves, amplifying the messages being received, and sometimes misinterpreting non-pain messages as pain.
- Discomfort becomes soreness, soreness becomes pain, and pain becomes agony.
- Increased sympathetic activity in the person ('stress', fear, alarm, etc.) causes release of a variety of other substances, such as norepinephrine (noradrenaline).
- The now oversensitive pain receptors find this irritating, causing even more pain messages to be sent to the central nervous system (CNS), and brain.
- The pain itself will often become a source of new anxiety and stress, making the whole process worse.

Details of the series of events that is thought to take place in tissues when a trigger point forms will be described in later chapters. See Box 2.4 in Chapter 2, which describes the results of remarkable recent research that has analyzed the tissues of trigger points, and Figure 1.2.



**Figure 1.2** Hypothetical mechanism explaining tenderness of myofascial trigger points. (Reproduced with permission, from Mense S & Simons D *Muscle Pain*, Lippincott Williams & Wilkins, 2001.)

## OTHER INFLUENCES

Apart from overuse and trauma, it is known that high levels of emotional, and psychological distress, as well as background chemical changes (e.g. iron deficiency or hormonal imbalance), will also encourage sensitization (Simons et al 1999).

Many of these processes are discussed further in Chapters 2 and 3 (see also Box 1.2).

Ideally the background causes of trigger points and facilitation should be removed or reduced, but because this may take time, treatment to ease the pain and other symptoms is commonly called for, by deactivation of active trigger points (Fig. 1.3).

The choice of methods used to deactivate an active trigger point depends on the training and licensing status of the practitioner/therapist, and will be described in detail in Chapters 7, 8 and 9.

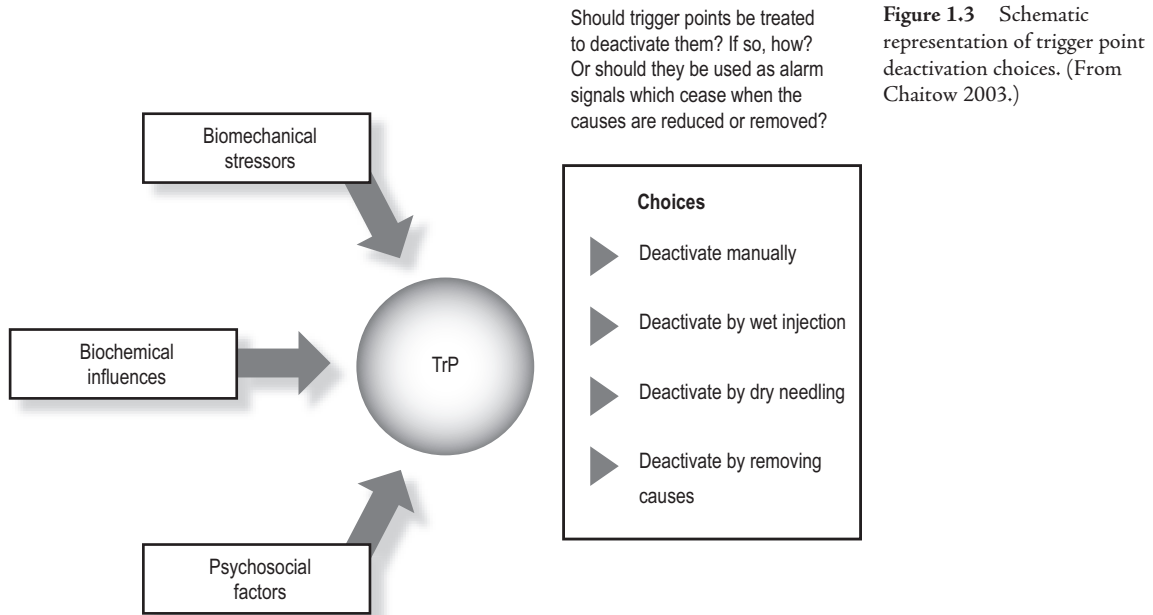
## STRESS REACTION

When an area is facilitated, whether 'segmentally' alongside the spine, or in muscle or fascia (trigger point), there will be increased neural activity (and therefore more pain) when either the area itself – or the body as a whole – is stressed, in any way.

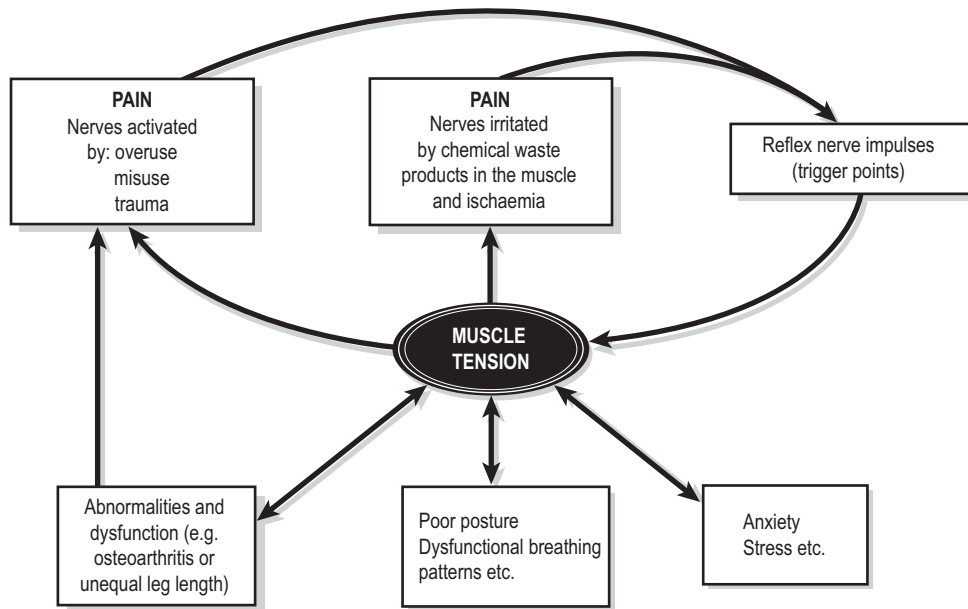
In this way a trigger point behaves like 'neurological lenses'. Korr (1986) used this metaphor because he compared the way a trigger point can 'focus' (or amplify) any general stress, through itself, in much the same way that a magnifying glass focuses sunlight to a tiny point (Fig. 1.4).

When there is physical, environmental or psychological stress, such as we all experience in our daily lives (deadlines, traffic jams, other people's

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**Figure 1.3** Schematic representation of trigger point deactivation choices. (From Chaitow 2003.)



**Figure 1.4** Pain-tension vicious cycle. (From Peters et al 2002.)

behavior, financial or domestic worries, exams, etc.) there will be increased neural activity (sympathetic responses) in the local areas (such as trigger points) that have become sensitized.

Trigger points can therefore be understood to be in a virtually permanent state of 'physiological alarm'.

This means that any methods that produce relaxation and calm, that reduce sympathetic arousal, are likely to result in less pain being sensed from the activity of trigger points.

This is supported by research that shows that relaxation massage – or anything else that has a calming effect – does precisely this, reducing pain deriving from trigger points (de las Peñas 2005). This will become clearer in Chapter 7, where treatment options are outlined.

A definition of stress, and the way it affects the body, is explained in Box 1.2.

### Box 1.2 Understanding stress and adaptation

Stress can be defined as anything that makes a demand on the body to adapt. Stress can also be seen as any physical or mental challenge that provokes a response in the body that enables a person to meet the challenge, or to flee from it.

The responses of the body will be different, depending on whether the adaptation demand (stress) is a single event, or a series of events that are either continuous or repetitive.

A single alarm reaction to a demand ('fight or flight') will produce an acute response, with increased heart rate, blood pressure, muscle tone, etc., as the body prepares for instant action – this is also known as *sympathetic arousal*.

If the same, or other, demands are ongoing or repetitive, the 'alarm' stage gives way to the stage of resistance, or adaptation. When this happens, although there seems to be better coping with the original stress, this is – according to Selye's research – at the expense of the ability to handle other stresses (Selye 1974).

As a person accommodates and adapts to any stressor, other stressors require lower thresholds to trigger alarm reactions.

Selye also showed that when there are a number of stressors at the same time this triggers an alarm reaction even though the individual stress factors on their own would not have had this effect. Take for example a person who is trying to multi-task, is overloaded both physically and emotionally, is already in pain, has not had enough sleep, and who is low in blood sugar because meals are being skipped; each 'stress factor' on its own could be coped with, but when they all exist together, a state of sympathetic arousal, anxiety and increased sensitivity would exist.

To use a different, chemical, example: if someone was exposed to one-third of a dose of histamine, together with one-third of a dose of exposure to extreme cold, plus one-third of a dose of formaldehyde, an alarm reaction would occur, equal to a full dose of any one of these stressors.

So it seems that as adaptation to life's stresses and stressors continues, thresholds drop so that even a slight stress factor is capable of producing a reaction – pain for example – from facilitated structures, whether these are paraspinal or myofascial.

We all adapt to repetitive activity. The letters SAID (specific adaptation to imposed demand) describe the changes that occur in the body in response to particular activities (Norris 2000).

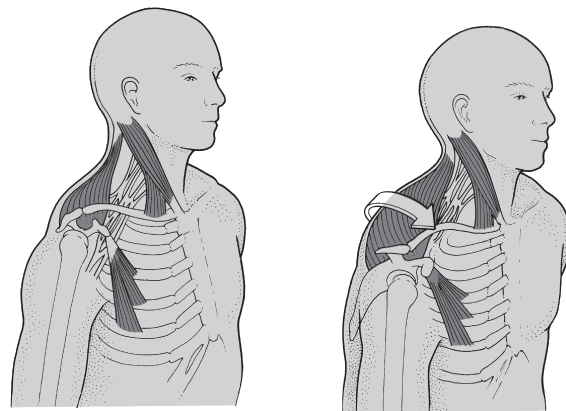
This process of adaptation applies to activities such as athletic or weight training, as well as to any regularly performed task or activity, such as playing an instrument, typing on a keyboard, using a work- or hobby-related tool, digging a garden, or any other prolonged or repetitive activity.

But our potential for adaptation is limited – by age, physical condition, previous trauma, nutritional status and many other factors.

After a period of adaptation that may last for many years (following the initial alarm reaction), when the limits of adaptation are reached, tissues break down.

This is known as the stage of collapse, or exhaustion, and is when major symptoms may appear (joint damage for example).

Like a piece of elastic that has reached its limits, particular tissues may just not be able to cope with whatever stresses they are being asked to handle. (Fig. 1.5)



**Figure 1.5** A progressive pattern of postural and biomechanical dysfunction develops, resulting in, and aggravated by, inappropriate breathing function. (From Chaitow 2001.)

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### Box 1.2 Understanding stress and adaptation – *cont'd*

#### A formula for recovery

When we are examining a person, or a part (shoulder, knee, etc.) it is worth considering the following questions:

- How well is the person or the part adapting to the demands being imposed?
- How much adaptive potential remains?
- How close to exhaustion is this shoulder?
- How near to adaptive exhaustion is this person?

Helping to stop or slow down degeneration, delaying adaptive exhaustion, involves one of two options:

- improve the ability of the person, or tissues, to handle the stress load, or
- reduce or eliminate the load.

### MORE ON THE PAIN PROCESS

Unfortunately pain is not always useful as a warning, and sometimes it does not stop on its own.

Chronic pain may sometimes be part of a process left over from a past event, such as surgery (scar tissues often have trigger points alongside – see Chapter 4), major trauma (whiplash, fracture, etc.), or serious pathology such as degenerative arthritis or cancer.

In such situations pain may be of little value as an alarm, and indeed in many chronic pain situations the continuous, or intermittent yet persistent, nature of the pain – whether it involves sensations that are aching, burning, searing, stabbing, etc. – creates additional problems.

The pain may lead to emotional or physical symptoms, interfering with movement and sleep, and generally preventing performance of the normal activities of life.

Myofascial trigger points are almost always a part of such chronic, widespread pain and dysfunction, and while deactivating them may not change the underlying serious condition, it can reduce pain levels, making life more tolerable (Wall & Melzack 1990).

### DECOMPENSATION

Grieve (1986) has clearly described a common sequence that relates to patients presenting with pain or restricted movement.

- The person may have suffered a major injury that has overwhelmed the tolerances of relatively healthy tissues (muscles, ligaments, joints).
- Or the individual will show signs of gradual decompensation, because of slow exhaustion of the tissue's adaptive potential, for example through overuse, with or without trauma.
- As this process of decompensation continues there will, over time, be other changes that can lead to exhaustion of the body's adaptive potential, with more pain and restriction as a result.

- Think of the example of someone with a simple problem such as a heel-spur, causing pain when standing on the affected leg.
- There will be a compensating way of standing and walking, with weight thrown onto the other side.
- Over time – and this can mean many years – excessive wear and tear on the other leg, possibly the hip, knee, low back, upper back or even neck, will start to produce symptoms of stiffness and pain.
- And there will be new compensations for these changes as well ... and in the end the problem in the heel may be the background cause of widespread pain throughout the body.

A similar pattern of compensation and decompensation could just as easily be the result of an unbalanced temporomandibular joint, or any other part of the body that calls for compensating use patterns.

Whether a patient's problem involves chronic headache, jaw and/or facial pain, neck, shoulder and/or arm discomfort or pain, or back and/or pelvic pain, aching limbs, pain in the chest or abdomen, there is a strong likelihood that at least some, and sometimes almost all, of the pain will be deriving from the presence of active myofascial trigger points, possibly resulting from decompensation (Wall & Melzack 1990) (Fig. 1.6).

### NOT JUST PAIN – FUNCTION AS WELL

Recent research has shown that trigger points that are not sufficiently sensitized to produce pain (such as latent trigger points – see Box 1.1 for an explanation) nevertheless interfere with normal muscle function (Lucas et al 2004).

It was shown that when there were latent trigger points (i.e. not producing any pain until pressed, and even then the pain was not a symptom the person recognized) in upper trapezius muscles (one of the commonest places for triggers, along with quadratus lumborum), there was a change in the way the other arm muscles behaved when the arm was raised.



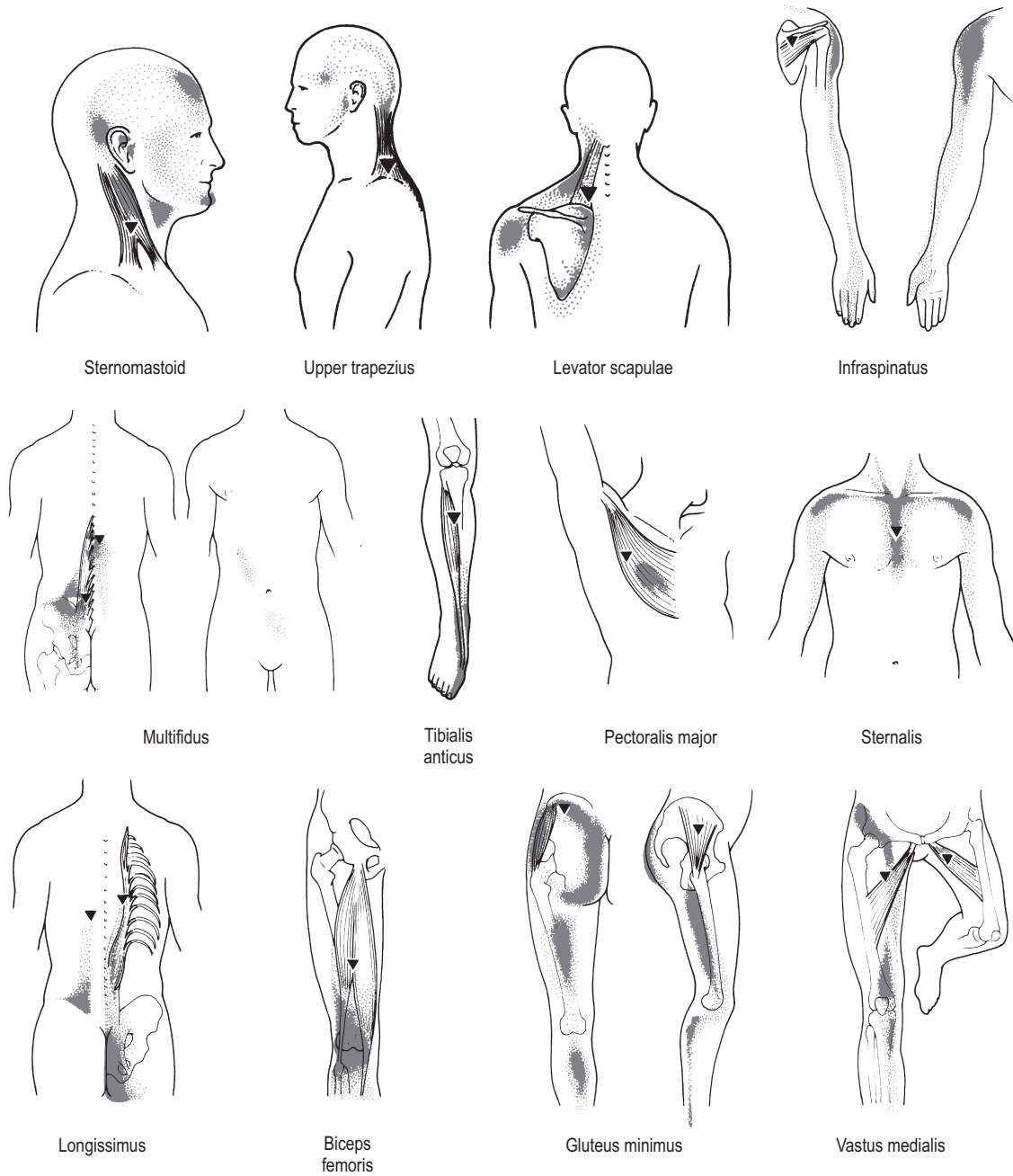


Figure 1.6 Some common trigger points and their target areas. (From Chaitow 2003.)

### CAN TRIGGER POINTS EVER BE USEFUL?

If the same sort of interference with the normal firing sequence of muscles occurred in, for example, the lower back muscles, this would significantly interfere with normal spinal stability.

Trigger points modify the tone of the muscles in which they are located, and when trigger points refer or radiate pain, or other symptoms, into target areas (referral zones – see Box 1.1), the tone (tension, stiffness) of the muscle in these zones also changes (it usually increases).

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If a person has genetically acquired laxity (looseness) of their ligaments they will be hypermobile and joints (such as the sacroiliac) will be relatively less stable than they should be, and overlying muscles will be obliged to increase activity to help maintain stability (Keer & Grahame 2003).

It is well known that hypermobile individuals are more prone to musculoskeletal problems such as back and sacroiliac pain and dysfunction (Bridges et al 1992).

Hypermobile people are also very prone to developing fibromyalgia, characterized by chronic body-wide pain symptoms (Gedalia et al 1993, Goldman 1991), and are also known to have an excessive number of active trigger points, compared with people who are not hypermobile (Simons et al 1999).

It seems reasonable to believe that, in a person who is hypermobile, trigger points, and the increased muscle tone they produce, may be functional, actually assisting in maintaining stability.

It is useful to consider that there may be times when deactivation of trigger points (as detailed in Chapters 7, 8 and 9) may not be in the best interests of the patient.

See Box 1.3 for an example of a 'useful' trigger point.

An alternative way of handling trigger points in someone who is hypermobile may be to use toning and conditioning exercises to improve the ability to stabilize whatever may be unstable, so reducing the need for trigger point activity.

### TRIGGER POINTS AS MONITORS OF PROGRESS

At times it is possible to remove the reason for trigger point activity.

An example of this comes from a New Zealand physical therapist, specializing in breathing retraining. Dinah Bradley (2002) reports that before teaching breathing exercises to people with an upper chest pattern, she looks for trigger points in their intercostal muscles (Fig. 1.8). Having located several, she tests how much pressure is needed to produce pain in these points (using a pressure gauge/algometer – see Chapter 5 for more about this useful little instrument).

She then teaches the patient a home-breathing rehabilitation regime, and when she next sees the patient, some weeks later, she retests the amount of pressure needed to 'fire' the trigger points.

If the trigger points now require much more pressure to produce pain than they did when she first evaluated them, she is reassured that the person is doing their home-work, and that these intercostal muscles are less stressed, and that the trigger points in them will therefore be calmer (see Chapter 5 for discussion of pressure and pain levels).

This 'functional' approach to using trigger points recognizes the 'alarm' function they represent. By taking away the reason for their overactivity, by virtually 'putting out the fire', the alarms have stopped ringing.

Unfortunately this scenario is not true for all (or even most) trigger points because causes are not always easy to identify, and therefore change.

But when trigger points are possibly useful, or are capable of being deactivated by improved function (through postural reeducation, better use of the body, better breathing patterns, etc.), the therapeutic choices should reflect this.

### OTHER SYMPTOMS THAN PAIN

Trigger points can be responsible for a wide variety of symptoms other than pain.

The major researchers into myofascial trigger point activity, Travell and Simons (Simons et al 1999, Travell & Simons 1992), have shown that trigger points interfere with normal secretions in the areas they influence. In this way skin changes, as well as, for example, digestive function can be altered by active or latent trigger point activity, and improved by their removal.

The influences of trigger points other than pain are listed in Box 1.4. See also Figures 1.9, 1.10, 1.11 and 1.12 in Box 1.4.

### WHAT WE STILL NEED TO EXPLORE

The coming chapters will contain:

- Chapter 2: The biomechanical, psychological and biochemical processes – large and small – that allow trigger points to develop (such as poor posture, unbalanced breathing patterns, anxiety, overuse and misuse of muscles and joints, ischemia – poor blood and oxygen supply to the tissues, unbalanced nutrition and hormonal status, etc.).
- Chapter 3: More details about different types of points – particularly central and attachment points, and why it is important to know the difference, so that the central ones are chosen for first attention.
- Chapter 4: Maps, which parts of the body are affected by particular trigger points.
- Chapter 5: Assessing pain levels.
- Chapter 6: The many (and best) ways of palpating for, and locating trigger points.
- Chapter 7: How to choose where to start when there are many painful and active triggers (and which to leave alone because they might be useful), and the various ways in which they can be manually deactivated, including cryotherapy (spray and stretch), or be made to vanish without treatment

because the causes have been removed. Plus advice on preventing trigger points from recurring.

- Chapter 8: Managing trigger points in the context of a massage session.
- Chapter 9: Other methods of trigger point deactivation – such as use of magnets, lasers,

ultrasound, thyroid hormone replacement, dry needling, analgesic injections and acupuncture. Some of these methods are used by licensed massage therapists (LMTs), but others require appropriate referral and licensure.

### Box 1.3 Potentially useful trigger points

Symptoms are the signposts of adaptation.

Sometimes symptoms represent an adaptation failure (tissues unable to handle the stress and strain that is being imposed on them).

And sometimes symptoms represent adaptation in action.

Take, for example, the healing process following injury that involves inflammation.

Inflammation is a vital process of adaptation to tissue damage, without which the tissues could not heal.

And as we have seen, pain, hypertonicity and/or spasm can at times be protective.

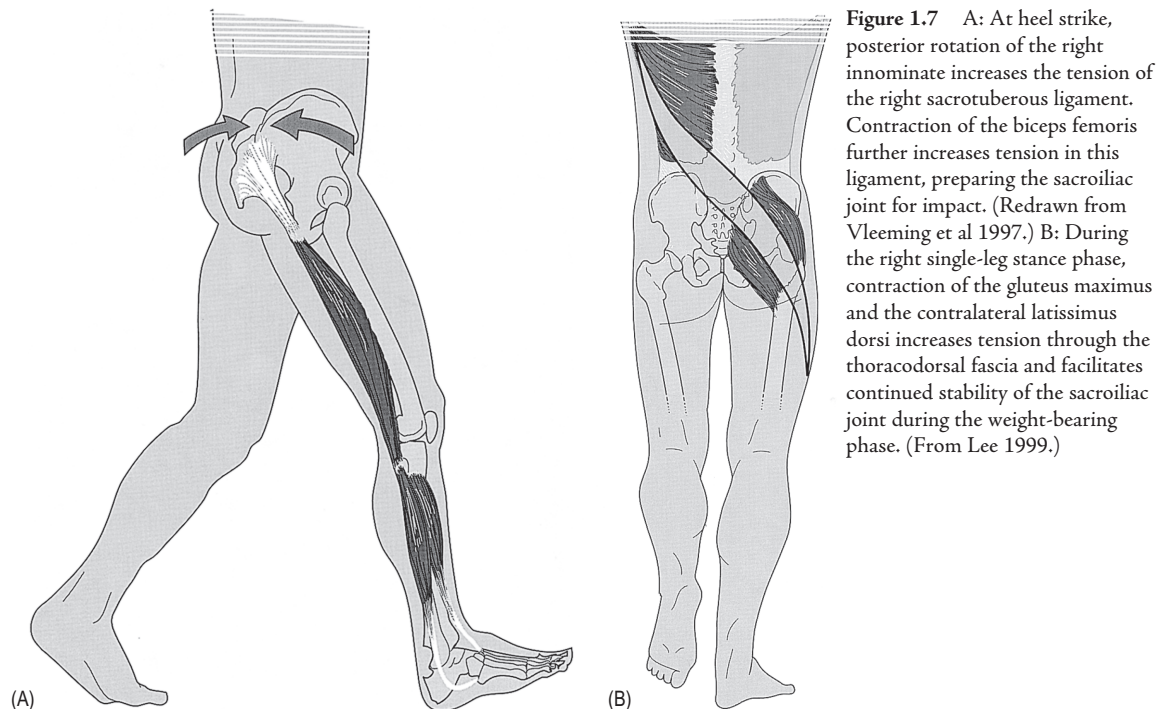
Trigger points produce increased tone in the muscles housing them, as well as in tissues to which they refer, possibly offering an energy-efficient way of protecting a vulnerable joint (because trigger points are controlled by chemical processes, not nerves – as will be described in Chapter 2.)

For example:

- a gluteus maximus or latissimus dorsi trigger point would create increased tone in that muscle group, placing additional load on the thoracodorsal fascia, helping to protect an unstable sacroiliac joint (see Fig. 1.7B), or
- a trigger point in the hamstrings would increase tension on the sacrotuberous ligament, helping to protect an unstable sacroiliac joint (see biceps femoris trigger point in Fig. 1.6).

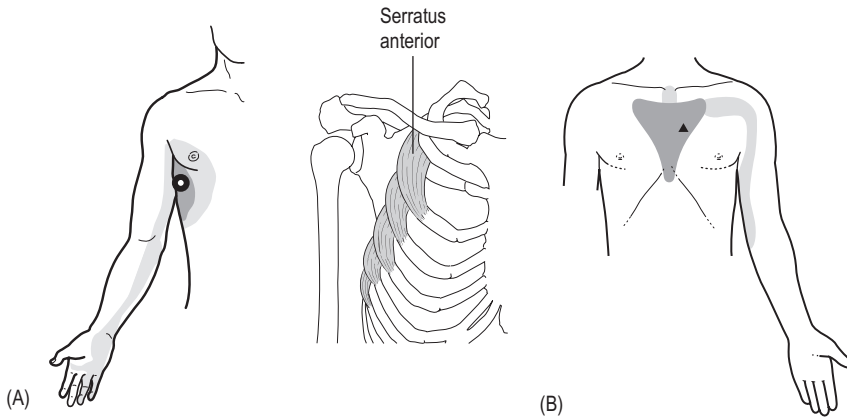
Not all trigger points are useful; many are residual evidence of past stresses, while newly developed triggers are often the result of the effects of currently active trigger points. See notes on satellite trigger points in Box 1.1 and the next chapters (Simons et al 1999).

It makes sense to attempt to remove the intensity of pain symptoms coming from a trigger point, but it makes more sense to focus on why the symptom exists, and to aim to remove or modify causes.



**Figure 1.7** A: At heel strike, posterior rotation of the right innominate increases the tension of the right sacrotuberous ligament. Contraction of the biceps femoris further increases tension in this ligament, preparing the sacroiliac joint for impact. (Redrawn from Vleeming et al 1997.) B: During the right single-leg stance phase, contraction of the gluteus maximus and the contralateral latissimus dorsi increases tension through the thoracodorsal fascia and facilitates continued stability of the sacroiliac joint during the weight-bearing phase. (From Lee 1999.)

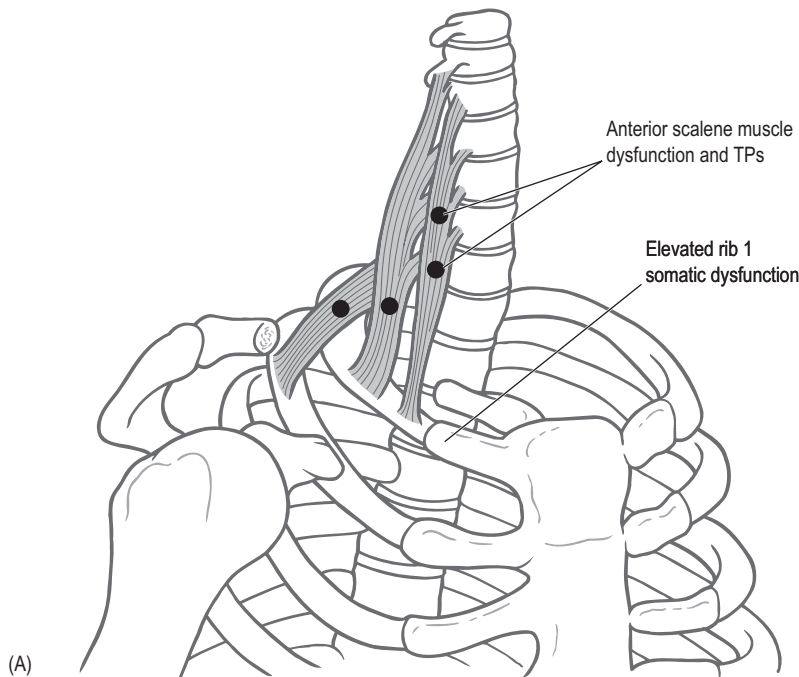
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**Figure 1.8** A: Serratus anterior trigger points include one which produces a 'short breath' condition as well as an often familiar interscapular pain. (From Chaitow & DeLany 2000). B: The pattern of pain referral from a trigger point (or points) in the sternalis muscle. (From Baldry 1993.)

**Box 1.4 Trigger point symptoms other than pain (Kuchera 1997, Kuchera & McPartland 1997, Simons et al 1999, Slocumb 1984, Travell & Simons 1992, Weiss 2001)**

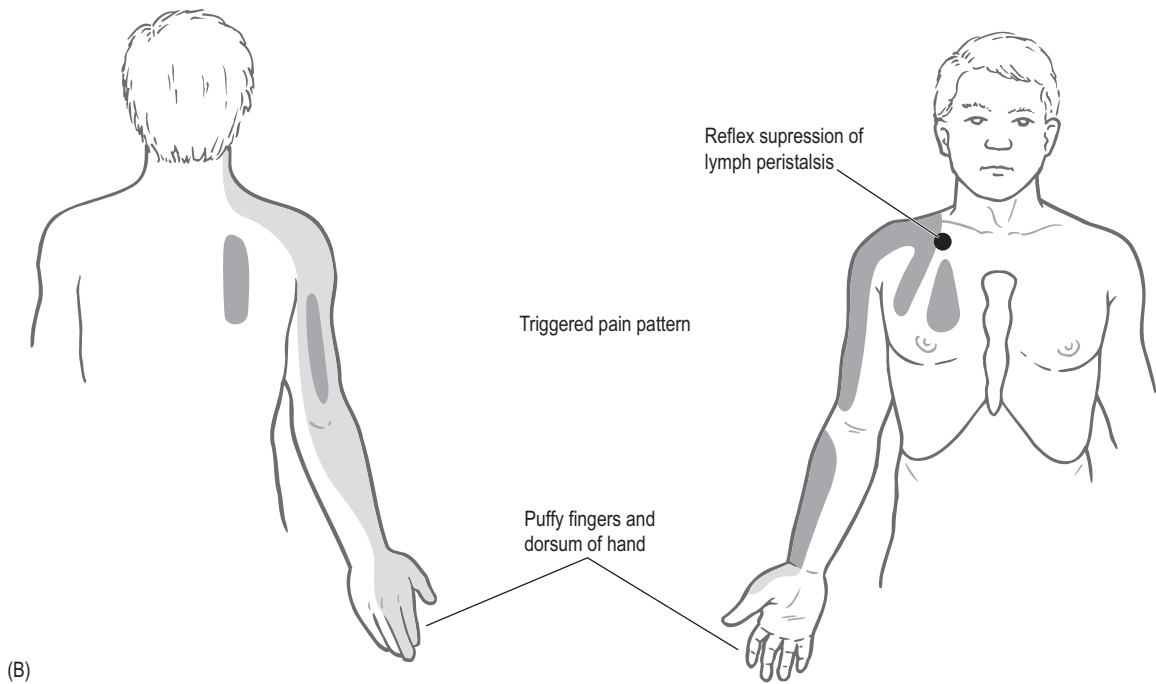
- Appendicitis-like pain, usually during premenstrual phase of cycle (trigger point may be located at lower right margin of rectus abdominis muscle)
- Cardiac arrhythmias (trigger points in pectoralis major in particular)
- Colic – simulating abdominal or gallbladder symptoms (trigger point is close to costal margin, slightly left of center)
- Conjunctival reddening (trigger points in cervical or facial muscles)
- Dermatographia (trigger points referring to area where dermatographia is noted)
- Diarrhea, dysmenorrhea (trigger points in lower abdominal quadrants, left or right, often in lower rectus abdominis)
- Diminished gastric motility (trigger points in abdominal musculature)
- Excessive maxillary sinus secretion (trigger points in facial muscles)



**Figure 1.9** A: Location and B: effects of scalene trigger points. (Reproduced with permission, from Ward R (ed) *Foundations of Osteopathic Medicine*, Lippincott Williams & Wilkins, 1997.)

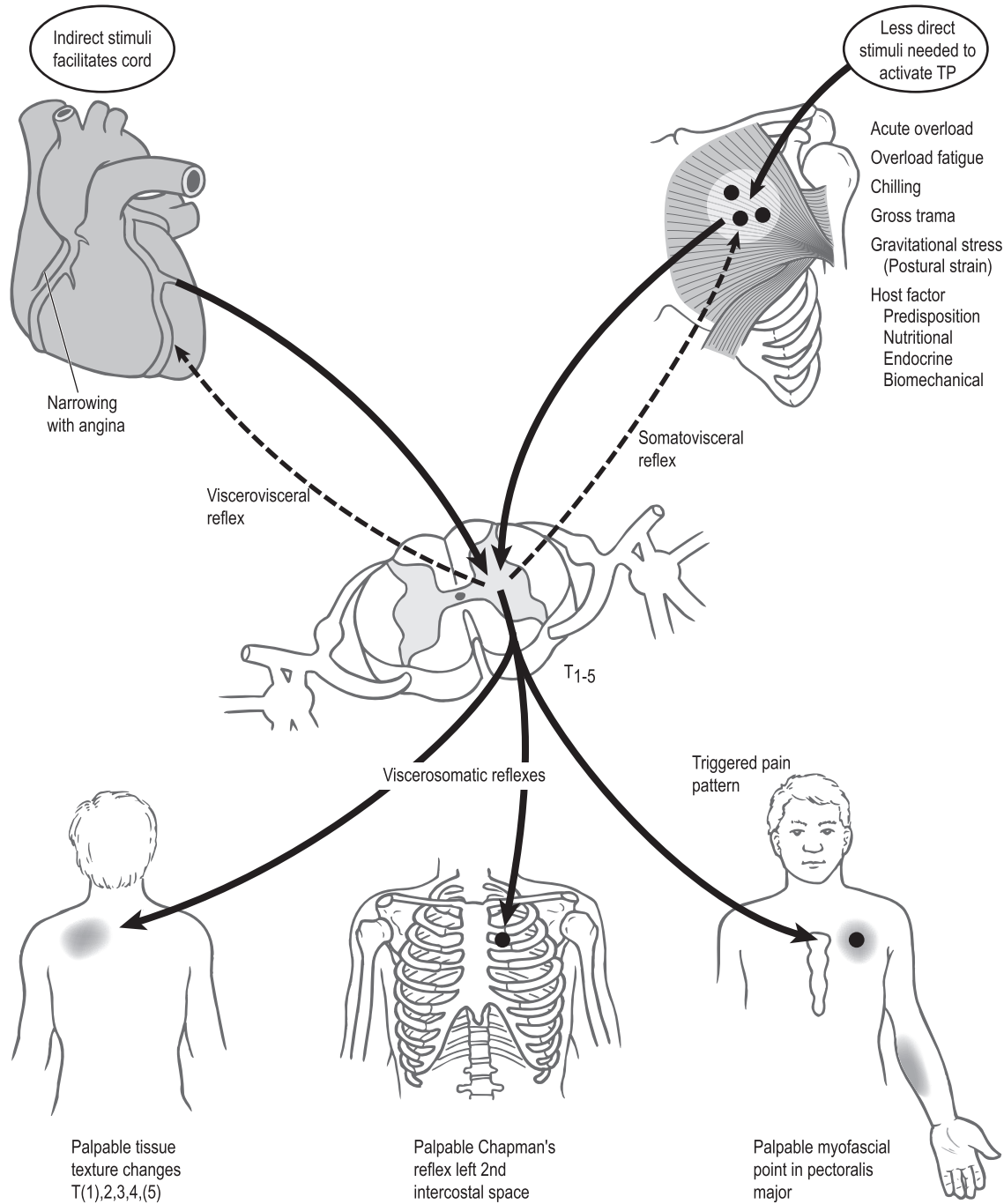
**Box 1.4 Trigger point symptoms other than pain (Kuchera 1997, Kuchera & McPartland 1997, Simons et al 1999, Slocumb 1984, Travell & Simons 1992, Weiss 2001) – cont'd**

- Gooseflesh (trigger points referring to area where gooseflesh is noted)
- Indigestion, nausea, 'heartburn' (trigger points in upper rectus abdominis – usually left side)
- Interstitial cystitis (trigger points located in lower abdomen, intrapelvic and inner thighs)
- Localized sweating (trigger points referring to area where sweating is noted)
- Proprioceptive disturbance, dizziness (trigger point is in cervical or facial muscles)
- Ptosis, excessive lacrimation (trigger points in facial muscles)
- Upper limb lymphatic stasis (trigger points in posterior axillary fold, and/or in lower aspect of anterior scalene)
- Urinary symptoms including spasm (trigger point immediately above symphysis pubis)
- Vasoconstriction and headache (trigger points lie in cervical or facial musculature)



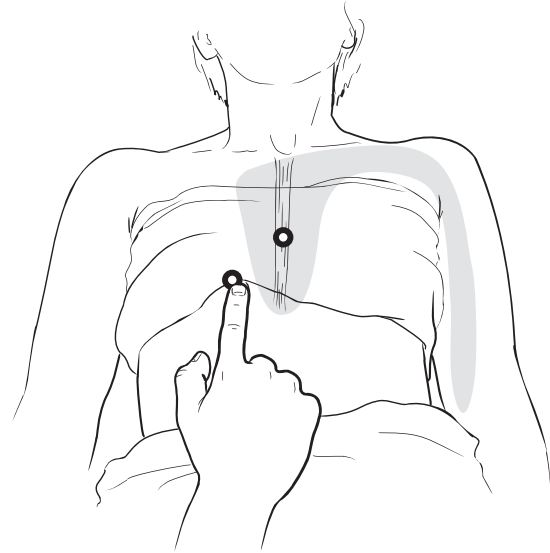
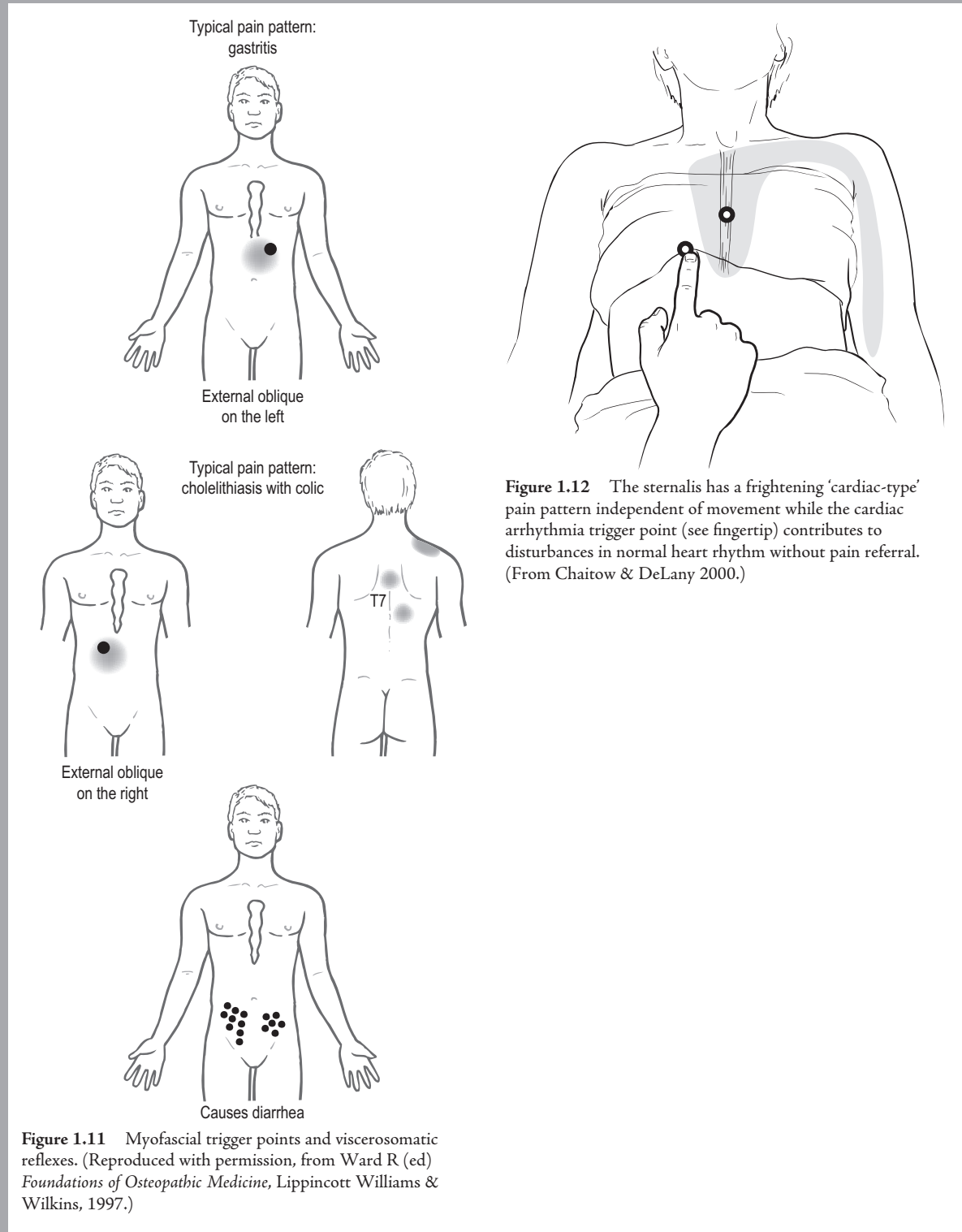
**Figure 1.9** Continued.

**Box 1.4 Trigger point symptoms other than pain (Kuchera 1997, Kuchera & McPartland 1997, Simons et al 1999, Slocumb 1984, Travell & Simons 1992, Weiss 2001) – cont'd**



**Figure 1.10** Spinal cord as organizer of disease processes. (Reproduced with permission, from Ward R (ed) *Foundations of Osteopathic Medicine*, Lippincott Williams & Wilkins, 1997.)

**Box 1.4 Trigger point symptoms other than pain (Kuchera 1997, Kuchera & McPartland 1997, Simons et al 1999, Slocumb 1984, Travell & Simons 1992, Weiss 2001) – cont'd**



**Figure 1.12** The sternalis has a frightening 'cardiac-type' pain pattern independent of movement while the cardiac arrhythmia trigger point (see fingertip) contributes to disturbances in normal heart rhythm without pain referral. (From Chaitow & DeLany 2000.)

**Figure 1.11** Myofascial trigger points and viscerosomatic reflexes. (Reproduced with permission, from Ward R (ed) *Foundations of Osteopathic Medicine*, Lippincott Williams & Wilkins, 1997.)

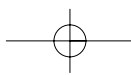
**CLINICAL NOTE****Key points from Chapter 1**

1. There are different types of trigger points, but the most clinically important is an active point that produces symptoms that the patient recognizes.
2. Trigger points can produce many other symptoms than pain.
3. Trigger points are commonly part of most chronic pain problems, and at times may be the main source of the pain.
4. Trigger points are areas of facilitation, commonly emerging from a background of adaptation, or failure of adaptation.
5. Deactivating such triggers may not correct underlying conditions but can make life more tolerable by reducing the pain burden.
6. At times, trigger points may be performing a useful stabilizing function (always consider this if the person – or joint – is hypermobile).
7. Facilitated areas, such as trigger points, are easily aggravated by any form of stress (biochemical, biomechanical, psychosocial, climatic, etc.) affecting the body as a whole, as well as by local stress.
8. Removing the causes of trigger point activity is the best 'treatment', but if this is not possible deactivation can usually be achieved using manual and complementary methods.

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