

# Chapter 1

## The 'triage'



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### INTRODUCTION

The term 'triage' derives from battlefield settings where wounded soldiers were divided (by the senior physician) into three categories: those with serious injuries who were likely to recover with appropriate attention, and who therefore received primary attention; those with minor wounds whose condition allowed for delay in their receiving treatment; and those whose injuries were so severe that recovery was unlikely and who therefore received only limited attention in the pressured environment of battle.

There is general agreement that low back pain falls into three broad categories, and it is the third on this list that this book will focus on.

Back pain can result from:

- 1 Serious spinal pathology (or non-spinal pathology that refers to the spine)
- 2 Nerve root pain (radicular pain)
- 3 Non-specific causes.

This chapter is devoted to an overview of non-specific back pain, the cause of well over 90% of cases (Deyo & Weinstein 2001).

In Chapter 2, there is a discussion of the main causes and characteristics of back pain that results from the specific causes that we will *not* be focusing on. This is because it is important that you have a basic understanding of the causes and symptoms associated with back pain where serious pathology or nerve root problems (such as a herniated disc) are the causes, even if you are not going to treat those conditions.

Additionally, Chapter 2 will have information regarding a range of health problems that produce symptoms that mimic, or masquerade as, back pain – the so-called *impostor* symptoms.

Once it is established that a person's back pain derives from non-pathological, non-specific, musculo-skeletal causes, it is helpful to establish just what degree of pain the patient is experiencing, and what areas are involved. Methods used to establish pain levels, and the questions that need answering regarding this, are discussed in Chapter 3.

## NON-SPECIFIC BACK PAIN

The type of back pain that we are considering in this chapter is the most common form, which commonly has no obvious cause, and usually has no obvious pathology connected to it.

This sort of back pain *is not* directly linked to conditions such as arthritis, a tumour, osteoporosis, ankylosing spondylitis, hypermobility, a fracture, inflammation, nerve compression or cord compression.

Although all of these conditions can cause pain in the back (acute or chronic), so can 'non-specific' factors.

- Often the patient who presents with 'common non-specific backache' is otherwise well. The symptoms usually vary with activity, and this suggests that biomechanical factors are the main aggravating features (Waddell 1998)
- In contrast to non-mechanical backache, where symptoms are often continuous and unremitting, non-specific forms are usually variable, are relieved by rest, and by particular positions and movements (such as stretching). It is therefore very important that you ask your patient specifically: 'Is your pain constant, or does it vary?' If the back pain varies you need to discover what circumstances seem to bring it on or aggravate it
- It is important to remember that 'uncomplicated' does not mean that the pain is a minor feature. The pain of uncomplicated backache may be extreme, often spreading to the buttocks and thighs
- Contributing causes, leading to non-specific back pain, may include poor posture, over-use, deconditioning (poor muscle tone, lack of exercise), chills, trigger point activity, and/or other factors, many of which the person with the back pain may be able to control or modify.

Many of these factors will be expanded upon in Chapter 4, which concentrates on the connection between how the body is used, how it is 'cared for', and back pain. Management of back pain will be seen – in that chapter and others – to have a great deal to do with self-management/self-care, with the therapist offering advice and treatment, but with the 'owner' of the back having primary responsibility for its rehabilitation and maintenance.

## Making sure there is a correct diagnosis

It is important for you to try to identify and understand what may be causing or aggravating your patient's back pain, so that you can offer appropriate advice as to how to improve the condition through self-directed management and rehabilitation strategies.

As will be outlined later in this chapter (and expanded upon in Chapter 2), there are numerous 'impostor' (or 'masquerader') symptoms that it is necessary to be aware of, because a patient's back pain may at times be the result of serious health problems.

If there is any doubt at all as to what is causing the back pain, a clear diagnosis should be obtained from an appropriately licensed practitioner (Grieve 1994). This does not mean that massage and manual treatment, together with appropriate exercise and movement, cannot help back pain that *is* linked to serious pathology, but the main focus of this book is not towards such conditions because, as a rule, the more serious causes of back pain require medical or specialist (e.g. osteopathic, chiropractic, physical therapy) management (Eisenberg et al 1998).

Our interest, in this book, is on the huge majority (97%) of back pain problems, that result from mechanical causes such as a strain, or an awkward movement, or being in a static stressful position for too long; or which develop when a combination of minor stresses occur together (Deyo & Weinstein 2001).

As for the other 3%, if any 'red' or 'yellow' flags emerge when you are taking the case history of the patient with back pain you should suggest a referral to a licensed practitioner whose scope of practice allows the making of an accurate diagnosis. These 'flags' are touched on later in the chapter, and are explained and discussed more fully in Chapter 2. In such cases, the patient should be told that once a diagnosis has been made, you will be more than happy to offer appropriate massage therapy to help ease the symptoms, and hopefully to facilitate recovery, but that for you to do so *before* a diagnosis is available would be inappropriate and unethical.

If you ensure a diagnosis in cases where the cause of the back pain is unknown, your ethical, legal and professional position will be reinforced.

## COST AND RANGE OF BACK PAIN

The human and economic cost of back pain is simply enormous:

- Lower-back (and neck) pain are the two largest causes of time off work (Andersson 1997)
- Back pain is the most frequent reason that causes people to consult with complementary or alternative therapists and practitioners (Grieve 1994)

- and back pain is the second most common reason for a visit to the MD (Deyo & Weinstein 2001)
- and back pain is the cause of excessive use of radiological imaging and surgery
- and back pain is also the most expensive work-related cause of disability (Grieve 1994)
- Four out of five people suffer back pain at least once (Bigos et al 1994), and 65 million adults are affected by back pain in the USA each year (Deyo & Weinstein 2001)
- Andersson (1997) reports that, in industrialized countries, 70% of people experience acute low back pain at least once, and that in any given year, between 15 and 45% will do so.

### **Just how costly is back pain?**

Luo et al (2004) estimate the cost to the US economy as being more than US\$90 billion annually, broken down as follows:

- US\$27.9bn in-patient care
- US\$23.6bn office visits
- US\$14.1bn prescription drugs
- US\$11.9bn outpatient services (occupational therapy, physical therapy, etc.)
- US\$2.7bn emergency room visits
- US\$10.5bn miscellaneous.

When the cost of social security payments, and loss of productivity, are also taken into account, Eisenberg (2004) goes far beyond these obvious costs, and suggests that the total cost of back pain to the US economy is in excess of US\$190 billion per year – accounting for around 1% of the gross national product of the USA.

### **MASSAGE AND BACK PAIN**

Back pain can be seen to be a major problem. It represents a burden for the patient, the family, and increasingly, for the economy of industrialized countries. Within that huge problem, massage, along with complementary soft tissue and joint treatment methods, have been shown to offer safe and effective care to assist in recovery and rehabilitation (Ernst 2000).

Cherkin et al (2003) in their research review have compared massage with manipulation and acupuncture in treating back pain, and have found massage to be safe, and to be superior in both effectiveness and cost-effectiveness to the other methods:

Initial studies have found massage to be effective for persistent back pain. Spinal manipulation has small clinical benefits that are equivalent to those of other commonly used therapies. The effectiveness of acupuncture remains unclear. All of these

treatments seem to be relatively safe. Preliminary evidence suggests that massage, but not acupuncture or spinal manipulation, may reduce the costs of care after an initial course of therapy.

### **WHAT ARE THE VARIOUS ELEMENTS THAT LEAD TO BACK PAIN?**

Back pain can have various underlying biomechanical causes, including injury to the muscles or ligaments in the back, compression of the nerves in the spine, and damage to the discs that cushion the vertebrae, or the facets of the spinal joints. Whatever the contributory factors, and immediate triggers, that lead to back pain, it is safe to say that the real 'cause' is almost always a failure of adaptation (Selye 1956). To understand adaptation, see Box 1.1.

Whether sprains and strains are acute, involving sudden trauma, or are the result of gradual 'wear and tear', these minor traumas involve a failure of the structures of the area to cope with the demands being imposed on them. Such failure often leads to tissue damage (microtrauma – or more serious trauma) inflammation, nerve irritation, and ultimately pain.

The causes of back pain can usually be shown to involve a variable set of ingredients because factors such as age, inherited features (take for example hypermobility or limbs of unequal length, etc.), general nutritional and fitness (aerobic) status, as well as the nature, degree, frequency and duration of the 'load' being dealt with/adapted to, all enter into the equation. It is logical to assume that a young, fit, balanced set of muscles and joints will almost always manage a lifting task better than an elderly, unfit, unbalanced set of muscles and joints (Paris 1997).

### **'CAUSES' OF NON-SPECIFIC BACK PAIN**

A number of different factors and features, all of which can contribute to or help maintain back pain are summarized below. The symptoms and effects of those activities that are within the influence of massage therapists will be expanded on in later chapters.

The most commonly reported 'causes' of low back pain are (Andersson 1997):

- Heavy physical work
- Bending
- Twisting
- Lifting
- Pulling and pushing
- Repetitive work patterns
- Static postures
- Vibrations.

### Box 1.1 Adaptation

Adaptation represents the story of the contest between the 'load' and the tissues handling the load.

Tissues adapt to the load imposed on them. Think of athletic or weight training as easy examples. To run the marathon, or perform the high jump, or any other specialized task or activity (gardening, working on a production line, painting ceilings, etc.) particular muscles and joints have repetitive demands imposed on them.

After an initial acute alarm phase of the local adaptation syndromes (LAS) or general adaptation syndromes (GAS), when stiffness and soreness may be experienced, the tissues start to adapt, and no longer react with stiffness and soreness. This is the adaptation phase of LAS (involving a local area, such as the shoulders or knees) or GAS (involving the whole person), which continues until the load (the stress demands) reduces, or the tissues themselves can no longer adapt (like a piece of tired

elastic), at which time the 'breakdown', or 'exhaustion' phase of LAS or GAS (Fig. 1.1) starts and symptoms of pain and dysfunction become apparent (Selye 1956).

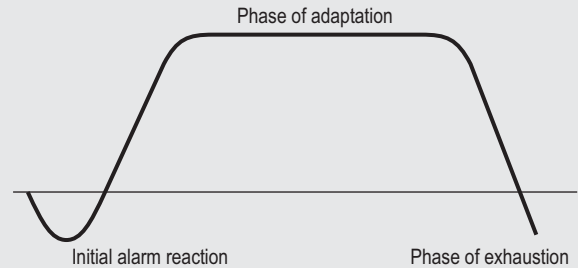


Figure 1.1 GAS/LAS.

Most of these causes, or triggers, of the onset of back pain involve poor use of the body. It is relatively easy to learn better ways of bending, lifting, moving and carrying, and appropriately illustrated educational hand-out notes should be supplied to patients, along with demonstrations of better use patterns (Fig. 1.2).

### The close environment and back pain

It is also useful to ask yourself what features of the person's close environment might be contributing to the back pain.

Ill-fitting and poorly designed shoes (platforms, stiletto heels, etc.; Fig. 1.3) as well as stress-inducing chairs, and cramped or distorting driving or working positions, are just some factors that might fit into the category of 'close environment' stressors, in any given case.

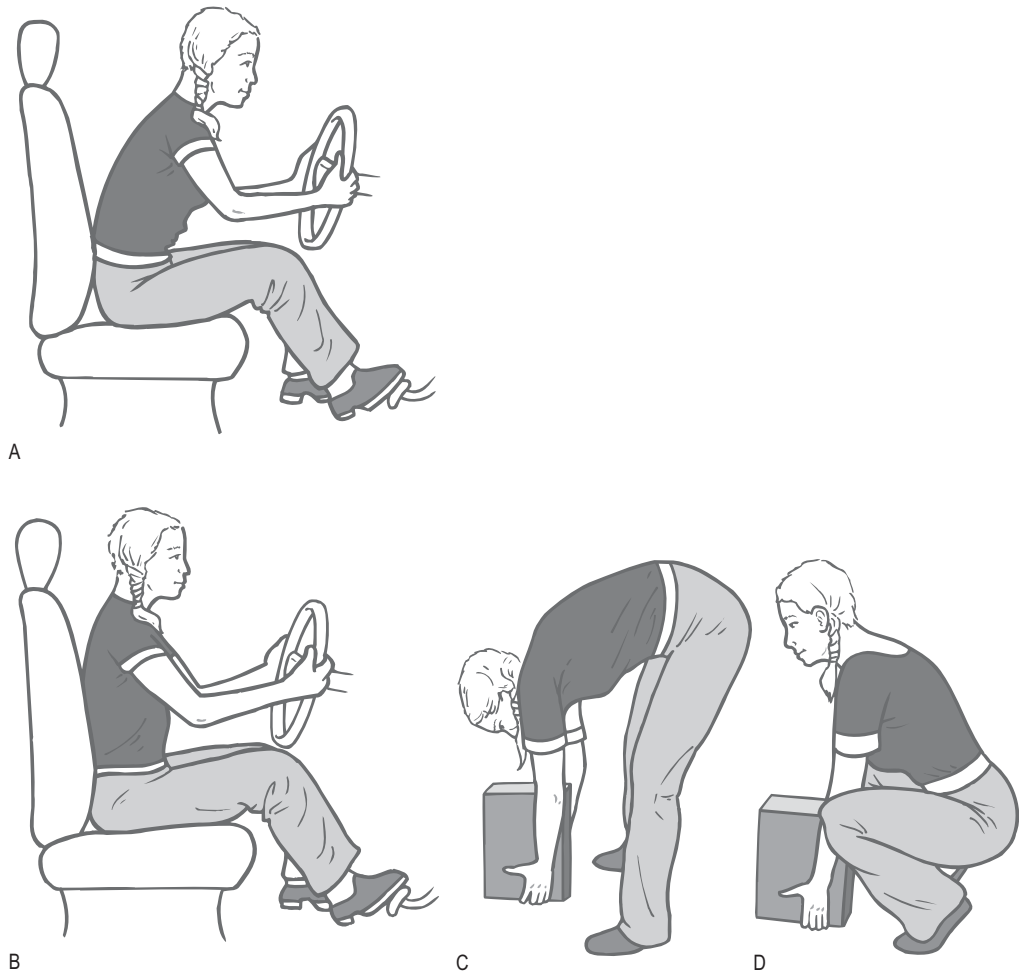
### Psychosocial contributions to back pain

The most common psychosocial risk factors contributing to back pain have been listed (Hoogendoorn et al 2000, Linton 2000) as being:

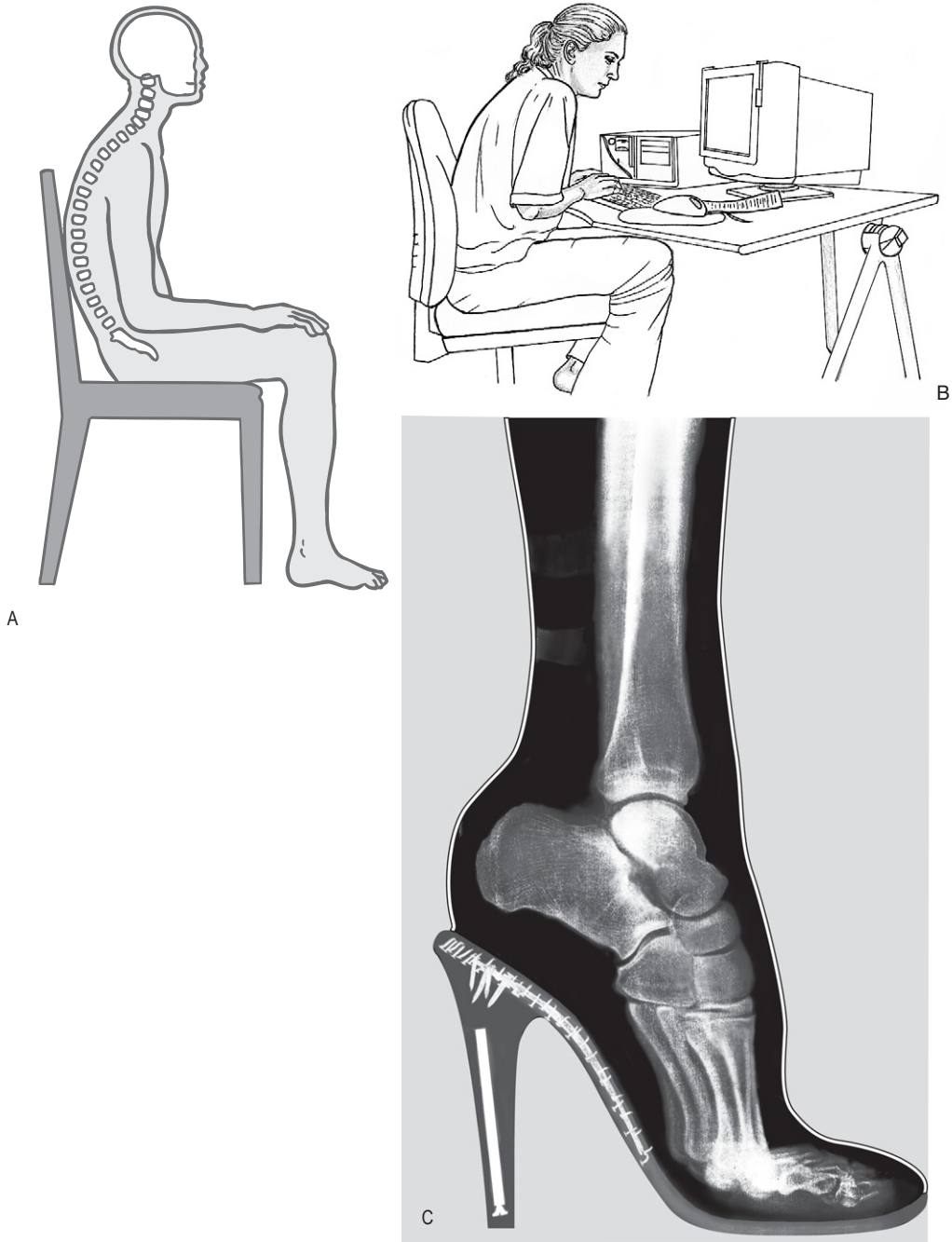
- Stress: feelings of being overwhelmed by the demands of life, time pressures, etc.

- Distress: a combination of feelings of helplessness and unhappiness
- Anxiety: an exaggerated level of concern and fear, possibly involving 'catastrophizing', where the future is seen as bleak, and almost always involving altered (usually 'upper chest') breathing patterns, that contribute to lowered pain threshold and altered muscle tone (Chaitow et al 2002, Nixon & Andrews 1996)
- Depression: a profound unhappiness and sense of existence being pointless
- Cognitive dysfunction: a misunderstanding and/or misinterpretation of facts
- Pain behavior: avoiding normal everyday activities that it is feared *might* aggravate the back pain problem
- Job dissatisfaction: blaming the job for the back problem, or simply unhappiness in the work situation
- Mental stress at work or in the home: inter-personal tensions, time (or other) pressures that make working and/or home environments unsatisfying or actively unpleasant.

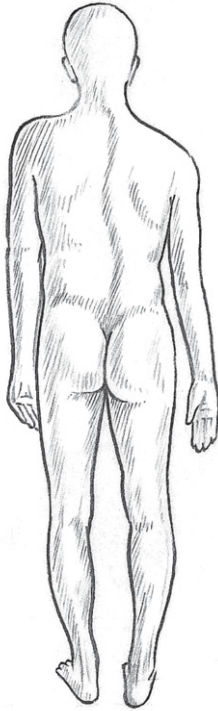
Remedies for many of these psychosocial factors are to be found through patient education, stress management, counseling and cognitive behavioral therapy (Moore et al 2000).



**Figure 1.2** Bad and better use patterns. Driving: (A) incorrect and (B) correct. Lifting: (C) incorrect and (D) correct. (From Chaitow and Fritz 2006.)



**Figure 1.3** (A) The right angled seated posture encourages slumping (After Cranz 2000) and, in order to see while slumped, the head rotates back in relation to the top vertebra, exerting a downward pressure on the spine. (B) (From Wilson 2001.) (C) Footwear has a significant impact on the foot, the extreme of which is illustrated in the high-heel shoe. Distortions of the foot will be reflected into the rest of the body with significant postural and structural implications. (From Chaitow and DeLany 2002.)



**Figure 1.4** Structural imbalance resulting in scoliotic pattern when standing occurs as a result of short (right) leg. An adequate heel lift placed under the short leg should result in straightening of the spine, unless the spine is rigidly fixed (after Travell & Simons 1992). (From Chaitow and DeLany 2002.)

### **In-born, congenital and acquired features and back pain**

A part of the back pain story may relate to stresses arising from features such as:

- one leg being shorter/longer than the other (Fig. 1.4)
- one side of the pelvis being smaller than the other
- the upper arms being unusually short causing the person to lean sideways when seated in an arm chair
- unusual foot structures (such as Morton's syndrome) (Frey 1994)
- unusual degrees of hypermobility (laxness) of the connective tissue (Keer & Grahame 2003)
- being extremely overweight.

## **THE BIOMECHANICS OF BACK PAIN: THE MOTOR SYSTEM**

To understand the background to a great deal of non-specific back pain, you need to be familiar with the system that offers stability to joints and facilitates their ability to be moved by attaching muscles: the motor system.

Panjabi (1992) has shown that the motor system is made up of three inter-related elements:

- 1 *The central nervous subsystem (control)*: the central nervous system and brain respond to proprioceptive input (messages that inform the brain about the status of the tissues being reported on: are the tissues tense? are they moving? if so how fast? is anything restricting them? etc.). Messages arrive from the tens of thousands of reporting stations throughout the body and, based on the information received, decisions are made (to move, change position, stand, walk, etc.). Instructions are given to the muscles to perform actions to increase or decrease tone, or to actively contract in order to create movement of a joint or limb, or area. Some actions are automatic (reflex) and some are a mixture of responses to proprioceptive input, and deliberate choices about activity (to stand up, sit down, walk, to scratch, etc.).
- 2 *The osteoligamentous subsystem (passive)*: this is the system that binds and supports the joints, offering stability to the movement and stabilizing the functions of joints. These activities are outside of voluntary control. If there is relative laxity (hypermobility, looseness) of structures such as the ligaments, function – such as movement – will be less efficiently and safely achieved. Some aspects of this subsystem are osseous, for example the form and shape of the bones of the pelvis that meet at the sacroiliac joint can be so configured as to offer a solid base on which the pelvis can work. However, the structures can be poorly matched, offering relatively poor 'form' closure, leading to an unstable joint (Lee 1999). This will be explained in Chapter 5, which looks at the pelvis and its contribution to back stability, or back problems.
- 3 *The muscle subsystem (active)*: the status and interrelationship between muscles that perform stabilizing (postural-type 1) tasks, and those that perform active (phasic-type 2) movement functions, decides how efficiently, and with what degree of fine-control, movement occurs.

Anything that interferes with any aspect of these three features of normal motor control, may contribute to dysfunction and pain (Lewit 1999). See Box 1.2 on the topic of postural and phasic muscles.

### Box 1.2 Postural and phasic muscles

There are basically two types of muscles in the body: those that have as their main task stabilization, and those that have as their main task movement (Engel 1986, Woo et al 1987).

These are known as:

- *Postural* (also known as Type I, or 'slow twitch red') and
- *Phasic* (also known as Type II, or 'fast twitch white') (Janda 1982).

It is not within the scope of this book to provide detailed physiological descriptions of the differences between these muscle types, but it is important to know that:

- All muscles contain both types of fiber (Type I and Type II) but that the predominance of one type over the other determines the nature of that particular muscle
- Postural muscles have very low stores of energy-supplying glycogen but carry high concentrations of myoglobin and mitochondria. These fibers fatigue slowly and are mainly involved in postural and stabilizing tasks, and when stressed (overused, underused, traumatized), tend to shorten over time
- Phasic muscles contract more rapidly than postural fibers, have variable but reduced resistance to fatigue, and when stressed (overused, underused, traumatized) tend to weaken, and sometimes to lengthen over time
- There are a variety of Type II fibers
- Evidence exists of the potential for adaptability of muscle fibers. For example, slow-twitch can convert to fast-twitch and vice versa, depending upon the patterns of use to which they are put, and the stresses they endure (Lin 1994). An example of this involves the scalene muscles which Lewit (1999) confirms can be classified as either a postural or a phasic muscle. If stressed (as in asthma), the scalenes will change from a phasic to become a postural muscle
- Trigger points can form in either type of muscles in response to local situations of stress.

#### Summary

*Postural muscles:* Those muscles that shorten in response to dysfunction (Fig. 1.5), which include:

- Trapezius (upper), sternocleidomastoid, levator scapulae and upper aspects of pectoralis major, in the upper trunk; and the flexors of the arms
- Quadratus lumborum, erector spinae, oblique abdominals and iliopsoas, in the lower trunk
- Tensor fascia lata, rectus femoris, biceps femoris, adductors (longus brevis and magnus) piriformis, hamstrings, semitendinosus, in the pelvic and lower extremity region.

*Phasic muscles:* Those muscles that weaken in response to dysfunction (i.e. are inhibited), which include:

- The paravertebral muscles (not erector spinae), scalenes (see above), the extensors of the upper extremity, the abdominal aspects of pectoralis major; middle and inferior aspects of trapezius; the rhomboids, serratus anterior, rectus abdominus; the internal and external obliques, gluteals, the peroneal muscles and the extensors of the arms.

A useful chart (below) can be used to chart changes (shortening) in the main postural muscles.

#### Postural muscle assessment sequence

NAME: \_\_\_\_\_

Key: E Equal (circle both if both are short)

L & R are circled if left or right are short

Spinal abbreviations – indicating areas of *flatness* during flexion, and therefore reduced ability to flex – suggesting shortened erector spinae:

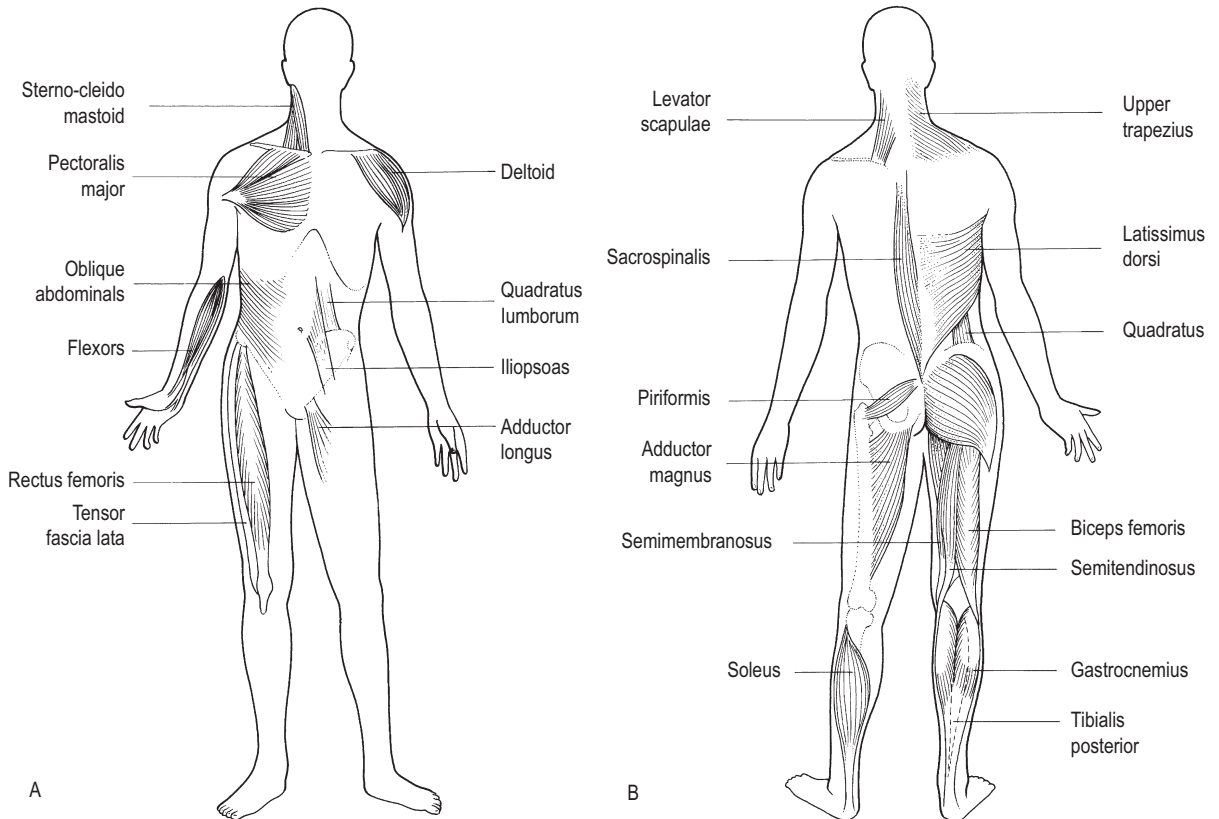
LL low lumbar LDJ lumbo-dorsal junction

LT low-thoracic MT mid-thoracic

UT upper thoracic

01	Gastrocnemius	E	L	R		
02	Soleus	E	L	R		
03	Medial hamstrings	E	L	R		
04	Short adductors	E	L	R		
05	Rectus femoris	E	L	R		
06	Psoas	E	L	R		
07	Hamstrings					
	a upper fires	E	L	R		
	b lower fires	E	L	R		
08	Tensor fascia lata	E	L	R		
09	Piriformis	E	L	R		
10	Quadratus lumborum	E	L	R		
11	Pectoralis major	E	L	R		
12	Latissimus dorsi	E	L	R		
13	Upper trapezius	E	L	R		
14	Scalenes	E	L	R		
15	Sternocleidomastoid	E	L	R		
16	Levator scapulae	E	L	R		
17	Infraspinatus	E	L	R		
18	Subscapularis	E	L	R		
19	Supraspinatus	E	L	R		
20	Flexors of the arm	E	L	R		
21	Spinal flattening					
	a seated legs straight	LL	LDJ	LT	MT	UT
	b seated legs flexed	LL	LDJ	LT	MT	UT
	c Cervical spine extensors short?	Yes	No			





**Figure 1.5** (A) The major postural muscles of the anterior aspect of the body. (B) The major postural muscles of the posterior aspect of the body.

## STABILITY

To continue with the sacroiliac example, if the muscles that attach to the pelvis are unbalanced, some being too tight, others too weak (lax), for whatever reason, 'force' closure of the SI joint may be compromised, with back and pelvic pain resulting. Force closure is explained in Chapter 5, along with 'form' closure issues.

The key muscles that determine the stability and functionality of the back and the pelvis are (Van Tulder et al 2004):

- Rectus abdominis
- External obliques
- Internal obliques
- Latissimus dorsi
- Pars lumborum
- Iliocostalis lumborum
- Longissimus thoracis
- Quadratus lumborum
- Multifidus
- Transversus abdominis

- Psoas
- Piriformis
- Gluteus maximus and medius.

## ASSESSING FOR MUSCLE STRENGTH, STAMINA, LENGTH, COORDINATION AND TRIGGER POINTS

Ideally, depending on the region affected by, or contributing to the patient's reported back pain, it is helpful to know the current status of the associated muscles:

- Do the patient's phasic (Type 2) muscles have adequate strength to perform their movement tasks? This can be tested by using 'strength tests' and where appropriate exercise to facilitate strength can be advised (see Ch. 3)
- Do the patient's postural (Type 1) muscles have adequate stamina to perform their stabilizing tasks? Simple tests can help identify muscles that need to be trained to regain their stamina (see Ch. 3)

- Have the patient's Type 1 muscles shortened (that is, is there any loss of range of motion)? Testing for length (shortness or over-lengthened) can be performed to identify those in need of appropriate treatment (see Ch. 3)
- Is there good coordination between those muscles that cooperate and support each other (synergists) in particular movements? Testing movements (such as hip abduction) to see whether muscle firing sequences are coordinated are described in Chapter 4
- Are there active or latent trigger points in any of the key muscles relating to the painful area? Palpation and treatment methods are described throughout the rest of the book
- Does stretching of any of the local muscles cause discomfort or pain? If so, this may indicate the presence of active trigger points in the muscle
- Are local reflexes normal? Testing reflexes helps establish whether nerve function is over- or under-active (see Ch. 3).

In Chapters 4, 5, 6 and 7 we will look at massage and other manual therapy methods that will allow you to palpate, assess and treat dysfunctional aspects of these muscles.

### SOME OF THE MANY CONTRIBUTORY FEATURES OF NON-SPECIFIC BACK PAIN

As will become clear, when we have looked at the various parts of this complicated picture, there are numerous features and factors that can interfere with the ability of muscles to perform their support and movement tasks (motor control), resulting in back pain, including:

- trigger point activity (Simons et al 1999)
- deconditioning/disuse (the opposite of being aerobically conditioned) (Nixon & Andrews 1996)
- disturbed balance (Winters & Crago 2000)
- disturbed information gathering (proprioceptive input, including visual and auditory signals)
- hypermobility (Muller et al 2003)
- hyperventilation (Lum 1987)
- anxiety and other emotional states (Vlaeyen & Crombez 1999)
- poor nutrition (Brostoff 1992)
- inflammation (Handwerker & Reeh 1991)
- endocrine disturbances (such as underactive thyroid) (Lowe & Honeyman-Lowe 1998)
- poor posture (physiological 'misuse') (Lewit 1999)
- overuse and trauma (abuse).

McGill (2004) summarizes this as follows: 'The muscular and motor system must satisfy the requirements to sustain postures, create movements, brace against sudden motion or unexpected forces, build pressure, and assist challenged breathing, all the while ensuring sufficient stability'. The most important of these potential contributory factors will be discussed in Chapter 4.

### CAUTIONS: RED AND YELLOW FLAGS

Red flags are signs that may be present, alongside acute back pain, that suggest that possibly serious factors – often pathological – are operating. These are described in more detail in Chapter 2.

Unlike the possibly pathological signs that the red flags represent, yellow flags are described as suggesting psychosocial factors that 'increase the risk of developing, or perpetuating chronic pain and long-term disability. These are also more fully explained in Chapter 2 (RCGP 1999, Van Tulder et al 2004).

Recognizing yellow flag signs should alert you to the need for appropriate counseling or psychotherapy, or at the very least what is known as cognitive behavior therapy (see Box 1.3).

### Avoid bed rest unless essential

Once serious pathology has been ruled out, various modalities may help in treating back pain, including massage, deactivation of local trigger points (that can be responsible for much neck and back pain), manipulation, stretching, ultrasound, hydrotherapy and exercise. But whatever else is done, in most cases of back pain, there is a great deal of evidence that it is important *not* to take to bed (unless it is absolutely necessary, as in some acute disc herniation situations).

A review of many studies concluded that bed rest:

- has no positive effect for back pain
- may have slightly harmful effects (Hagen et al 2000).

### Improved habits of use

In the long term, learning new ways of standing, walking, sitting and working can be very important in preventing repeated episodes of back and neck problems. These issues will be discussed further in Chapters 8 and 9 (Hides et al 2001). Sometimes quite simple changes can reduce the chance of recurrence:

### Box 1.3 Cognitive behavioral therapy

Modern pain management programs commonly use cognitive behavioral therapy (CBT) to reverse, or change, 'illness behavior'.

If an activity is painful, stopping that activity may relieve the pain in the short term but this may condition the person to avoidance of pain by doing less and less, leading to a belief that pain is an indication of increased harm. This leads to deconditioning, and usually does little to improve the pain problem.

If the person with back pain is observed by a family member, or friend, to be having difficulty doing something, that person might perform the task instead. This can 'teach' the person in pain to avoid particular activities, because it becomes preferable to let someone else perform the task.

These examples of changed behavior in response to pain are known as *operant conditioning* and CBT methods are designed to reverse these negative behavior patterns (Wall & Melzack 1989).

The message that 'hurt does not necessarily mean harm' is one of the important lessons the person in pain needs to learn. To achieve this, CBT methods (Bradley 1996, Turk et al 1983) focus on:

- *Education*: learning about the painful condition. What it is and what it is not
- *Skills training*: learning to use the body more efficiently and less stressfully
- *Skills rehearsal and feedback*: learning to become familiar with and to apply these new skills

- *Generalization of skills taught to use in everyday situations, and in novel situations*: learning how to use new skills in a variety of settings, some unexpected.

The objectives of interdisciplinary pain management and CBT are to:

- Assist patients to modify their belief that their problems are unmanageable and beyond their control
- Inform patients about their condition
- Assist patients to move from a passive to an active role in the management of their condition
- Enable patients to become active problem-solvers to help them cope with their pain through the development of effective ways of responding to pain, emotion and the environment
- Help patients to monitor thought, emotions and behaviors, and identify how these are influenced by internal and external events
- Give patients a feeling of competence in the execution of positive strategies in the management of their condition
- Help patients to develop a positive attitude to exercise and personal health management
- Help patients to develop a program of paced activity to reduce the effects of physical deconditioning
- Assist patients to develop coping strategies that can be developed, once contact with the pain management team, or healthcare provider, has ended.

- Simply wearing cushioned insoles can reduce stress on spinal tissues, reducing the chances of back pain (Paris 1997)
- Additionally, it is known that one of the most vulnerable times for the low back is early morning, soon after getting up from the bed, particularly when bending forward (putting on socks, for example) (Liebenson 2000, Snook et al 1998).

Avoidance of such 'high risk' activities, early in the morning, or after sitting for any length of time, is helpful in both injury, and re-injury, prevention. Research has shown that avoiding early morning bending helps recovery from acute low back pain (Snook et al 2002).

## TREATMENT

The fact is that most backaches recover in between 3 and 6 weeks, with or without treatment, although there is evidence that massage and manipulation (such as is used in chiropractic and osteopathy) help the period of recovery to be more comfortable (Meade et al 1995).

In both the short and the long term, whether manipulation is more effective than exercise, and/or re-education, in helping normalize back pain remains controversial, because many research studies seem to contradict each other (Blomberg et al 1992, Triano et al 1995).

A 1997 national survey showed that, apart from visiting a mainstream physician, massage was among

the most popular complementary treatments for back pain, alongside acupuncture, herbal remedies and spinal manipulation (Eisenberg et al 1998). This research found that 48% of adults with low back pain used at least one complementary therapy.

The most commonly used complementary modalities were:

- chiropractic
- massage therapy
- acupuncture
- mind–body techniques.

### How successful are these methods?

If adaptation (see Box 1.1) is the primary cause of back and neck pain, then whatever treatment is offered should achieve one of three things:

- 1 removal or reduction in the stress load to which the local tissues (or the body as a whole) are adapting
- 2 improvement in the way(s) the local tissues (or the body as whole) are coping, adapting
- 3 symptomatic treatment to make the recovery period more comfortable, without adding to the adaptive load.

Sometimes all three elements can be achieved, sometimes only one.

Since healing and recovery is a self-generated function (cuts heal, broken bones mend, etc.), the important element in any treatment choice is that it should be safe, should not add to the load, and should hopefully help recovery to be more rapidly achieved, and if not, at least more comfortably.

Massage seems well able to offer a number of these features, with education and rehabilitation exercises doing the rest in most cases.

### Massage

#### *What research has shown*

It is important to know that most acute back problems are self-limiting. Around 90% of people with an acute back problem will be better within 6 weeks, whatever treatment they receive (unless it is a form of treatment that makes things worse!).

However, between 2 and 7% of people with an acute back pain problem will develop chronic back pain, and it is this category that is most worrying because around 80% of work absenteeism is the result of chronic back pain (Andersson 1997).

Back pain is often associated with a complicated dysfunction of the paraspinal and other back muscles (Cooper 1993). It is possible that in many cases, massaging these could help improve or normalize muscular function, and research (Cherkin et al 2001) suggests

this is so. Professor Edzard Ernst (1999) reports that, ‘On the European continent, massage has been a routine form of therapy for acute and chronic LBP for many decades’ (Westhof & Ernst 1992). A recent survey from Vienna shows that no less than 87% of back pain patients received massage as one form of treatment (Ernst & Fialka 1994). Classical Swedish muscle massage has a long history (Westhof & Ernst 1992) and is associated with various effects that are potentially beneficial in the symptomatic treatment of neck and back pain:

- Massage relaxes the mind as well as the musculature and we have seen (‘yellow flags’) that in many instances of chronic back pain, emotion and stress are possible key features
- Massage increases the pain threshold, possibly through endorphin release (Ernst & Fialka 1994)
- It can also enhance local blood flow and this could increase the clearance of local biochemical substances that increase pain (Ernst & Fialka 1994).

These known beneficial effects of massage do not however *prove* that massage is helpful in treatment of back pain, but fortunately there are studies that do suggest this (Ernst 1994, Triano et al 1995, Wiesinger et al 1997).

Unfortunately, many research reviews entirely ignore massage as a meaningful therapeutic option (Deyo 1983, Frank 1993, Frymoyer 1988, Nachemson 1985) and some physiotherapy texts do not mention it at all (Frost & Moffett 1992).

#### *Proof of the value of massage in treatment of low back pain*

Much research has proved the value of massage in the treatment of low back pain (see, e.g. Bronfort et al 2004, Cherkin et al 2003, Ernst 1999). Cherkin et al (2003) pointed out that: ‘Few treatments for back pain are supported by strong scientific evidence. Conventional treatments, although widely used, have had limited success. Dissatisfied patients have, therefore, turned to complementary and alternative medical therapies and providers for care for back pain’.

- 1 Cherkin et al (2003) conducted a summary of all good research on the subject since 1995, in which different methods were compared in treatment of back and/or neck pain. They found 20 research studies that were of a standard to include in their review, however only three evaluated the benefits of massage. The finding of these studies was that ‘massage therapy is both safe and effective for subacute and chronic back pain’. They also found that there was evidence that spinal manipulation produced small clinical benefits that are equivalent

to those of other commonly used therapies, but that the effectiveness of acupuncture remains unclear for these problems. Importantly, they found that there is evidence that massage, but not acupuncture or spinal manipulation, may reduce the costs of care after an initial course of therapy in treatment of back pain.

- 2 In a straight comparison of massage and acupuncture in treating back pain, Frey (1994) found that those receiving massage used the least medications and that: 'Therapeutic massage was effective for persistent low back pain, apparently providing long-lasting benefits. Traditional Chinese Medical acupuncture was relatively ineffective. Massage might be an effective alternative to conventional medical care for persistent back pain'.
- 3 G uthlin and Walach (2000) conducted a study of patients with 'non-inflammatory rheumatic pain' (not just back pain) who received either 10 sessions of classical massage or usual medical care for 5 weeks. By the end of this period, both groups had improved similarly, but at the 3-month follow-up, more pain relief had occurred in the massage group.
- 4 Another review (Furlan et al 2000) of research compared massage with de-tuned laser therapy as the placebo, and with various other physical treatments such as acupuncture or spinal manipulation. The results showed that massage is superior to placebo, relaxation treatment, acupuncture, or self-care education, but that it is inferior to manipulation, shiatsu, or transcutaneous electrical stimulation; and no different from treatment with corsets or exercise in the care of back pain. The authors concluded that massage 'might' be

beneficial for subacute and chronic non-specific low back pain.

- 5 Researchers at the Touch Research Institute, Miami School of Medicine, evaluated the benefits of massage when treating low back pain (Hernandez-Reif et al 2001). They summarized the research outcome as follows: 'Adults with low back pain, with a duration of at least 6 months received two 30-min massage, or relaxation therapy, sessions per week for 5 weeks. Participants receiving massage therapy reported experiencing less pain, depression and anxiety and their sleep improved. They also showed improved trunk flexion performance'.

Thus the evidence from these reviews and studies proves that when massage is compared with other treatment methods such as acupuncture, manipulation, relaxation and ultrasound:

- Massage is at least as helpful in treating back pain as other modalities
- Massage reduces use and therefore costs of medication when treating back pain
- Massage as a treatment of back and neck pain is safe.

## CONCLUSION

By avoiding the dangers of inappropriate treatment of red and yellow flag patients, and by adding to the undoubted benefits of massage a number of essential rehabilitation features such as core stability and balance training, as well as potentially useful soft tissue manipulation methods (such as trigger point deactivation, muscle energy, positional release, and myofascial release techniques), as described in later chapters, the results should be even better.

## KEY POINTS

- Back pain can be associated with neurological or pathological causes, but can also (the vast majority) be 'non-specific'
- A failure to adapt to biomechanical (and/or psychological) adaptive demands seems to lie behind most non-specific back and neck pain problems
- Most back pain gets better with or without treatment, but appropriate treatment can speed the process, and add to comfort during recovery
- Massage can potentially be of great value in treating all forms of back and neck pain, but it is most valuable in treating non-specific forms
- Red and yellow flags should be looked for to alert you to referral for a diagnosis if you are not absolutely sure that a patient's back pain is 'non-specific'
- Faulty motor control is a key cause of back pain
- Faulty motor control can derive from overuse, misuse, abuse and disuse
- Faulty motor control can derive from the influence of myofascial trigger points
- Restoration of motor control commonly requires exercise and/or postural, respiratory and/or balance rehabilitation
- Bed-rest is almost never of value for non-specific back pain
- 'Pain behavior' is a very real danger and should be avoided ('hurt does not necessarily mean harm')
- There are ideal care-sequences that should be incorporated wherever possible, in order to ensure that there are no gaps in the care offered to patients.

## References

- Andersson G B J 1997 The epidemiology of spinal disorders. In: Frymoyer J W (ed.) *The adult spine: principles and practice*, 2nd edn. Raven Press, New York, p 93–141
- Bigos S, Bowyer O, Braen G et al 1994 Acute low back problems in adults. Guideline No. 14, publication No. 95-0643. Public Health Service, US Department of Health and Human Services, Rockville
- Blomberg S, Svardsudd K, Mildenberger F 1992 Controlled multicenter trial of manual therapy in low back pain: initial status, sick leave and pain score during follow up. *Orthopaedic Medicine* 16:1
- Bradley L A 1996 Cognitive therapy for chronic pain. In: Gatchel R J, Turk D C (eds) *Psychological approaches to pain management*. Guildford Press, New York, p 131–147
- Bronfort G, Haas M, Evan R 2004 Efficacy of spinal manipulation and mobilization for low back pain and neck pain: a systematic review and best evidence synthesis. *The Spine Journal* 4:335–356
- Brostoff J 1992 *Complete guide to food allergy*. Bloomsbury, London
- Chaitow L 2001 *Muscle energy techniques*, 2nd edn. Churchill Livingstone, Edinburgh
- Chaitow L, DeLany J 2002 *Clinical applications of neuromuscular technique*, Volume 2. Churchill Livingstone, Edinburgh
- Chaitow L, Fritz S 2006 *A massage therapist's guide to understanding, locating and treating myofascial trigger points*. Churchill Livingstone, Edinburgh
- Chaitow L, Bradley D, Gilbert C 2002 *Multidisciplinary approaches to breathing pattern disorders*. Churchill Livingstone, Edinburgh
- Cherkin D, Eisenberg D, Sherman K et al 2001 Randomized trial comparing traditional Chinese medical acupuncture, therapeutic massage, and self-care education for chronic low back pain. *Archives of Internal Medicine* 161:1088
- Cherkin D, Sherman K, Deyo R et al 2003 A review of the evidence for the effectiveness, safety, and cost of acupuncture, massage therapy, and spinal manipulation for back pain. *Annals of Internal Medicine* 138:898–906
- Cooper R 1993 Understanding paraspinal muscle dysfunction in low back pain a way forward? *Annals of Rheumatic Disease* 52:413–415
- Cranz G 2000 The Alexander Technique in the world of design: posture and the common chair: Part 1: the chair as health hazard. *Journal of Bodywork and Movement Therapies* 4(2):90–98
- Deyo R 1983 Conservative therapy for low back pain distinguishing useful from useless therapy. *Journal of the American Medical Association* 250:1057–1062
- Deyo R, Weinstein J 2001 Low back pain. *New England Journal of Medicine* 344:363–370
- Eisenberg D 2004 Presentation at the International Symposium on the Science of Touch, May 2004, Montreal, Canada
- Eisenberg D, David R, Ettner S et al 1998 Trends in alternative medicine use in the United States; 1990–1997. *Journal of the American Medical Association* 280:1569–1575
- Engel A 1986 *Skeletal muscle types in myology*. McGraw-Hill, New York
- Ernst E 1994 *Mechanotherapie*. *WMW* 20:504–508
- Ernst E 1999 Massage therapy for low back pain: a systematic review. *Journal of Pain and Symptom Management* 17:65–69
- Ernst E 2000 Complementary and alternative medicine in rheumatology. *Baillière's Best Practice and Research in Clinical Rheumatology* 14:731–749
- Ernst E, Fialka V 1994 The clinical effectiveness of massage therapy – a critical review. *Forsch Komplementarmed* 1:226–232
- Forbes St C R, Clair W, Jayson M 1992 Radiographic demonstration of paraspinal muscle wasting in patients with chronic low back pain. *British Journal of Rheumatology* 31:389–394
- Frank A 1993 Low back pain. *British Medical Journal* 306:901–909
- Frey C 1994 *Current practice in foot and ankle surgery*. McGraw-Hill, New York
- Frost H, Moffett J 1992 Physiotherapy management of chronic low back pain. *Physiotherapy* 78:751–754
- Frymoyer J 1988 Back pain and sciatica. *New England Journal of Medicine* 318:291–300
- Furlan A D, Brosseau L, Welch V et al 2000 Massage for low back pain. *Cochrane Database System Review* CD001929
- Grieve G 1994 *The masqueraders*. In: Boyling J D, Palastanga N (eds) *Grieve's modern manual therapy*, 2nd edn. Churchill Livingstone, Edinburgh
- Güthlin C, Walach H 2000 Die Wirksamkeit der klassischen Massage bei Schmerzpatienten–eine vergleichende Studie. *Physikalische Therapie* 21:717–722
- Hagen K, Hilde G, Jamtvedt G 2000 The Cochrane review of bed rest for acute low back pain and sciatica. *Spine* 25:2932–2939
- Handwerker H, Reeh P 1991 Pain and inflammation. *Proceedings of the Vth World Congress on Pain, Pain Research and Clinical Management*. Elsevier, Amsterdam, p 59–70
- Hernandez-Reif M, Field T, Krasnegor J 2001 Lower back pain is reduced and range of motion increased after massage therapy. *International Journal of Neuroscience* 106:131–145
- Hides J, Jull G, Richardson C 2001 Long term effects of specific stabilising exercises for first episode low back pain. *Spine* 26:243–248
- Hoogendoorn W et al 2000 Systematic review of psychosocial factors as risk factors for back pain. *Spine* 25:2114–2125
- Janda V 1982 Introduction to functional pathology of the motor system. *Proceedings of VIIIth Commonwealth and International Conference on Sport. Physiotherapy in Sport* 3:39
- Keer R, Grahame R 2003 *Hypermobility syndrome*. Butterworth Heinemann, Edinburgh

- Lee D 1999 *The pelvic girdle*. Churchill Livingstone, Edinburgh
- Lewit K 1999 *Manipulation in rehabilitation of the motor system*, 3rd edn. Butterworths, London
- Liebenson C 2000 The trunk extensors and spinal stability. *Journal of Bodywork and Movement Therapies* 4:246–249
- Lin J-P 1994 Physiological maturation of muscles in childhood. *Lancet* 4:1386–1389
- Linton S 2000 Review of psychological risk factors in back and neck pain. *Spine* 25:1148–1156
- Lowe J, Honeyman-Lowe G 1998 Facilitating the decrease in fibromyalgic pain during metabolic rehabilitation. *Journal of Bodywork and Movement Therapies* 2:208–217
- Lum L 1987 Hyperventilation syndromes in medicine and psychiatry. *Journal of the Royal Society of Medicine* 80:229–231
- Luo X, Pietrobon R, Sun S 2004 Estimates and patterns of direct health care expenditures among individuals with back pain in the United States. *Spine* 29:79–86
- McGill S 2004 Functional anatomy of lumbar stability. *Proceedings of 5th Interdisciplinary World Congress on Low Back and Pelvic Pain*. Melbourne, Australia, p 3–9
- Meade T et al 1995 Randomised comparison of chiropractic and hospital outpatient management of low back pain; results from extended follow-up. *British Medical Journal* 11:349
- Moore J, Von Korff M, Cherkin D et al 2000 A randomized trial of a cognitive-behavioral program for enhancing back pain self-care in a primary care setting. *Pain* 88:45–153
- Muller K, Kreutzfeldt A, Schwesig R et al 2003 Hypermobility and chronic back pain. *Manuelle Medizin* 41:105–109
- Nachemson A 1985 Advances in low-back pain. *Clinical Orthopaedics and Related Research* 200:266–278
- Nixon P, Andrews J 1996 A study of an anaerobic threshold in chronic fatigue syndrome (CFS). *Biological Psychology* 43:264
- Panjabi M 1992 The stabilizing system of the spine. Part 1. Function, dysfunction, adaptation, and enhancement. *Journal of Spinal Disorders* 5:383–389
- Paris S 1997 Differential diagnosis of lumbar and pelvic pain. In: Vleeming A, Mooney V, Dorman T et al (eds) *Movement, stability and low back pain*. Churchill Livingstone, Edinburgh
- RCGP 1999 *Clinical Guidelines for Management of Acute Low Back Pain*. Royal College of General Practitioners, London
- Selye H 1956 *The stress of life*. McGraw-Hill, New York
- Simons D, Travell J, Simons L 1999 *Myofascial pain and dysfunction: the trigger point manual*, Vol 1, Upper half of body, 2nd edn. Williams & Wilkins, Baltimore
- Snook S, Webster B, McGorry R 1998 The reduction of chronic non-specific low back pain through the control of early morning lumbar flexion. *Spine* 23:2601–2607
- Snook S, Webster B, McGorry R 2002 The reduction of chronic, non-specific low back pain through the control of early morning lumbar flexion: 3-year follow-up. *Journal of Occupational Rehabilitation* 12:13–20
- Travell J, Simons D 1992 *Myofascial pain and dysfunction: the trigger point manual*, vol 2, the lower extremities. Williams and Wilkins, Baltimore
- Triano J, McGregor M, Hondras M A et al 1995 Manipulative therapy versus education programs in chronic low back pain. *Spine* 20:948–955
- Turk D C, Michenbaum D H, Genest M 1983 *Pain and behavioral medicine: a cognitive behavioral perspective*. Guildford Press, New York
- Van Tulder M, Becker A, Nekkering T et al 2004 *European Guidelines for the Management of Acute Non-specific Low Back Pain in Primary Care*. *Proceedings of the 5th Interdisciplinary World Congress on Low Back and Pelvic Pain*, 2004, Melbourne Australia, p 56–79
- Vlaeyen J, Crombez G 1999 Fear of movement (re)injury, avoidance and pain disability in chronic low back pain patients. *Manual Therapy* 4:187–195
- Waddell G 1998 *The back pain revolution*. Churchill Livingstone, Edinburgh
- Wall P, Melzack R 1989 *Textbook of pain*. Churchill Livingstone, Edinburgh
- Westhof E, Ernst E 1992 *Geschichte der Massage*. *Deutsche Medizinische Wochenschrift* 117:150–153
- Wiesinger G, Quittan M et al 1997 Benefit and costs of passive modalities in back pain outpatients: a descriptive study. *European Journal of Physical Medicine Rehabilitation* 7:182–186
- Wilson A 2001 *Effective management of musculoskeletal injury*. Churchill Livingstone, Edinburgh
- Winters J, Crago P (eds) 2000 *Biomechanics and neural control of posture and movement*. Springer, New York
- Woo S Y, Buckwalter J A (eds) 1987 *Injury and repair of musculoskeletal soft tissues*. American Academy of Orthopedic Surgeons Symposium, Savannah

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