SECTION 2

Assessing pain

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CHAPTER CONTENTS

7

Pain assessment and measurement

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OVERVIEW

In earlier chapters, we discussed the multifaceted and all-encompassing experience of pain. It is not enough to ask, ‘How intense is your pain on a 0–10 scale?’ A therapist must carefully assess the multidimensional aspects of the pain phenomenon to develop a comprehensive programme with the patient. In this chapter, we will provide the beginning pain therapist with knowledge about pain assessment and measurement.

An overview of models and methods of assessing and measuring pain will be given. Broad, interdisciplinary models of pain assessment will be described, as well as profession or discipline-specific models. In particular, the occupational therapy model of occupational performance will be used as a guide to assessment by the occupational therapist, and the acute pain and orthopaedic models will be used to guide assessment by the physiotherapist. The interrelated but distinct categories of impairment, disability and handicap (as expressed in the WHO model), or impairment, activity and activity limitation, participation and participation limitation (WHO 1999) and their application to pain measurement will be outlined (see Box 7.1).

Specific tools for measuring aspects of pain will be described. For each measure, utility, reliability and validity will be addressed. As a patient’s function is a particular concern for occupational therapists and physiotherapists, the measurement of function will be covered in detail. In conjunction with undertaking pain measurement for treatment, outcome measurement for determining therapy efficacy will also be reviewed. Lastly, we will consider other factors that may influence outcomes in the assessment and measurement of pain.

Learning objectives

At the end of this chapter, students will be able to:

1. Understand the differences between pain assessment and pain measurement.
2. Understand the reasons for evaluating pain in patients.
3. Describe the types of pain evaluation commonly used.
4. Describe some of the most commonly used pain-measurement tools.
5. Understand how assessment of pain needs to vary for different patients.
6. Understand occupational therapy or physiotherapy approaches to pain assessment and measurement.

SOME IMPORTANT ISSUES ON THE MEASUREMENT OF PAIN

There is a plethora of literature about the measurement of pain experience. There are many measurements available and many more are being developed and tested. How does one decide what measures are suitable for a particular setting? There are three important considerations. The measure must have clinical utility. It must be reliable, and it must be a valid measure of that aspect of pain for which it is intended. We will briefly discuss these three considerations before we discuss types of measures, and then measures for each of the three components of pain (description, response, impact).

Box 7.1 Key terms defined

In 1980, the World Health Organization (WHO) published the International Classification of Impairments, Disabilities and Handicaps (ICIDH) to help classify the consequences of injuries and diseases and their implications for people. This taxonomy provides a useful framework for considering the functional difficulties faced by the patient with chronic pain. Harper and his colleagues (1992) utilized the ICIDH to develop a functional taxonomy of impairments, disabilities and handicaps associated with low back pain. In 1999 an updated draft document (ICIDH-2) was published (WHO 1999). The concept of impairment was retained but concepts of disability and handicap were revised as noted in the definitions given below.

Impairment – Impairment is an objective, structural limitation which can be measured with a reasonable degree of accuracy and uniformity (Vasuderan 1989, Waddell & Main 1984, WHO 1980, 1999). It may relate to psychological, anatomical or physiological structures.

Disability or activity limitations – The World Health Organization (1980) defined disability as a restriction or lack of ability to perform an activity in the manner considered normal. The new WHO classification focuses on activity rather than disability. It defines activity as 'the performance of a task or action by an individual' and activity limitations as 'difficulties an individual may have in the performance of activities' (WHO 1999 p 14). Determining disability or activity limitation is complex. Jette's definition cited by Verbrugge (1990) as 'a gap between a person's capability and the environment's demand' is useful for therapists. The definition notes the importance of the need for a fit between the person and the environment and the need to assess both components to fully understand activity limitations. Disability may be physical mental, or social.

Handicap or participation restrictions – Handicap is the extent to which the impairment and disability impinge on a person's normal vocational and social and family roles (WHO 1980). ICIDH-2 defines participation as 'an individual's involvement in life situations' (WHO 1999 p 14), and participation restrictions as 'problems an individual may have in the manner or extent of involvement in life situations' (WHO 1999 p 14).

Reliability – Reliability is the extent to which a measurement is consistent, that is, it measures the same way each time it is used even if some conditions have varied (the person administering it, the situation).

Validity – Validity is the extent to which a measurement actually measures what it claims to measure.

Function – Function is the output of active life-skills based on precursor physical abilities (e.g. range of motion, strength, grip, gait) and psychosocial abilities (e.g. temperament, self-concept, organizational ability).

Self-efficacy – Self-efficacy is the belief in one's ability to successfully perform particular behaviours which are needed to produce particular outcomes (Bandura 1977, Council et al 1988, Jensen et al 1991, Strong 1995).

Pain behaviours – Pain behaviours are overt manifestations of pain and suffering, such as grimacing, limping, avoiding activity, moaning.

Clinical utility

Clinical practice is often pragmatic or local in style, and may seem not to exactly match the theory on which a measure is based. Often, the primary consideration is that pain measurement must be clinically helpful to the setting in which it will be used. Most therapists find that there is a limit to the available time for assessment and measurement. Clinically useful measurement is therefore parsimonious; short, efficient measurements collecting the maximum, useable information are preferred. For this reason, in order to be comprehensive and parsimonious, it is advisable to aim for only one measurement tool from each of the three dimensions (description of the pain, responses to the pain, impact of pain) unless more measurement is essential.

The usefulness of the measures we incorporate into our practice depends on the quality of their reliability and the validity. Measures about which the reliability and validity is unknown may provide quantitative information, they may be in common usage, and may even be accepted by insurance companies, but they do not provide us with an accurate and confident assessment of the patient's pain experience. We do not really know that they measure what they claim to measure.

Reliability of pain measures

Reliable measures of pain provide consistent results from one time of use to the next. To illustrate, a reliable thermometer will give the same temperature from one hour to the next in a static thermal state. If there is much fluctuation in the temperature readings in the static thermal state, then the thermometer is not reliable. Of course, if circumstances change, such as the patient develops a fever, we would expect a reliable thermometer to measure this change. This property of a measurement tool is termed its responsiveness to change (Guyatt et al 1987). A reliable measure of pain also will provide similar information from one time to the next unless the pain changes (i.e, intrarater reliability). The measure will also give the same results, or very close to the same, if two different therapists administer the measure (i.e. interrater reliability).

Data on the reliability of an instrument may be context-specific. For example, the reliability may have been obtained in a population that may have specific characteristics (i.e. demographic, specific pain conditions or normal), which limits its use to that population. This is an issue that the therapist who is using reliability data of an instrument should take into consideration.

How does the reliability of a pain measure relate to clinical usage for therapists? In selecting the most appropriate assessment or battery of assessments to use for any particular patient, the aim is to balance the need for psychometrically reliable data against the need for a measurement tool which can be administered efficiently. It may be that the most reliable measurement tool is very long and the patient has a short attention span, or requires so many other evaluations that a long one is impractical. In many clinical situations, the time available for completing an assessment is short. The measures that are used need to use time efficiently. The utility of a measurement is also limited by its complexity. In some situations, the most effective way to assess the quality of pain would be the McGill Pain Questionnaire (MPQ) (Melzack 1975), but if the patient speaks little English or any of the languages into which the MPQ has been translated, then a visual analogue scale will be more useful. Jensen et al (1999) have recently shown that a simple, single 0–10 pain intensity rating has sufficient reliability and validity for use with patients with chronic pain, especially in research involving large sample sizes. When working with smaller sample sizes or when wanting to detect changes in pain intensity in individual patients, composites of 0–10 ratings (e.g. current, worst, least and average pain) may be preferable.

Validity of pain measures

A pain measure is valid if the measure truly measures what it is supposed to measure and not something else. Knowing exactly what some pain measures are measuring may be more contentious than one would expect. The Pain Drawing (Parker et al 1995), for instance, may not simply describe areas where patients feel pain of various types. Sometimes anatomically and physiologically impossible distributions of pain are selected. Does the Pain Drawing describe the location of pain or does it measure something else, like psychological distress? In fact, it has been proposed that scoring systems for the pain drawing may be used to assess psychological distress, but efforts to do this have met with equivocal success (Parker et al 1995). Unusual drawings may convey psychological distress but they may also mean an unusual pain distribution.

When a measure is being developed, we worry first about the content validity of the measure but overall if the measure is not reliable then it cannot be valid. A measure that provides inconsistent outcomes is giving information about something other than what it is intending to measure.

Types of pain measures

The distinction between categories of pain measures and their strengths and limitations will be assisted by completion of the Reflective exercise 7.1.

Self-report

As suggested in the Reflective exercise, there are three types of pain measures: self-report measures, observational measures, and physiological measures (see Box 7.2). The first type is 'self-report'. The person with the pain provides the information to complete the measure about the pain. Self-report measures are used in many ways. They often involve rating pain on some kind of metric scale. A therapist might ask the patient to rate the worst pain, the least pain, and the average pain in the past week. Diaries are another way to gain a prospective, subjective view of a patient's pain if the pain is persistent or chronic. It is a helpful way to measure the impact of the pain on the patient's life. Diaries can be relatively structured with the necessary information to record prepared in a format that is completed at regular intervals. Ratings of pain intensity, levels of rest and activity, and current mood and emotional or affective states can also be recorded.

Self-report is considered the gold standard of pain measurement because it is consistent with the definition of pain. Pain is a subjective experience. But, the dilemma of self-report measures is exactly that subjective nature. They are based on the patient's perception of her or his pain and that perception may be influenced by other factors. To illustrate, the rating that you give about the severity of your migraine in Reflective exercise 7.1 is useful only to the extent that the therapist believes that you have given an honest response.

There has been controversy about the validity of self-report data; some work has shown the level of pain reported by patients with chronic pain was unrelated to their self-report of physical disability (Patrick & D'Eon 1996). The dilemma here is that we intuitively expect that the extent of disability should be proportionately related to the severity of the pain. When they are not related in this way, we are inclined to argue that the patient's self-report of pain intensity is exaggerated and invalid. This may be so, but actual physical performance and perceived level of physical performance may be two entirely different constructs, each of which is valid clinical information about a patient with chronic pain. Lastly, self-report measures rely on the person's ability to communicate about pain. Self-report is not possible for infants, young children, or people with special needs that impair communication.

Reflective exercise 7.1

Imagine that you have a severe migraine. Your roommate has never had migraines. She observes that you are listening to some quiet music while you are trying a relaxation strategy on your bed. Suppose that we want to measure how bad your migraine might be. We could ask you.

- What factors might influence the rating that you give?

Another alternative would be to ask your roommate to complete an observational pain measure.

- How accurate do you think her measurement of your pain would be?

A third way might be to record your pulse or rate of breathing.

- Do you think these measures would tell us anything about the severity of your migraine?

Box 7.2 Types of pain measures

1. Self-report measures (e.g scales, drawings, questionnaires, diaries)
2. Observational measures (e.g. measure of behaviour, function, range of motion)
3. Physiological measures (e.g. heart rate, pulse)

Observational measures

Observational measures are another method of pain measurement. Observational measures usually rely on a therapist, or someone well known to the patient, completing an observational measure of some aspect of pain experience, usually related to behaviour or activity performance. Observational measures can be useful to corroborate the self-reports given by the patient. They are also very useful to identify other areas of concern, particularly measurement of function and ergonomic factors that may exacerbate or cause work-related pain.

The subjective components may help in determining which type of treatment programme is most appropriate for which type of patient with pain (Strong et al 1994). Nevertheless, observational measures may be relatively expensive as a technique since they require observation time. They may also be less sensitive to the subjective and affective components of the pain experience.

In research, observational measures have been shown to be most accurate for acute pain since pain behaviour tends to habituate as pain becomes more chronic (McGrath & Unruh 1999). There is also no behaviour that is an indicator of pain and nothing else. Clutching the abdomen may be due to pain but it might also be a spasm of nausea. To know what the behaviour signifies one may need to ask the person and that is back to self-report.

Lastly, observational measures appear to be a more objective measure of the patient's pain but they do reflect the therapist's objective *and* subjective measurement of the patient's pain. The roommate's observational measurement of your migraine in Reflective exercise 7.1 may be affected by her or his inexperience with migraines and the observation that you are lying down and appear to be relaxing.

Physiological measures

The third category of pain measurement is physiological. Pain can cause biological changes in heart rate, respiration, sweating, muscle tension and other changes associated with a stress response (Turk & Okifuji 1999). These biological changes can be used as an indirect measure of acute pain, but biological response to acute pain may stabilize over time as the body attempts to recover its homeostasis. For example, your breathing or heart rate may have shown some small change at the outset of your migraine if the onset was relatively sudden and severe, but over time these changes were likely to return to before migraine rates even though your migraine persists. Physiological measures are useful in situations where observational measures are more difficult. For example, observational measures can be used to measure pain in infants but physiological measures have provided important information about post-surgical pain in neonates (Anand & McGrath 1999).

In summary, self-report measures are considered the gold standard of pain measurement. After all, only you know how bad that migraine really is. Your roommate's measurement is also useful but her measurement is indirect. It is still very important to note here that all three categories of measures have some degree of error. They provide a part of the picture of the patient's pain experience but they do not have 100% accuracy. In the next sections, we discuss the various measures that can be used to obtain a description of the pain, responses to the pain, and the impact of pain on the person's life.

ASSESSMENT OF PAIN

Assessment of pain before intervention is important to ensure that the therapist and the pain team has a complete picture of the patient's needs and areas of difficulty. Although the words assessment and measurement are related and they are often used interchangeably, their meaning is somewhat different. Assessment is the broader examination of the relationship between different components of the pain experience for a given patient, whereas measurement is the quantification of each component. Sometimes therapists measure components without an assessment framework, with the result that the information gathered may have minimal usefulness in determining whether an intervention programme was useful for the patient. Deciding what to measure depends on the therapist's assessment model and the assessment model depends on the therapist's practice frame of reference.

Assessment of an individual patient's pain and its ramifications on that patient's life is an important task for occupational therapists and physiotherapists. In addition to the frame of reference used by the therapist, the type of assessment used may be influenced by the nature of the treatment facility and the referral request. The therapist needs to remember that there are differing reasons for performing an assessment of a patient's pain status. These different assessment rationales may not be mutually exclusive and may also assume importance at different stages in the patient's time with pain. A patient who is referred to a therapist for a resting splint and will be discharged shortly, to be followed by another therapist in the community, will be assessed differently from another patient who may be seen over many weeks. For many years, occupational therapists have utilized a biopsychosocial model in their pain assessment (e.g. Milne 1983). Physiotherapists on the other hand have tended to rely on a biomedical model. Physiotherapists have recently been urged to utilize a more comprehensive, psychosocial assessment model in their practice (Strong 1999, Watson 1999).

Assessment can be used to help with diagnosis; to assist in defining goals for clinical intervention and management; to help in evaluating the effectiveness of a treatment programme; to provide a picture of a patient's functional ability despite pain; and to provide data for insurance, compensation and pension claims. If assessment of pain is to occur repeatedly for one patient, it is likely to follow the order just listed, that is, it will be for diagnostic (or exploratory) reasons first, and then to help in making treatment goals more precise and relevant.

In chronic pain, the WHO classifications of impairment, disability (activity and activity limitation), and handicap (participation and participation limitation) are particularly important. Assessment of impairment may be judged by pain intensity, disability by self-care, ambulation and endurance deficits, and handicap by deficits in vocational, social or familial roles (Patrick & D'Eon 1996).

As noted previously, a therapist will usually assess a patient's pain using the most appropriate model or frame of reference for the situation. The frame of reference focuses the assessment and in turn determines what questions must be answered through measurement. In many cases a purely biomedical approach to pain assessment may be insufficient (Vlaeyen et al 1995), because it will focus on biological measurement and exclude other psychological and environmental factors. A biopsychosocial model is often advocated (Turk 1996). This model will lead to assessment that considers interaction between biological, psychological and social components in pain experience and will determine exactly what factors within each should be measured.

Several other factors determine which model or frame of reference is most appropriate for pain assessment. These factors include acuteness or chronicity of the pain, provision of intervention as a team member or sole pain therapist, a rehabilitation focus to the service, involvement of compensation, and difficulties that might complicate assessment (such as a cognitive impairment or lack of fluency in the primary language spoken at the service). Psychological, social, and demographic factors have been found to be crucial in influencing the development of chronicity of pain (Polatin & Mayer 1996) and so these areas need to be included in assessment protocols.

It is essential to remember that the information gathered in an assessment of the patient's pain must be used to the best ends. While this may sound self-evident, it is surprisingly common for the purpose of assessment information to be poorly considered. The effect is then to have not enough information, too much information for the context in which it is to be used, or information which is not specific enough to the particular individual. If the information is important as an outcome measure, then it is essential that the measures used at the outset are relevant to the goals of the intervention programme and can be measured again at discharge.

In order to safeguard against these pitfalls and ensure that relevant and adequate information is obtained, the therapist needs to follow the cardinal rules of data-gathering with patients:

- Ensure there is some initial time spent to establish a collaborative relationship by getting to know the person and her or his individual situation.
- Where possible, allow for the patient to expand on formal assessment items, and to elaborate on her or his responses.
- Actively listen to the patient's information, and notice signals which suggest that the patient would like to talk further (e.g. hesitations, rushing over a certain aspect, comments such as 'but you don't need to hear more about that').
- Try to understand the implications for the patient's lifestyle and quality of life as much as possible.
- Remember the information.

Experienced therapists will find in the pain literature a variety of assessment models that can be used to gather information about a patient's pain. For example, Jamison (1996) proposed a model of assessment with seven categories – pain intensity, functional capacity, mood and personality, pain beliefs and coping, medication monitoring, adverse effects and psychosocial history. Woolf and Decosterd (1999) recently advocated an interview-based assessment of the patient's pain which is similar to one previously advocated by physiotherapists (Maitland 1987). It comprises aspects of pain such as:

- Is the pain spontaneous or evoked?
- What is the nature and intensity of the stimulus if the pain is evoked?
- What is the quality of the pain?
- What is the pain distribution?
- Is the pain continuous or intermittent?
- What is the pain intensity?
- A clinical assessment.

Although there are important distinctions between different assessment models, in general, there are three essential components of pain assessment that will need to be considered for most patients with pain. These components are: description of the pain, responses to the pain, impact of pain on the person's life.

In the next section, we will examine the various measures which can be used for each of these three components. Each component has a range of sub-categories and for each sub-category there are usually a number of measurement tools or styles of measurement available. Many of these measures are summarized in the Tables which are included in this chapter.

Measurement of the description of the pain

Measures which describe pain are usually self-report in style. They are typically in the form of questionnaires, rating scales, visual analogue scales and drawings. Pain can be described in terms of its intensity (i.e. how much pain), its quality (e.g. if it is burning, aching, dull, sharp, etc), and its location on the body.

In gathering a description of the pain from a patient, several purposes are served. A baseline description of the pain allows for comparison of changes. Ideally, pain should be monitored for some time before treatment commences, and then during treatment and at the end of treatment. The brief scales, such as the numerical rating scale, have been used daily for up to 2 weeks in chronic pain programmes and the results averaged to increase the reliability of the assessment. Although this amount of assessment will provide a baseline to truly compare to changes following intervention, it is rather more than is achievable or desirable in most clinical contexts. There is considerable evidence that self-report of pain intensity is both reliable and valid (Jamison 1996).

Numeric scales

The numeric rating scale is the most popular, but visual analogue and verbal rating scales are also well used (Jamison 1996). In a study to examine the validity of a number of commonly used measures of pain intensity, the 11-point box scale emerged as the most valid compared to a linear model of pain (Jensen et al 1989). The box scale was also accurate to score. However, this study was of patients with postoperative (i.e. acute) pain. Earlier research had suggested that the numerical rating scale was best for use with chronic pain patients (Jensen et al 1986). Strong et al (1991) also found the box scale to be one of two preferred pain intensity measures for use with patients with chronic low back pain, along with the visual analogue scale in a horizontal orientation. A number of assessments for use in gathering a description of the patient's pain are listed in Table 7.1, while Figure 7.1 illustrates some of these pain intensity measures.

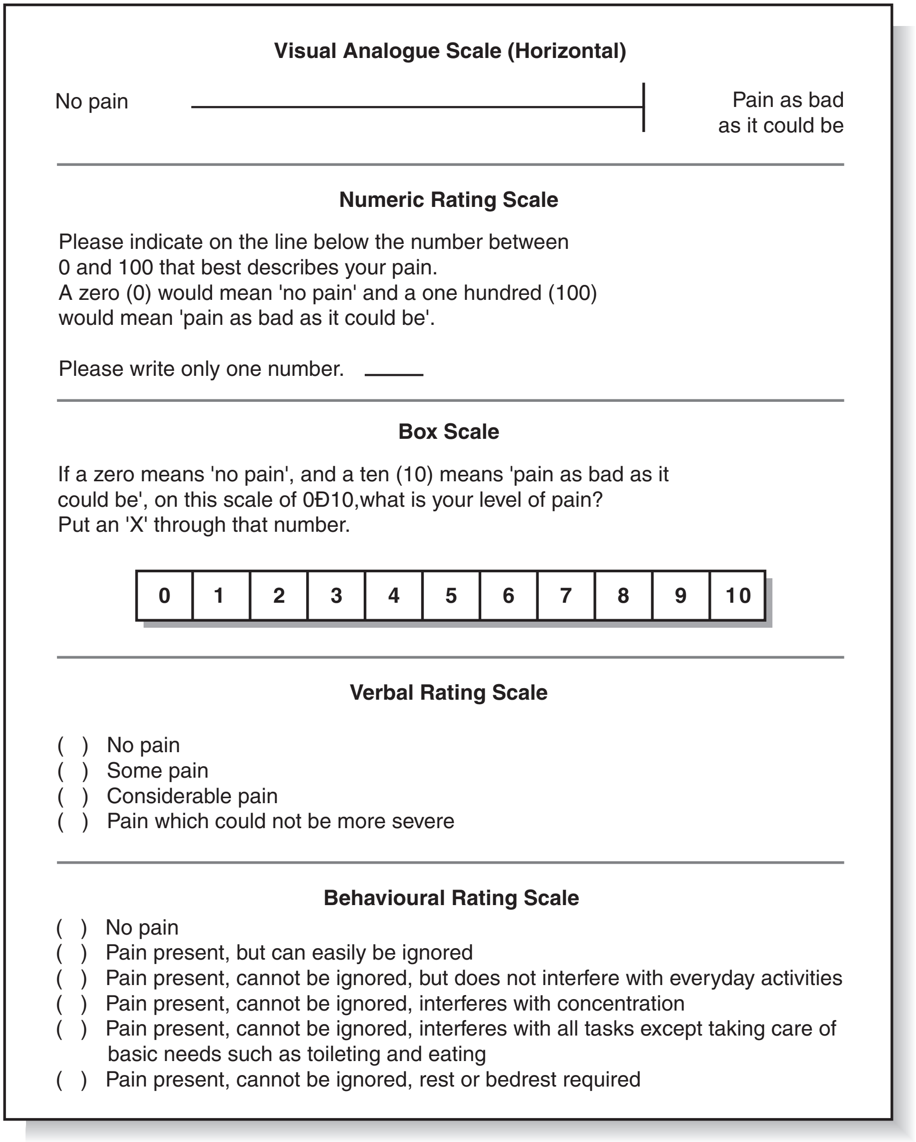
Visual analogue scales

Visual analogue scales are simply a 10-cm line with 'stops' or 'anchors' at each end. The line may be horizontal or vertical. The patient is asked to mark the line at a point corresponding to the severity of his/her pain. End-point descriptors are 'none' and 'severe' or similar phrases. Visual analogue scales (VAS) have been said to be sensitive, simple, reproducible and universal (i.e. can be understood in many situations where there are cultural or language differences to the assessor) (Huskisson 1983).

In a recent study it was shown that a mark above 3 cm on a 10-cm scale would include 85% of patients who had rated their pain as moderate on a four-point categorical scale, and 98% of patients who reported severe pain (Collins et al 1997). While this means a rating above 3 cm is going to be fairly reliable at including patients with severe pain, it will also include patients with pain that is moderate or less. This finding highlights the fact that, while the VAS may usefully compare a patient to themselves over time, it is less reliable to compare individuals to each other.

Table 7.1 Commonly used pain evaluations for describing pain

Assessment	Style	Psychometric status	Utility
Visual Analogue Scales including vertical, horizontal and numbered scales	Self report – there are a number of types, eg vertical,horizontal, plastic thermometer style	The accuracy of scoring on the 10-cm line is often questionable	Measure pain intensity Quick, able to be repeated regularly, and do not require complex language Useful in cancer pain
McGill Pain Questionnaire (MPQ) Also has short form (MPQ- SF)	Self-report 20 sets of adjectives to select one in each relevant category Short-form has 15-item adjective checklist and two scales for pain intensity	Total score and dimension scores Well-established reliability and validity Some problems with difficulty level of words used	Measures quality of pain – three dimensions affective, evaluative, sensory Widely used in clinical research
Pain Drawing (various protocols)	Self-report by drawing areas and types of pain with symbols on front and back outlines of the human body	Rating scales which have been developed for pain drawings have poor validity	Identifies location of pain perceived by client High face validity for patients



Visual Analogue Scale (Horizontal)

No pain

Pain as bad
as it could be

Numeric Rating Scale

Please indicate on the line below the number between
0 and 100 that best describes your pain.
A zero (0) would mean 'no pain' and a one hundred (100)
would mean 'pain as bad as it could be'.

Please write only one number. ______

Box Scale

If a zero means 'no pain', and a ten (10) means 'pain as bad as it
could be', on this scale of 0Ð10,what is your level of pain?
Put an 'X' through that number.

0	1	2	3	4	5	6	7	8	9	10

Verbal Rating Scale

( ) No pain
( ) Some pain
( ) Considerable pain
( ) Pain which could not be more severe

Behavioural Rating Scale

( ) No pain
( ) Pain present, but can easily be ignored
( ) Pain present, cannot be ignored, but does not interfere with everyday activities
( ) Pain present, cannot be ignored, interferes with concentration
( ) Pain present, cannot be ignored, interferes with all tasks except taking care of basic needs such as toileting and eating
( ) Pain present, cannot be ignored, rest or bedrest required

Figure 7.1 Pain intensity measures.

The VAS line may be horizontal or vertical, however clinical evidence is often that the horizontal version is preferred. Patients with back pain have been known to misinterpret a vertical line as their spine and then place a mark on the line to describe the location of their pain, rather than to indicate its intensity.

There are variations of the VAS currently being used, such as the Visual Analogue Thermometer (Choinière & Amsel 1996) and the Pain-O-Meter (Gaston-Johansson 1996). These are somewhat more sophisticated plastic instruments designed to reduce some of the measurement error which can occur with the VAS if copies are used. If the line is not exactly 10 cm long, then the reliability of the measured score is questionable. In other variations of the VAS, the length of the line has been varied, and the descriptors have been altered so that the construct measured is pain sensation or pain affect (Price & Harkins 1987).

The VAS and similar instruments are useful in the measurement of cancer pain, because of their brevity. Measurement of cancer pain needs to be brief because tolerance of lengthy assessment may be poor in very ill people (Ahles et al 1984). The pain may change frequently requiring measurement to be frequent. Therefore a measurement which is quick to administer but remains reliable over many times is desirable.

The pain drawing

The pain drawing has been used as a simple way to gain a graphic representation of where the patient feels pain. While this may sound like a straightforward procedure, two important aspects of the pain drawing may differ widely from setting to setting: the instructions on how to complete the pain drawing, and the scoring (if any) and interpretation of the pain drawing. A pain drawing consists of outline drawings of the human body, front and back, on which the patient indicates where the pain is by shading the painful area (Margolis et al 1986), or by indicating the type of pain (e.g. pins and needles, aching) by symbols (Ransford et al 1976). Margolis et al (1986, 1988) developed a scoring system based upon the total body area in pain (see Fig. 7.2 for Margolis pain drawing and scoring system).

Ransford et al (1976) developed a detailed scoring system to screen for psychological disorders, whereby a patient's graphic representation of their pain which is physiologically impossible may indicate problems. As a result of this feature, various methods of scoring or rating pain drawings in order to suggest level of psychological distress have been attempted (Ransford et al 1976, Parker et al 1995). These rating scales have poor reliability. However, used without a scoring system, the pain drawing can be a useful tool to assist in clinical reasoning, giving as it does useful information about the location and distribution of the patient's pain.

McGill Pain Questionnaire

The McGill Pain Questionnaire (MPQ) (Melzack 1975) includes a numerical intensity scale, a set of descriptor words and a pain drawing. Patients are asked to indicate, from 20 groups of adjectives, descriptors of their present pain. Patients are restricted to using only one word from each group. These adjectives tap the sensory (categories 1–10), affective (categories 11–15) and evaluative (category 16) dimensions of a person's pain. A miscellaneous class (categories 17–20) of words was also described. Quantitative scores which can be derived from the MPQ are the 'number of words chosen', the 'pain rating index total', the 'pain rating index sensory', the 'pain rating index affective' and the 'pain rating index evaluative'. The MPQ is multidimensional, but its focus is still pain description. It is probably the most widely used pain evaluation measure. More recently, Melzack (1987) developed the short-form MPQ. The original MPQ adjectives and the short-form MPQ are illustrated in Figures 7.3 and 7.4.

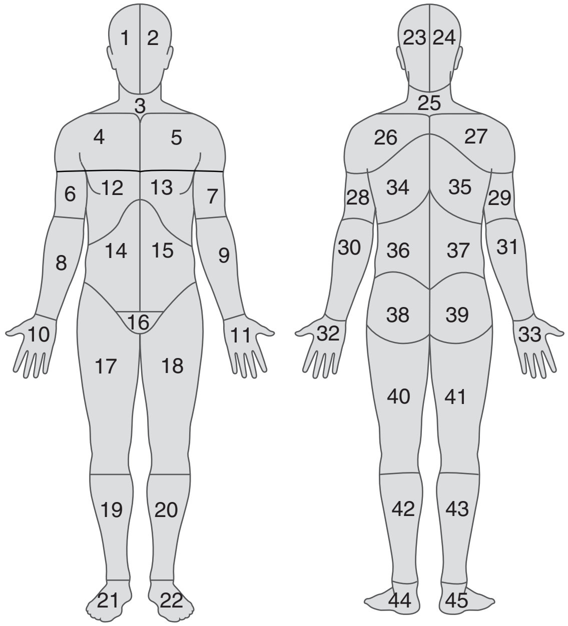
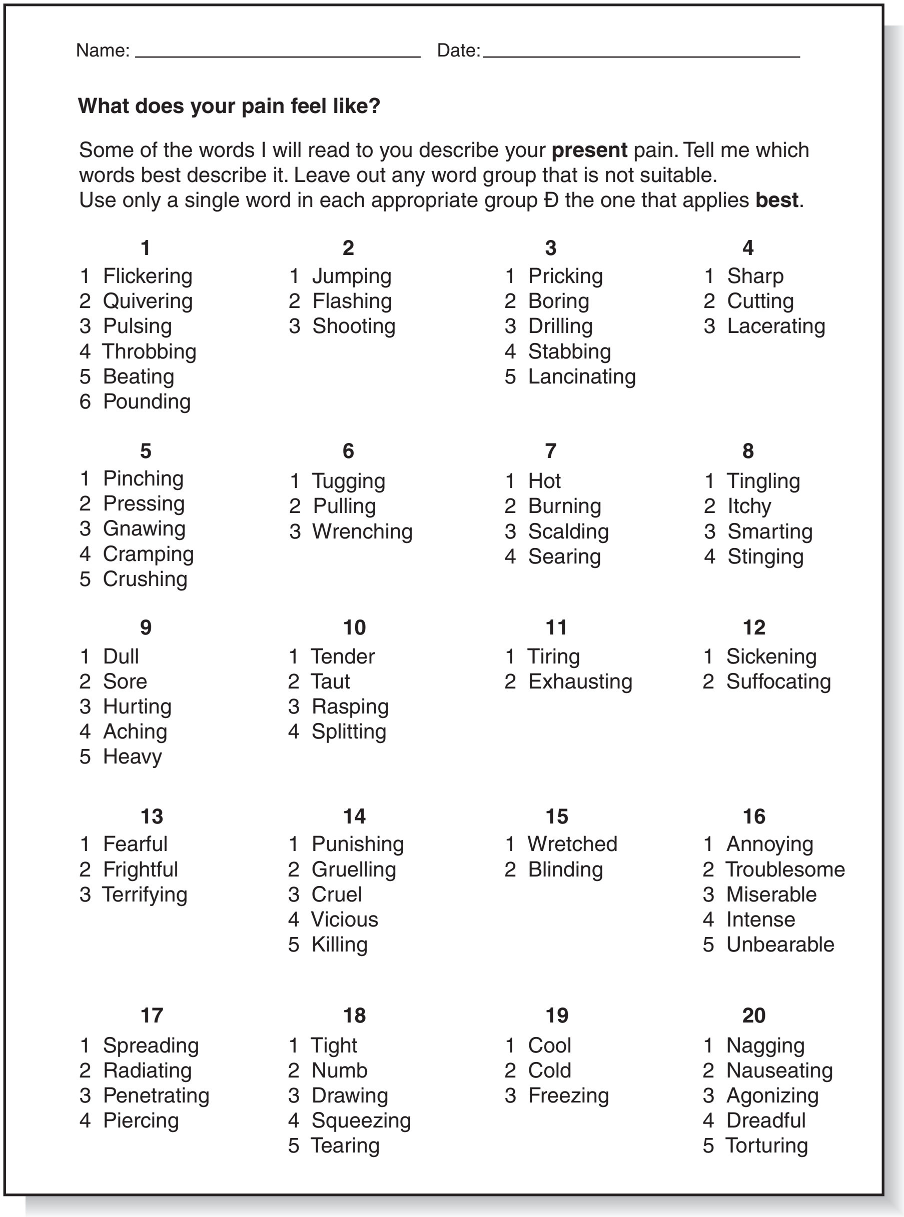


Figure 7.2 Margolis pain drawing and scoring system. The body was divided into 45 areas. A score of 1 was assigned if the patient indicated that pain was present and a score of 0 if pain was absent, for each area. Weights were assigned to each area equal to the percentage of body surface they covered. Reprinted from Pain 24, Margolis et al, pp. 57–65. © 1986, with permission from Elsevier Science.

While many researchers have utilized the MPQ in a highly quantitative way (for example, Lowe et al 1991, Strong et al 1989), its primary value for clinicians is to identify qualitative features of a person's pain experience, and to detect less than dramatic, more subtle clinical changes. From the words chosen, the therapist can also get an idea of unexpected features of a person's pain. For example, if a patient endorsed the adjective 'cold' as a descriptor of their low back pain, this would be unusual. Alternatively, for a patient with



Name: ________________________ Date: ________________________

What does your pain feel like?

Some of the words I will read to you describe your **present** pain. Tell me which words best describe it. Leave out any word group that is not suitable.
Use only a single word in each appropriate group Ð the one that applies **best**.

1
1 Flickering
2 Quivering
3 Pulsing
4 Throbbing
5 Beating
6 Pounding

2
1 Jumping
2 Flashing
3 Shooting

3
1 Pricking
2 Boring
3 Drilling
4 Stabbing
5 Lancinating

4
1 Sharp
2 Cutting
3 Lacerating

5
1 Pinching
2 Pressing
3 Gnawing
4 Cramping
5 Crushing

6
1 Tugging
2 Pulling
3 Wrenching

7
1 Hot
2 Burning
3 Scalding
4 Searing

8
1 Tingling
2 Itchy
3 Smarting
4 Stinging

9
1 Dull
2 Sore
3 Hurting
4 Aching
5 Heavy

10
1 Tender
2 Taut
3 Rasping
4 Splitting

11
1 Tiring
2 Exhausting

12
1 Sickening
2 Suffocating

13
1 Fearful
2 Frightful
3 Terrifying

14
1 Punishing
2 Gruelling
3 Cruel
4 Vicious
5 Killing

15
1 Wretched
2 Blinding

16
1 Annoying
2 Troublesome
3 Miserable
4 Intense
5 Unbearable

17
1 Spreading
2 Radiating
3 Penetrating
4 Piercing

18
1 Tight
2 Numb
3 Drawing
4 Squeezing
5 Tearing

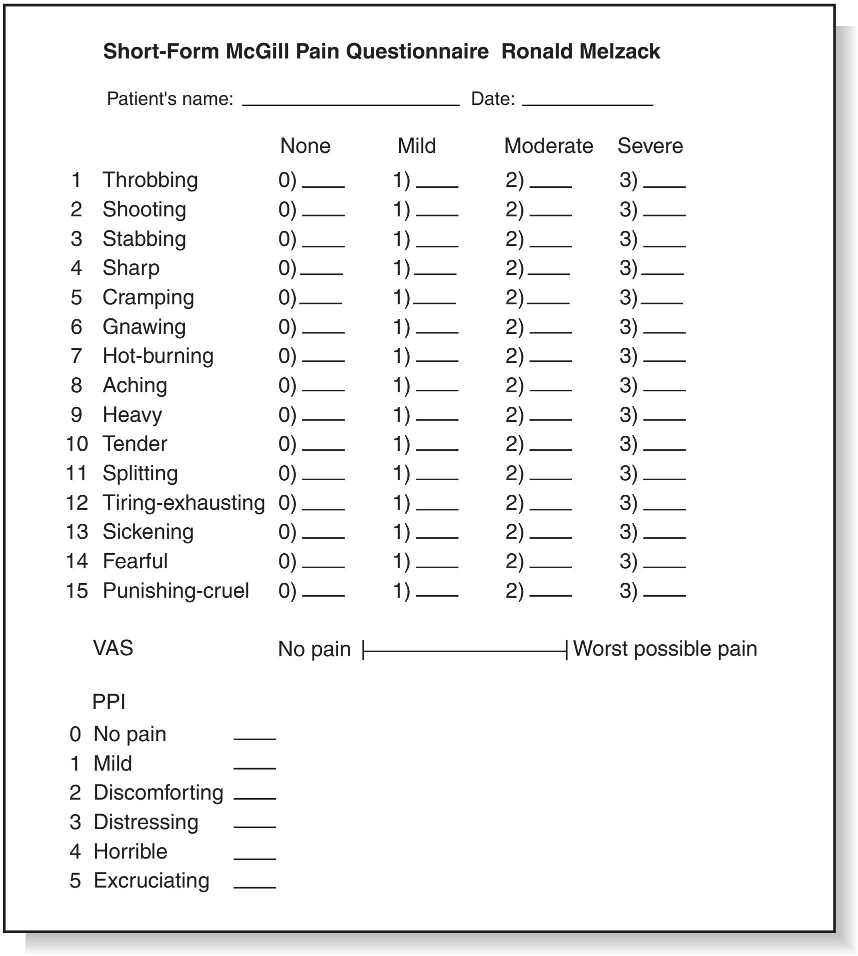
19
1 Cool
2 Cold
3 Freezing

20
1 Nagging
2 Nauseating
3 Agonizing
4 Dreadful
5 Torturing

Figure 7.3 The McGill pain questionnaire adjectives (from Melzack 1975, with kind permission from Professor R Melzack).

phantom limb pain to endorse the words stabbing, burning and constant is entirely expected. Jerome and his colleagues (1988) also suggest that attention be given to the specific words chosen by patients on the MPQ rather than concentrating on the total scores obtained. The reliability and validity of the MPQ are well established and were reviewed in Melzack and Katz (1994).

Comprehensive measurement of pain description, using several methods, allows the patient to feel they



Short-Form McGill Pain Questionnaire Ronald Melzack

Patient's name: ____________________ Date: ____________

		None	Mild	Moderate	Severe
1	Throbbing	0) ____	1) ____	2) ____	3) ____
2	Shooting	0) ____	1) ____	2) ____	3) ____
3	Stabbing	0) ____	1) ____	2) ____	3) ____
4	Sharp	0) ____	1) ____	2) ____	3) ____
5	Cramping	0) ____	1) ____	2) ____	3) ____
6	Gnawing	0) ____	1) ____	2) ____	3) ____
7	Hot-burning	0) ____	1) ____	2) ____	3) ____
8	Aching	0) ____	1) ____	2) ____	3) ____
9	Heavy	0) ____	1) ____	2) ____	3) ____
10	Tender	0) ____	1) ____	2) ____	3) ____
11	Splitting	0) ____	1) ____	2) ____	3) ____
12	Tiring-exhausting	0) ____	1) ____	2) ____	3) ____
13	Sickening	0) ____	1) ____	2) ____	3) ____
14	Fearful	0) ____	1) ____	2) ____	3) ____
15	Punishing-cruel	0) ____	1) ____	2) ____	3) ____

VAS No pain |————————————| Worst possible pain

PPI
0 No pain ____
1 Mild ____
2 Discomforting ____
3 Distressing ____
4 Horrible ____
5 Excruciating ____

Figure 7.4 The short-form McGill pain questionnaire adjectives (from Melzack 1987, with kind permission from Professor R Melzack).

have fully communicated the way their pain feels to them, and so contributes to them feeling understood. A thorough evaluation can be valuable in the establishment of the therapeutic relationship. As a note of caution, there is a fine line to be negotiated between the patient feeling well-understood and feeling over-assessed and intruded upon. For this reason, measurement tools which are relatively brief yet efficient are often most suitable.

Measurement of responses to pain

A person's response to pain is very personal, based on physiology, personality, previous life experiences, family and culture. How someone responds to pain is often demonstrated by behavioural and psychological reactions or changes, and it is these features which therapists need to understand (Flaherty 1996). Therefore, aspects such as depression and illness behaviour are valuable components of a comprehensive pain assessment. Table 7.2 lists some of the available measures in this domain.

There is some evidence that a person's fears or beliefs about the source of their pain or possibility of re-injury can influence their responses to pain and their course of recovery (Main & Watson 1996). Fear-avoidance beliefs probably arise from the patient's experience of physical activity and pain, but can be altered by cognitive and affective factors (Waddell et al 1993). In an effort to completely understand the patient's perspective, and to understand what influ-

Table 7.2 Commonly used evaluations for pain responses

Assessment	Style	Psychometric status	Utility
Fear-avoidance beliefs questionnaire	Self-report 16 items on a single page	Only the initial study so far, however this showed good test-retest reliability, and a relatively stable 2-factor structure	To measure fear-avoidance beliefs about work and physical activity, specifically for patients with low back pain
Movement and pain predictions cale (MAPPS)	10 items on a 10-point rating scale with sequential drawings of particular movements	Correlations between 7 of the self-efficacy responses and actual movement	Assesses self-efficacy expectations, pain response expectancies and the reason for not completing a movement
Survey of Pain Attitudes-Revised (SOPA-R)	Self-report (57 items) 5-point Likert scale	Internal consistency, discriminant validity, construct validity, and factor structure are all adequate	Assesses seven beliefs which may affect long-term adjustment to chronic pain Is of most value for chronic low back pain
The Gauge	Self-report 27 items on a 1–10 point Likert scale	Has shown good internal consistency and test-retest reliability Convergent validity supported	Assesses the person's confidence in their ability to do a range of basic activities at home, without help
Illness Behaviour Questionnaire			Seven scales to assess abnormal illness behaviour in chronic pain and other conditions where the patient's response may appear discrepant to the physical pathology. This is widely used
Coping Strategies Questionnaire	Self-report		To determine the use of cognitive and behavioural coping strategies used to deal with pain This is widely used
Pain Beliefs and Perceptions Inventory	Self-report Has 16 items	Some debate about whether it has 3 or 4 valid sub-scales	This tool has some usage, but not as broadly as the SOPA-R
Pain Self-Efficacy Questionnaire (PSEQ)	Self-report on a 10-item questionnaire, using a 7-point scale	Internal consistency and test-retest reliability acceptable	Developed specifically for chronic pain
		Support for construct and concurrent validity	To rate confidence in performing activities despite pain

ences their behaviour, some of these attitudes and beliefs need to be evaluated (Strong et al 1992).

There are two measures of fears or beliefs about pain that have good reliability and validity, and may be useful to occupational therapists and physiotherapists. The Survey of Pain Attitudes (Revised) (SOPA-R) (Jensen & Karoly 1991, Jensen et al 1987), in its most recent version, assesses seven beliefs which possibly influence long-term adjustment for people with chronic pain. The subscales of the SOPA-R measure the extent to which patients believe they can control their pain: they are disabled by their pain, they are damaging themselves and should avoid exercise, their emotions affect their pain experience, medications are appropriate, others, especially family, should be solicitous, and there is a medical cure for their problem (Jensen & Karoly 1991). More recently, a further revision has been made of the SOPA-R, to provide a shorter version for clinical use: the SOPA-B (brief) (Tait & Chibnall 1997). This 30-item version of the SOPA assesses the subscales of solicitude, emotionality, cure, control, harm, disability and medication.

Another tool, the Pain Beliefs and Perceptions Inventory (PBPI), examines patients' beliefs on the stability of pain over time, to what extent they see pain as a mystery, and how much they are to blame for their pain (Williams & Thorn 1989). More recent work with the PBPI has supported the existence of four rather than three scales across a number of patient groups (Herda et al 1994, Morley & Wilkinson 1995, Williams et al 1994). Using the four-scaled version of the PBPI may provide a simple yet clinically useful gauge of the patient's beliefs about pain as mystery, self-blame, pain permanence and pain constancy (Williams et al 1994). A scoring key and some normative data are contained as appendices in the article by Williams et al (1994). Both the SOPA-R and the PBPI have strengths, however the psychometric properties of the SOPA-R are stronger, and it may be useful for a broader range of patients than the PBPI (Strong et al 1992).

Another important concept that is related to beliefs is pain appraisal. Not all pains worry people. Some pains such as sports-related pains are appraised as challenging. Other pains, such as pain from a burn, are appraised as highly threatening because they cause obvious harm. Still other pains such as childbirth may be appraised as highly threatening because of the pain severity, but also as highly challenging because labour is usually perceived as normal and produces a child. The Pain Appraisal Inventory (Unruh & Ritchie 1998) is a measure of threat and challenge appraisal. The measure is applicable to many types of pain and has strong evidence of reliability and validity.

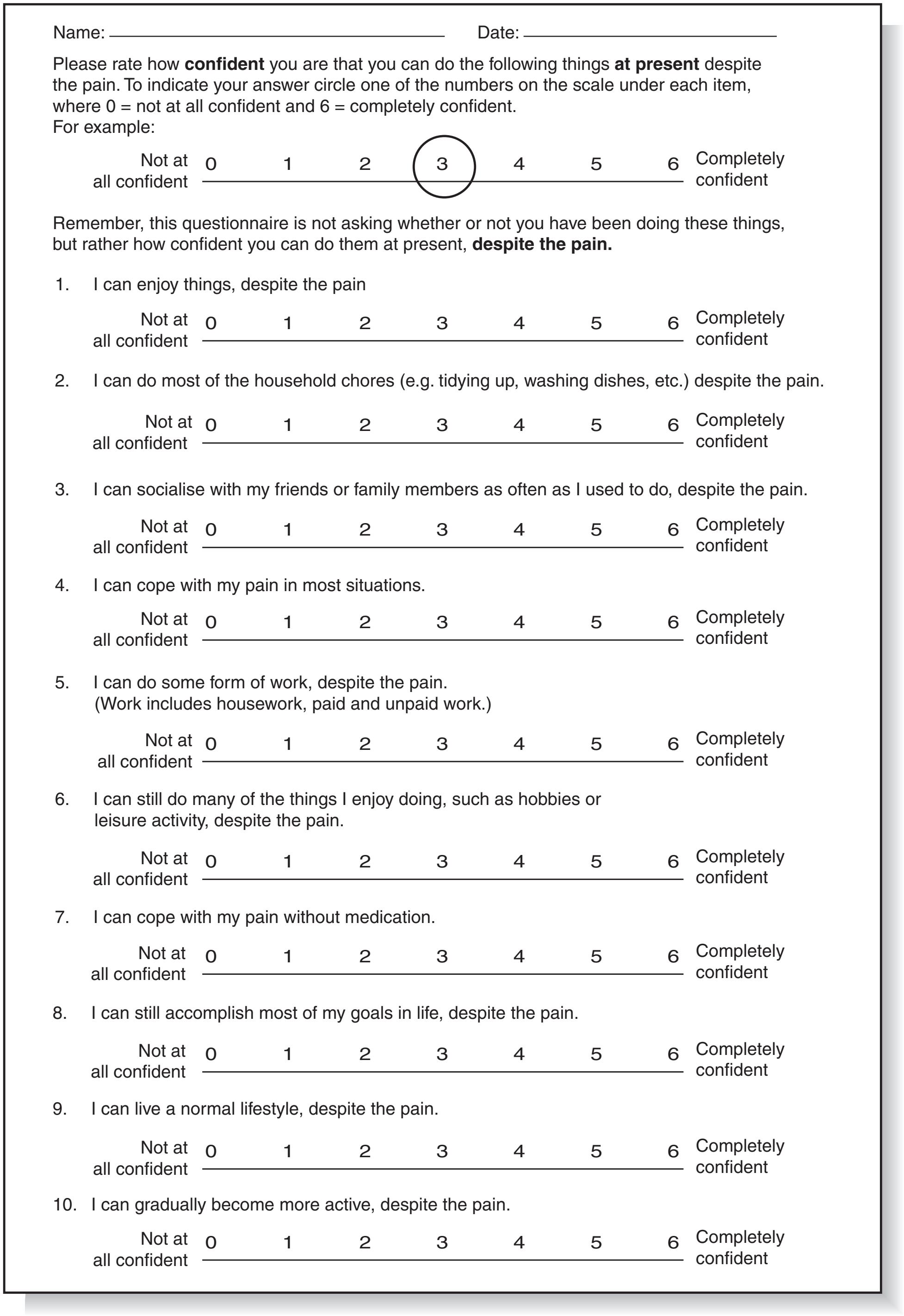
Related to attitudes and beliefs about pain is the concept of self-efficacy, or sense of confidence about ability to do certain activities. A self-efficacy expectation, combined with an outcome expectation (i.e. the belief that a particular behaviour will result in a certain outcome) may influence a person's avoidance of, or participation in, an activity (Bandura 1977). In relation to pain, it has been proposed that self-efficacy beliefs may explain in part the variability between a patient's skill level and their performance outside the treatment setting (Gage & Polatajko 1994, Strong 1995).

Several ways of measuring self-efficacy in relation to pain have been developed. The most useful are the Movement and Pain Prediction Scale (MAPPS) (Council et al 1988), the Pain Self-Efficacy Questionnaire (PSEQ) (Nicholas 1994) and the Self-Efficacy Gauge (Gage et al 1994).

On the MAPPS, each of 10 simple movements are shown by five sequential drawings of the movement. Patients score how far they think they could go in the movement (self-efficacy), the pain at each stage (pain-response expectancies) and the reason they couldn't complete a movement (Council et al 1988). Seven of the self-efficacy responses significantly correlated with actual movement performance. The PSEQ is a 10-item Likert-type questionnaire, designed specifically for chronic pain, where patients are asked to rate their confidence in performing activities despite pain. It has supportive validity and reliability research (Nicholas 1994). The PSEQ is shown in Figure 7.5. The Self-Efficacy Gauge (Gage et al 1994) is also a questionnaire, with 27 items. Patients rate their degree of confidence to complete certain activities without help. See Figure 7.6 for the Self-Efficacy Gauge. It was developed by an occupational therapist for use with patients with a variety of disorders, including pain conditions, where occupational performance was affected.

A number of assessments are commonly used to measure psychological aspects of a person which may arise from, or help stimulate, certain responses to pain. The Beck Depression Inventory (Beck et al 1961) is widely used to evaluate the level of depression associated with chronic pain. It is considered extremely reliable for both clinical and research use. Its use however is restricted, and so is not useful for occupational and physical therapists, although therapists need to understand its value and the information it provides about patients.

The Minnesota Multiphasic Personality Inventory (MMPI) (Hathaway & McKinley 1942) has also been used to gain a picture of the personality profile of the patient with chronic pain. Different profiles have been associated with different patterns of pain responses (Keefe 1982). Chronic pain patients may exhibit certain personality traits, but they are rarely significantly psychopathological, therefore tests such as the Rorschach (which can tease out personality structure) are usually not appropriate. Measures of 'reactive emotional stress' are more suitable (Jamison 1996). The MMPI is never used by physiotherapists or occupational therapists, but may be a component of the complete pain assessment battery used by the team. Main et al (1991) and Main and Spanswick (1995a) have suggested that there exist other more focused measures to assess psychological functioning and responses to pain than the MMPI. For example, Etscheidt et al (1995) have shown that the West-Haven Yale Multidimensional Pain



Name: ____________________ Date: ____________________

Please rate how **confident** you are that you can do the following things **at present** despite the pain. To indicate your answer circle one of the numbers on the scale under each item, where 0 = not at all confident and 6 = completely confident.
For example:

Not at all confident 0 1 2 [✓ 3] 4 5 6 Completely confident

Remember, this questionnaire is not asking whether or not you have been doing these things, but rather how confident you can do them at present, **despite the pain.**

1. I can enjoy things, despite the pain

   Not at all confident 0 1 2 3 4 5 6 Completely confident

2. I can do most of the household chores (e.g. tidying up, washing dishes, etc.) despite the pain.

   Not at all confident 0 1 2 3 4 5 6 Completely confident

3. I can socialise with my friends or family members as often as I used to do, despite the pain.

   Not at all confident 0 1 2 3 4 5 6 Completely confident

4. I can cope with my pain in most situations.

   Not at all confident 0 1 2 3 4 5 6 Completely confident

5. I can do some form of work, despite the pain.
   (Work includes housework, paid and unpaid work.)

   Not at all confident 0 1 2 3 4 5 6 Completely confident

6. I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite the pain.

   Not at all confident 0 1 2 3 4 5 6 Completely confident

7. I can cope with my pain without medication.

   Not at all confident 0 1 2 3 4 5 6 Completely confident

8. I can still accomplish most of my goals in life, despite the pain.

   Not at all confident 0 1 2 3 4 5 6 Completely confident

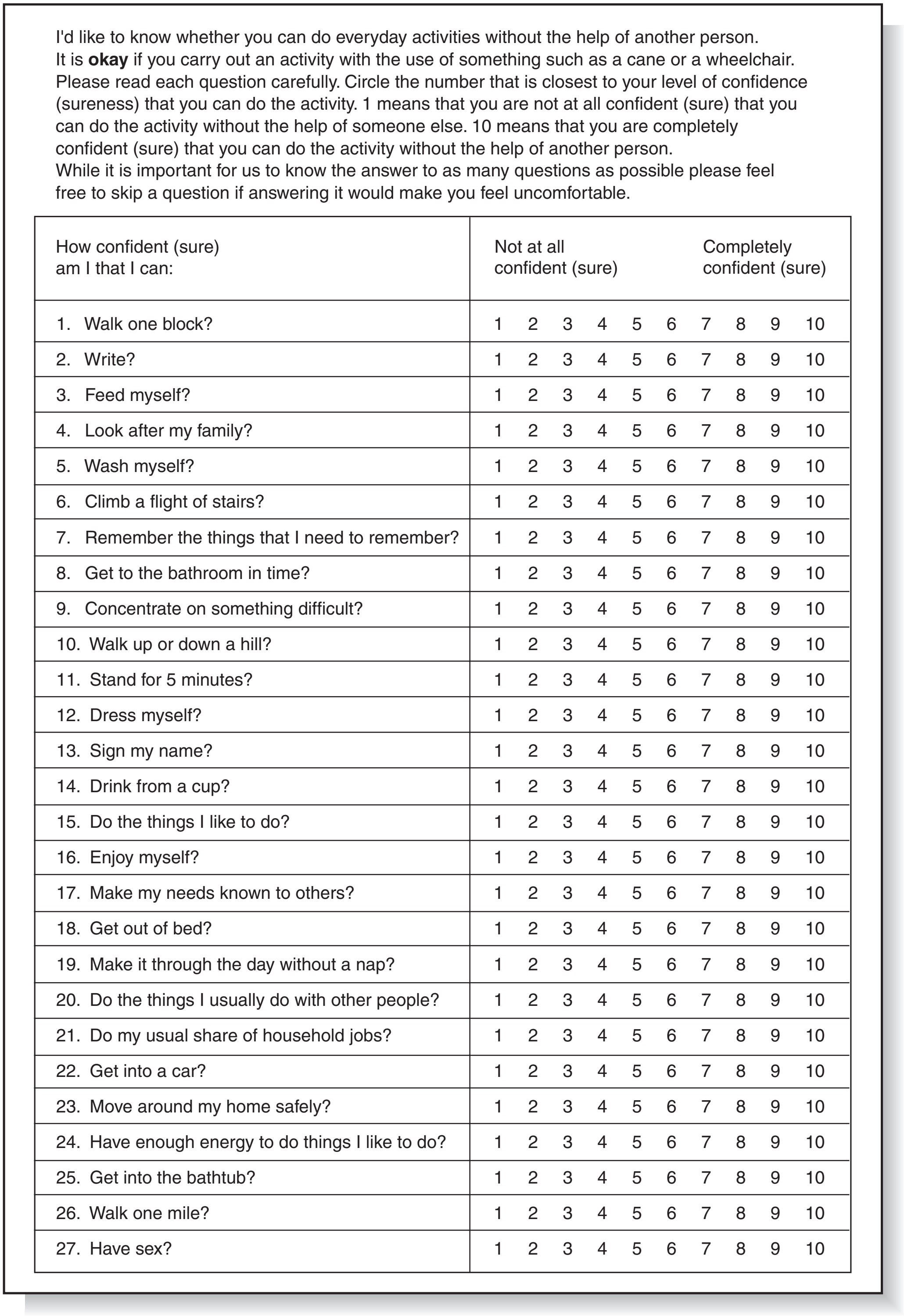
9. I can live a normal lifestyle, despite the pain.

   Not at all confident 0 1 2 3 4 5 6 Completely confident

10. I can gradually become more active, despite the pain.

    Not at all confident 0 1 2 3 4 5 6 Completely confident

Figure 7.5 Pain self-efficacy questionnaire (from Dr. Michael Nicholas, Pain Management Centre, St. Thomas' Hospital, London, with kind permission).



I'd like to know whether you can do everyday activities without the help of another person. It is **okay** if you carry out an activity with the use of something such as a cane or a wheelchair. Please read each question carefully. Circle the number that is closest to your level of confidence (sureness) that you can do the activity. 1 means that you are not at all confident (sure) that you can do the activity without the help of someone else. 10 means that you are completely confident (sure) that you can do the activity without the help of another person. While it is important for us to know the answer to as many questions as possible please feel free to skip a question if answering it would make you feel uncomfortable.

How confident (sure) am I that I can:	Not at all confident (sure)							Completely confident (sure)		
1. Walk one block?	1	2	3	4	5	6	7	8	9	10
2. Write?	1	2	3	4	5	6	7	8	9	10
3. Feed myself?	1	2	3	4	5	6	7	8	9	10
4. Look after my family?	1	2	3	4	5	6	7	8	9	10
5. Wash myself?	1	2	3	4	5	6	7	8	9	10
6. Climb a flight of stairs?	1	2	3	4	5	6	7	8	9	10
7. Remember the things that I need to remember?	1	2	3	4	5	6	7	8	9	10
8. Get to the bathroom in time?	1	2	3	4	5	6	7	8	9	10
9. Concentrate on something difficult?	1	2	3	4	5	6	7	8	9	10
10. Walk up or down a hill?	1	2	3	4	5	6	7	8	9	10
11. Stand for 5 minutes?	1	2	3	4	5	6	7	8	9	10
12. Dress myself?	1	2	3	4	5	6	7	8	9	10
13. Sign my name?	1	2	3	4	5	6	7	8	9	10
14. Drink from a cup?	1	2	3	4	5	6	7	8	9	10
15. Do the things I like to do?	1	2	3	4	5	6	7	8	9	10
16. Enjoy myself?	1	2	3	4	5	6	7	8	9	10
17. Make my needs known to others?	1	2	3	4	5	6	7	8	9	10
18. Get out of bed?	1	2	3	4	5	6	7	8	9	10
19. Make it through the day without a nap?	1	2	3	4	5	6	7	8	9	10
20. Do the things I usually do with other people?	1	2	3	4	5	6	7	8	9	10
21. Do my usual share of household jobs?	1	2	3	4	5	6	7	8	9	10
22. Get into a car?	1	2	3	4	5	6	7	8	9	10
23. Move around my home safely?	1	2	3	4	5	6	7	8	9	10
24. Have enough energy to do things I like to do?	1	2	3	4	5	6	7	8	9	10
25. Get into the bathtub?	1	2	3	4	5	6	7	8	9	10
26. Walk one mile?	1	2	3	4	5	6	7	8	9	10
27. Have sex?	1	2	3	4	5	6	7	8	9	10

Figure 7.6 Self-efficacy gauge (from Gage et al 1994, with kind permission).

Inventory can provide information about chronic pain patients who might require further psychological assessment, and it is a much briefer assessment than the MMPI.

The adjustment of the patient with chronic pain, or ability to manage with pain, may be measured using such measures as the Coping Strategies Questionnaire (Rosenstiel & Keefe 1983, Robinson et al 1997b) or the Illness Behaviour Questionnaire (IBQ) (Pilowsky & Spence 1983). These measures concern cognitive and behavioural coping strategies that patients can use to help them manage their pain. Both positive and negative adjustment strategies are covered. For example, two strategies assessed in the Coping Strategies Questionnaire are diverting attention and catastrophizing. The Pain Catastrophizing Scale (Sullivan et al 1995) measures catastrophizing in more depth and may be particularly useful to gain more information about coping, for patients who are having substantial difficulty managing pain. Catastrophizing is linked with disability and depression. At present it is unknown whether catastrophizing can be changed to more positive coping. However, positive coping strategies are unlikely to be effective in improving coping with chronic pain without support of a coping-skills training program (Rosenstiel & Keefe 1983). The case example in Box 7.3 illustrates the coping strategies a patient with low back pain following a work injury may exhibit.

Box 7.3 Case example

Mr B was a 52-year-old man who had had a work injury when he fell 5 feet from a ladder in the storeroom and landed on the concrete floor below. He immediately went home to bed, the next day visiting his GP and reporting that he was in agony. Plain X-rays revealed no significant findings, and his GP prescribed him bed-rest and regular panadol. Two weeks later he was still unable to work, and the GP sent him to a physiotherapist. Had he been asked to complete the Coping Strategies Questionnaire, his results on the Coping Strategies Questionnaire at this stage might look like:

- Diverting attention from his pain: 4/36
- Reinterpreting pain sensations: 0/36
- Catastrophizing: 28/36
- Ignoring pain sensations: 0/36
- Praying/hoping: 14/36
- Coping self-statements: 8/36
- Using behavioural coping: 8/36.

Such a profile is not inconsistent in an acute-injury pain situation, where the anticipated outcome is pain resolution. The pain can seem an awful, overwhelming thing, but the person will have faith in the doctor or physiotherapist to give pain relief and cure the pain. At this stage, it would be highly unlikely that the patient would be diverting attention from his pain problem. Should the pain continue unresolved, and the individual be one of the 10% of the population to develop a chronic pain problem, the persistence of coping strategies as endorsed above may make rehabilitation difficult.

Recently, the clear demonstration of bias effects in some of these self-report measures has called into question their reliability when used in cases where over-reporting of poor adjustment may affect financial decisions (Robinson et al 1997a). The same study highlighted the difficulty for clinicians and researchers in interpreting results when many of these self-report scales used for chronic pain have no in-built mechanisms for identifying faking or social desirability responses. However, there is potential clinical value in having illness behaviour defined by the presence of psychological symptoms rather than the absence of physical symptoms (Main & Spanswick 1995b). Main and Spanswick (1995b) have also reported that the Illness Behaviour Questionnaire may differentiate neurosis from conscious exaggeration.

Clinical observation of responses to pain are also valid methods of assessment. These are typically taken while the patient is involved in assessment or treatment activities. Pain behaviours which may have been initiated by nociception may persist long after the time of healing, due to positive consequences of these behaviours (Keefe & Dolan 1986). Fordyce (1976) has described pain behaviours as comprising both verbal and nonverbal methods of communication. They include such behaviours as grimacing, moaning, bracing, total body stiffness and verbal complaints (Fordyce 1976). All formal assessment is supplemented by clinical observation and to a certain extent interpretation is based on experience. The aim is to establish a realistic level of distress, which may not be simply related to numbers of obvious pain behaviours. Patients with chronic pain may, unintentionally, use a lot of learned pain behaviours to signal their pain. However, the distress may actually be psychological at the predicament in which they find themselves, rather than a direct function of presently-felt pain. A number of scoring systems can be used, ranging from the original system developed by Keefe and Block (1982) or the Pain Behavior Checklist (Kerns et al 1991).

Keefe and Block (1982) developed a behavioural observation system for use with patients with chronic low back pain. The tool requires the patient to sit, stand, walk, and/or recline for a number of short periods, during which time the patient is videotaped. The videotape is then analysed for the frequency with which the patient uses guarding, bracing, rubbing, grimacing and sighing pain behaviours. Development work with the tool pointed to the validity of this system for measuring a patient's pain. In the clinical setting, more unstructured observations of pain behaviours may be utilized.

Measurement of the impact of pain

Both occupational therapists and physiotherapists have an all-encompassing interest in the patient's best function – whether that is the greatest possible range and strength of high-quality movement, or the ability to manage as large a proportion as possible of the daily tasks that she or he wishes to perform. It follows, therefore, that the third level of pain evaluation commonly carried out is to measure functional status, level of activity, disability and other similar constructs.

A patient's function can be assessed in many different ways. The choice of assessment method will depend on such factors as the age of the patient (an 80-year-old man is unlikely to be assessed for return to work), the extent to which the pain has impacted to date (a patient who was bedridden and is now mobilizing will require a different measure to one who has always been mobile but limited in full range), and whether the assessment is occurring in a hospital, a clinic or home environment. There are eight potentially sequential steps which can be used in part or in full to assess function (Strong et al 1994a):

1. Ask the patient to tell you about their activities.
2. Complete an Activities of Daily Living checklist.
3. Observe performance on tasks.
4. Have the patient complete an activity diary.
5. Staff observe activity level of the patient.
6. Use of an automated measure of activity time.
7. Measurement of physical capacity.
8. A functional capacity evaluation.

There is considerable evidence that a daily activity diary is both reliable and valid when assessing daily activity patterns (e.g. uptime/downtime, pill-taking, mood, pain) for chronic pain patients in their home environment (Follick et al 1984). However, when self-report of uptime (i.e. time spent upright and moving rather than resting) is compared to that of an automated measuring device, there has been a significant under-report of uptime by patients (White & Strong 1992). Abdel-Moty et al (1996) observed that both patients with chronic low back pain and healthy volunteers, when asked to self-predict their ability to stair-climb and squat and then to do the activities, showed significant under-reporting of their physical abilities. They recommended the use of both self-report and actual functional performance. The authors of this chapter also advocate such a combined approach. Keeping a diary of activity can be useful if a structured recording system is used, and if patients are instructed to make entries relatively frequently throughout the day. Memory factors may impinge on accuracy. Some clinicians feel that such a focus on activities and pain is not particularly helpful. It is, however, a frequent practice in many chronic pain facilities.

A number of measures to ask patients how pain is affecting their lifestyle have been devised. Table 7.3 lists many of these. It may also be measured by the number of activities which are still able to be enacted and enjoyed, which might be measured by something such as the Human Activity Profile (Fix & Daughton 1988). The Oswestry Low Back Pain Disability Questionnaire (ODQ) (Fairbank et al 1980) is one of the most frequently used. There are ten sections in which the patient marks one category which most accurately describes his limitations in sitting, standing, walking, lifting, having sex, socializing, sleeping, doing personal care and travelling. One item gauges pain intensity. A possible score out of 50 is obtained, and this is converted to a percentage (Fairbank et al 1980). Recent review of the ODQ has shown it to have good face validity, and some evidence of factorial and criterion-related validity, and some sensitivity to change (Fisher & Johnston 1997). These features, combined with its brevity, make it a very usable assessment of lifestyle effects for patients with low back pain.

The Sickness Impact Profile (SIP) (Bergner et al 1981) is a questionnaire with 136 items to be self-completed or administered by interview. It was designed to provide a measure of health status that is behaviourally based (Bergner et al 1981). The SIP was designed to be used with various populations, not only those in chronic pain, and is able to demonstrate change in health status over time and between groups. There have been some recent developments in trying to select items for specific use with low back pain patients, and thus create a shorter questionnaire specifically for this population (Stratford et al 1993b).

Disability, as defined earlier in this chapter, is difficult to measure. The Pain Disability Index (PDI) (Tait et al 1987, 1990) is a self-report measure which asks patients to rate how much the pain prevents them from doing, or doing as well as previously, in seven areas of functioning. It measures voluntary (work, social) activities and obligatory (self-care) activities. The PDI is a valid and reliable tool, with a high

Table 7.3 Commonly used evaluations for impact of pain

Assessment	Style	Psychometric status	Utility
Short-Form health survey (SF-36)	Self-report	This has excellent validity and reliability	Designed to measure health status Has eight scales: limitations in physical activities, limitations in social activities, limitations in usual role activities, bodily pain, mental health, limitations in roles due to emotional problems, vitality, general health perceptions
Daily Activity Diary	Self-report	There is some support for reliability and validity of the diary for chronic pain patients at home	Monitors activity type and duration for each hour or 1/2 hour Also monitors pain intensity and medication intake Creates a structured record
Human Activity Profile (HAP)	Self-report, up to 94 items	Included a chronic pain sample in normative sample Norms are provided for different age and gender groups	Can be used to help determine the effect of physical impairment on human daily activity

internal consistency and valid factor structure (Grönblad et al 1993, 1994, Strong et al 1994). It can be used with all types of pain and is quick to administer. Studies are still needed to ascertain its sensitivity to clinical change.

Impact of pain on a person's life can also be assessed by behavioural assessment – by measuring the patient's ability to perform actual tasks which are the same as or related to everyday life tasks. Harding et al (1994), for example, developed a battery of measures for assessing the physical functioning of patients with chronic pain. These types of assessment can be expensive, and have, in the past been relatively unreliable. However, more recent measurements have become more reliable. For example, Harding et al (1994) found that a 5-minute walking test, 1-minute standing-up test, 1-minute stair-climbing test and endurance for holding the arms horizontal test were reliable, valid and useful.

Multidimensional assessment of pain

In keeping with the approaches which stress a holistic view of patients, and of management techniques for pain, there are also some assessments which are multidimensional in nature. These assessments have been designed to gather as much data as possible in the one evaluation, although different professionals may be responsible for actually conducting various parts of the assessment procedure. Such assessments have the advantage of keeping a primary focus on the whole of the patient, rather than medical or therapy sub-specialties.

There are a number of multidimensional pain assessments, each of which is somewhat different in approach and style (see Table 7.4). The most well known is probably the McGill Pain Questionnaire (MPQ), through which the patient quantifies pain in three dimensions – sensory, affective and evaluative. While the MPQ gives a useful breakdown of sensory and affective components of pain, it may not be a true multidimensional assessment. It was reported earlier in this chapter as a tool to measure the description of a person's pain.

The West Haven–Yale Multidimensional Pain Inventory (WHYMPI), or the MPI as it is more commonly known, was developed from a cognitive– behavioural viewpoint to:

> Examine the impact of pain on the patients' lives, the responses of others to the patients' communications of pain, and the extent to which patients participate in common daily activities (Kerns et al 1985 p 345).

The three parts to the inventory are nevertheless quite brief to administer, and are psychometrically sound. It contains 12 scales. The MPI is designed to be used with behavioural and psychological assessment strategies. Although it is multidimensional, this is only in relation to the patient's subjective pain experience in a range

Table 7.4 Multidimensional pain evaluations

Assessment	Style	Psychometric status	Utility
Integrated Psychosocial Assessment Model (IPAM)	Self-report	Preliminary support	This is a set of six tools, which in combination evaluate pain intensity, disability, coping strategies, depression, attitudes to pain, and illness behaviour It provides an overall picture of psychosocial adjustment in relation to chronic pain
McGill Pain Questionnaire	Self-report 20 sets of words describing pain experience from which client selects those relevant	Considerable support for basic structure, reliability, and validity	Used to assess the quality of pain in three dimensions: affective, evaluative, sensory
Multidimensional Pain Inventory (WHYMPI)	Self-report 61 items in three scales	This is well tested for reliability and is psychometrically strong Items fall into 12 subscales	Measures interference with activity, social support, pain severity, self-control, negative mood, response of significant others, ability to engage in activities, e.g. chores, social activity
Multiperspective Multidimensional Pain Assessment Protocol (MMPAP)	Physical examinations by two physicians plus client's subjective self-report	Has been shown to be reliable and valid in initial studies Test–retest reliability is acceptable Is a standardized protocol	Used mostly for assessing patients with chronic pain for treatment and to measure outcomes Can predict future employment of disability applicants

of contexts. Clinically, it is useful to gain the patient's view of her or his pain feeling, how supportive their spouse is, and how limited in activity the patient is. The MPI is sensitive to change following treatment.

The Integrated Psychosocial Assessment Model was developed by Strong (1992) for use with chronic pain patients in a clinical setting. It is a relatively new tool, which relates to a model of pain evaluation. Rather than designing a new assessment, Strong has used a complementary range of existing measures, which cover various aspects of the psychosocial experience of pain. This array of measurement tools, which cover pain intensity, pain disability, coping strategies, depression, attitudes to pain and illness behaviour, provides an integrated picture of patients, with similar profiles emerging in both Australia and New Zealand (Strong et al 1995). However, more work on the clinical utility of the assessment model is currently ongoing.

The fourth multidimensional assessment tool is the Multiperspective Multidimensional Pain Assessment Protocol (MMPAP) (Rucker & Metzler 1995). It is a combination of physical examinations by physicians and self-report by the patient with pain. The MMPAP was designed to be of value for assessing applicants for disability pensions, and has been shown to successfully predict employment status (Rucker & Metzler 1995, Rucker et al 1996). The major domains assessed by the MMPAP are pain dimensions, medical information, mental health status, social support networks, functional limitations and abilities and rehabilitation potential.

Assessment and measurement of pain in patients from special populations

While pain is something which affects individuals in an idiosyncratic way, there are some populations of people with special features as a whole, who must be considered when evaluating pain. Infants and children, older people, and people with cognitive or physical impairments or other special needs often have more difficulty communicating about pain. The difficulty in communicating about pain places these individuals at greater risk for problems in pain management. We examined these issues in Chapter 6, 'Pain across the lifespan', and provided suggestions about assessment and measurement for these special populations.

OCCUPATIONAL THERAPY OVERVIEW

How an occupational therapist works with patients with pain, and specifically how he or she assesses them, will depend on the practice setting. If the occupational therapist is part of a multidisciplinary team, she will contribute a component of the overall picture of the pain. Often this will relate to the patient's performance system, habituation system or volitional system, as described by the model of human occupation (Kielhofner 1995). Guisch (1984) demonstrated an application of the model of human occupation to the patient with chronic pain. In other situations, for example if the therapist is working in a sole practice or in a rural or remote area, then he will not be part of a team dedicated to pain, and therefore will need to build as complete a picture of the patient's pain as possible by his own assessment.

Many of the measures an occupational therapist will use have already been discussed. However, the conceptualization of the results of these measures and the overall assessment will allow the therapist to consider what the patient is able to do (performance system); how these abilities and capacities affect management of roles and aspects of lifestyle which are important to the patient (habituation system); and how interests, goals, attitudes, coping strategies, self-esteem, self-efficacy and affective status impact on managing as rewarding a lifestyle as possible on a day-to-day and longer-term basis (volitional system). Assessments specific to occupational therapists include the Occupational History (Kielhofner et al 1986, Moorehead 1969), the Role Checklist (Oakley 1982, cited in Barris et al 1988), the Activity Diary (Fordyce et al 1984), the Occupational Performance History Interview (Kielhofner et al 1988a, 1988b), and the NPI Interest Checklist (Matsutsuyu 1969). The latter chiefly assesses the volitional subsystem, while the others provide information relevant to the habituation subsystem.

Another occupational therapy measure is the Canadian Occupational Performance Measure (COPM) (Law et al 1998). The COPM in an individualized measure that is used by occupational therapists to detect changes over time in the patient's self-perception of her or his occupational performance in the areas of self-care, productivity and leisure. It can be used in any area of practice, including pain. Research and discussion about the reliability, validity and utility of the COPM is acceptable or better depending on the patient sample, and summarized in the COPM manual. For a complete view of the occupational therapist's role, the reader is referred to the earlier book by Strong (1996).

PHYSIOTHERAPY OVERVIEW

Depending on the situation, physiotherapists are called upon to provide pain-management across a broad spectrum of conditions and special client groups (e.g. cardiothoracic and medical conditions, sports and orthopaedic injuries, neurology, gynaecology, paediatrics and geriatrics). This overview pertains only to pain assessment and measurement in acute musculoskeletal pain and orthopaedic models of physiotherapy practice.

The context in which the therapist is working will determine the extent to which he or she is able or required to perform an assessment and measurement of musculoskeletal pain. In an acute situation in which the injury has just occurred, only an abbreviated assessment is possible. The therapist is required to perform a general scan of body systems to ensure that the condition is isolated to the musculoskeletal system and that there are no other injuries requiring prioritization. The aim is then to identify the structures that have been injured and the extent to which they have been injured. The approach in the therapist's rooms is different in that the physiotherapist is able to perform a more comprehensive assessment of the client's condition. This also allows for the measurement of appropriate aspects of the musculoskeletal pain state.

In the clinical setting, it would be expected that the physiotherapist's evaluation of the client's condition involve an interview and a physical examination. In the interview, the therapist completes a body-chart, which is in essence a mapping of the extent of symptoms (i.e. area of pain). Each symptom is described in terms of its constancy (i.e. is it intermittent or constant), nature (i.e. the client is provided the opportunity to use their descriptors), and the intensity of severity of the symptoms (by using a visual analogue scale). In cases of persistent or chronic pain, the therapist may use an MPQ to further describe the client's pain experience. The factors that aggravate and ease the symptom(s) are also determined. These factors are described in both qualitative and quantitative terms, as they frequently form the basis of outcome measures on which the efficacy of the intervention is gauged.

A history of the current condition is also taken, noting the mechanism of injury, severity of initial symptoms, any treatment and its effects, as well as the progress of the condition since its inception. In addition, the therapist will elucidate the presence of other non-musculoskeletal conditions that may be responsible for the symptoms experienced by the client, requiring referral to the appropriate healthcare practitioner.

Following the interview a physical examination usually takes place. The physical examination can be compartmentalized for description sake into three different sections, the order of their description herein not indicating their order of importance or order in the physical examination. One section usually involves an examination of the symptom-aggravating factor(s) that were elucidated in the interview. During this part of the examination the therapist develops an understanding of the relationship between symptomatology and the aggravating factor(s). The other two sections of the physical examination evaluate and measure the impairments in the musculoskeletal system, as well as developing an understanding of the impact of such impairments on function. An example of some of the measurements of physical impairments and dysfunction have been reported by several authors (Daniel 1988, Jull 2001, Lephart 1991, 1992, Richardson et al 1999, Stratford & Balsor 1994, Stratford et al 1987, 1993a, Wilk et al 1994). The findings of the interview and the preliminary findings of the physical examination itself will guide the extent of the physical examination.

Increasingly, physiotherapists are being encouraged to assess and measure the psychosocial impact of the musculoskeletal condition, especially when involved in the management of complex regional pain syndromes (Simmonds et al 2000). In their management of these chronic pain states, physiotherapists, as a function of their concern and care for the client's wellbeing, take into account psychosocial issues such as altered mood states, education level, anxiety, work dissatisfaction, medicolegal compensation and fear of re-injury or pain.

FACTORS THAT MAY INFLUENCE ASSESSMENT AND MEASUREMENT OUTCOMES

Social desirability

Social desirability is the need to obtain approval by responding in a way which is culturally acceptable, and is recognized as a factor which may affect the quality of information provided by a patient during many types of assessment. Social desirability factors may affect self-report of pain dimensions. Deshields et al (1995) found that patients with chronic pain who are more sensitive to social desirability report less psychological distress, but greater pain, than patients who were less sensitive to social desirability. That is, they seem to respond to a set which says it is acceptable to acknowledge physical pain, but not psychological distress.

Therapists need to be sensitive to the possibility of patients giving answers they see as socially desirable. The development of a good therapeutic relationship with the patient, which promotes honest communication, is invaluable. Being able to let patients know that you can see their strengths and capabilities, despite their physical or psychological distress, will encourage them to report accurately. At the same time, being able to accept that the patient's pain is real and distressing will help minimize the patient's need to exaggerate pain. An overall demeanour from the therapist which suggests that the pain is a real problem, but that there is likely to be a future time when pain will be more manageable and less disabling, may also encourage more hopefulness.

Compensation

There is a tendency to assume that patients who stand to be compensated for their trauma and pain will be less accurate in their self-report of pain and disability, and more extreme in their demonstrated pain behaviours. To what extent compensation complicates pain assessment and intervention is a vexing question, and research in the area has, in the past, produced equivocal results. This important issue was considered more fully in Chapter 4.

Memory problems

Patients with chronic pain often report memory problems, and various reports in the literature support this clinical impression. It has sometimes been assumed that the memory difficulties are related to medication patients may be taking. However, Schnurr and MacDonald (1995) found that memory complaints were not related to medication, and that, even though memory complaints were associated with depression in chronic pain patients, depression was not a full explanation.

In assessing patients' pain profiles it may therefore be worthwhile to keep in mind the possibility of disturbances in memory. Patients may under- or over-report their pain, or be unreliable recorders within a diary. Any memory disturbance can create a feeling of anxiety, and an assessment which is structured to minimize the need for memory will be less anxiety-provoking.

Therapist attitudes

The appraisals and attitudes of the therapist to pain in general, and pain in a particular patient, can be very influential on the quality of therapy provided. Attitudes held by a therapist may be predominantly unconscious, and therefore the therapist will not be aware of acting from a basis which may compromise a patient's treatment. As noted in Chapters 4 and 6, gender, culture, age, etc, may influence the patient's experience of pain; these factors may also impact upon the therapist and their attitudes and behaviours.

It would seem that being female, older of a non-Anglo-Saxon background and/or of a lower socioeconomic class may place a patient at a disadvantage in seeking management of pain, probably because of unconscious attitudes and beliefs held by health professionals. However it is possible, as a therapist, to adapt aspects of your clinical practice to counteract the possibility of unwitting bias. Rainville et al (1995) published a survey of health professionals' attitudes towards people with pain. It is a useful examination of one's own stereotypes and prejudices.

Acknowledging that there can be a problem goes a long way towards reducing the problem. Reviewing your own attitudes will be helpful. This can be achieved by: reflection; considering your personal experience of pain prior to working as a therapist; seeking feedback from a trusted colleague; or establishing guidelines for practice and comparing your performance across different patients. For each patient, the assessment must be thorough and the patient's view considered as the primary source of information. Use of an interpreter, of the appropriate gender if sensitive areas are to be discussed, may be needed. All assessments chosen should be age- and culture-appropriate wherever possible.

CONCLUSION

In this chapter, we discussed the many issues that a physiotherapist or occupational therapist needs to consider in the assessment and measurement of a patient's pain. The underlying premise is that some sort of formal evaluation should be made of the patient's pain. The selection of appropriate measurement tools, while far from an easy task, can be guided by using an assessment model which considers a description of the patient's pain, the responses of that person to the pain, and the impact of the pain on a person's life.

Therapists should choose measures which have acceptable validity and reliability and are manageable in the clinical setting. Therapists need to be attentive to patients, to listen to their words, to observe their behaviours and abilities, and to integrate such information to help with clinical decision-making.

Study questions/questions for revision

1. What dimensions of the patient's pain problem should be measured by the occupational therapist and the physiotherapist?
2. What are the differences between pain assessment and pain measurement?
3. Name one measure of pain quality, and describe the type of data it yields about the patient's pain?
4. Identify three reasons why therapists need to obtain self-report data on a patient's pain?
5. What is a reliable measure of a patient's pain intensity?
6. How would you measure the functional implications of a patient's pain?

ACKNOWLEDGEMENTS

Part of this chapter was published in 'Manual Therapy' 1999, 4: 216–220 (Strong 1999).

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