

Chronic pain,
pain management,
physical function,
biopsychosocial.

Increasing Activity and Improving Function in Chronic Pain Management

by Vicki Harding
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Summary Physiotherapists have been at the forefront of the chronic pain management movement, in which increased activity and improved function are important features. By incorporating psychological principles into their clinical practice they have been able to make significant contributions to helping chronic pain patients make changes where previously this has not been possible. This article describes some principles and practical strategies that can be applied by any physiotherapist and taught to patients to help them improve their function despite pain.

Introduction

There is a growing consensus of opinion that chronic pain is a condition of such complexity that it can be addressed only by multi-dimensional assessment and treatment. Such an approach recognises that pain is not merely the end-product of a transmission of nociceptive impulses from a receptor organ to an area of interpretation. It is a dynamic process of integration, perception and interpretation of a wide range of incoming stimuli, some of which are associated with actual or potential harm, and some of which are benign, even though interpreted and described in terms of damage. The ongoing nature of chronic pain means that it is often physically limiting and may be demoralising, and can lead to low mood and a reduction in social and personal contacts. Assessment and management of chronic pain patients must therefore pay attention to all these aspects of the condition. Individual physiotherapists can still use a broad, more psychological approach within their treatment programmes to help patients manage their pain (Harding, 1998).

Problem of Pathology Models for Chronic Pain

For patients with chronic pain any identified structural abnormality does not predict the accompanying degree of functional incapacity or of psychological distress (Waddell, 1987, 1992; Turk *et al*, 1996). The

level of distress and disability is better explained by individuals' beliefs about the nature of their condition and their ability to cope with the pain. Furthermore, persistent pain over a prolonged period is stressful. Chronic stress may result in poor sleep, low mood and neuroendocrine dysfunction. This in turn alters the perception of pain, and affects individuals' ability to cope with that pain still further: a cycle leading to further distress and physical decline.

Many patients have symptoms whose aetiological mechanism is poorly understood, eg ongoing muscle and back pain. The biological/physical cause of the original nociception is often so distant, and so masked by subsequent central sensitisation, surgical interventions and neurochemical and neuroablative techniques, that it is impossible to separate out any clear sense of underlying causative physical pathology. This makes the application of a pathology model quite inappropriate.

Medical interventions for chronic pain have also been relatively unsuccessful (Waddell *et al*, 1996). This has led to the opinion among many that management should have a biopsychosocial perspective and be delivered by either a multi-disciplinary team where members of different professions bring individual skills to patients, or an interdisciplinary approach where generic behavioural skills are common to all members of the team but where specific skills are presented by specialist professions (Pain Society, 1997). This type of programme should be patient-oriented and return to patients a sense of control over their condition; something that is often lost in the round of medical consultations and passive therapies.

Relatively few patients with chronic pain, however, ever make it to a chronic pain management clinic or programme due to lack of local service provision or financial constraints (Smith *et al*, 1996; Feuerstein and

Harding, V and Watson, P (2000). 'Increasing activity and improving function in chronic pain management', *Physiotherapy*, 86, 12, 619-630.

Zastowny, 1996). The requirement for skilled practitioners and the increase in demand for pain management programmes suggest that this rare resource is likely to remain scarce. Many physiotherapists will not have the luxury of referring to pain management programmes. It is hoped however that they will find elements of this approach helpful in their own practice.

Aims of Chronic Pain Management

The content and delivery of pain management programmes differ widely (Flor *et al*, 1992) which has dogged attempts to identify the elements most effective in bringing about a successful outcome. However, the principles and aims of these programmes remain the same. The Pain Society of Great Britain and Ireland (Pain Society, 1997) clarified the overall aim of a pain management programme as 'to reduce the disability and distress caused by chronic pain by teaching sufferers physical, psychological and practical techniques to improve their quality of life'. It is important to note that relief of pain is not a declared aim of pain management. Although eventual reduction in the level of pain is a desirable outcome from pain management, the focus is on functional improvements.

Pain management programmes are found

ed on cognitive-behavioural principles. The objectives of such a programme are chiefly derived from Turk *et al* (1983), Holzman *et al* (1986), and Bradley (1996). These objectives, shown in the panel, originally referred to the management of chronic pain in a cognitive-behavioural context, chiefly fulfilled by psychologists or psychologist-led interdisciplinary programmes. Many of them can also be applied to physiotherapy for pain management.

The cognitive-behavioural approach acknowledges that behavioural responses to illness can be influenced by the consequences of those responses, one of the tenets of operant-behavioural theory. For example, if a painful activity is avoided, the resultant short-term reduction in pain reinforces the avoidance behaviour. Equally, if the presence of pain during a task is aversive and observed by a partner, he or she may suggest taking over that task. If this help is reinforcing, further pain-associated behaviour may elicit further help from the spouse, leading to the relinquishing of several activities over time.

The cognitive-behavioural approach also recognises that both cognitive and affective factors influence behaviour. For example, whether patients re-engage in activity, even though it may have caused an increase in

Objectives of Interdisciplinary Pain Management

- Teach patients about pain, and the differences between acute and chronic pain, to help them accept the long-term implications of their chronic pain -- including that it is not unmanageable and beyond their control.
- Inform patients about their condition, and how their body works. This is intended to allay fears about doing damage when pain is provoked.
- Encourage patients to reduce avoidance, pain and illness behaviours, and to increase active well behaviours, including more assertive communication skills.
- 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 recognise and monitor thoughts, emotions and behaviours, and develop more adaptive coping strategies in order to reduce anxiety and depression, and improve self-confidence.
- Encourage patients to set and pursue their own realistic goals in work, self-care, chores and pleasurable activities, teaching them how to set baselines and to pace.
- Improve general fitness -- flexibility, strength and muscle and cardiovascular endurance, using baseline setting and pacing, and teaching them to relate exercises to activity goals.
- Wean patients off all analgesics, anti-depressants, tranquillisers and sleeping tablets if possible, and reduce use of the healthcare system for their chronic pain, replacing these with relaxation and coping strategies.
- Teach patients to apply behavioural principles at home, and help them to develop coping strategies that can be used when contact with the pain management team has ended, thus giving them a feeling of competence in the management of their condition.

pain initially, will be influenced by what the increase in pain means to them. If patients believe that pain is an indication of increased harm and damage, they are unlikely to relinquish resting as a way of coping, even if there are no external reinforcers operating. Cognitive-behavioural chronic pain management accords well with Melzack and Wall's (1965) description of the interpretation of pain, in which pain and the resultant behaviour are a product of the interaction of nociception, its modulation by other afferent stimuli, and emotional, cognitive and motivational factors.

The objectives of cognitive-behavioural pain management are achieved through a number of essential components (Turk *et al.*, 1983; Bradley, 1996; Keefe *et al.*, 1996). These are education, goal setting and pacing, improved fitness, skills training including relaxation, rehearsal and feedback, generalisation of skills taught to everyday situations and novel situations, and strategies for maintenance and relapse management. Before these can begin, the focus for patients' main needs should be assessed.

Assessment for Pain Management

Pain management is a process, not an event, and good patient management starts with the initial baseline assessment, which should include symptom severity, functional ability through self-report and functional testing, psychological distress and quality of life evaluation. These may form a baseline for planning specific treatments, and some measures are repeated at the end of the programme to evaluate outcome.

Just as adherents to pathology-based models may not address the psychosocial issues, biopsychosocial practitioners must not forget the 'bio' or medical part of the equation. The person performing the assessment, however, needs to balance performing a full physical assessment to ensure that patients feel they have had their condition taken seriously, without repeating unnecessary further tests and reinforcing a pathology-based model.

It is useful if current physical activity, social role and patterns of activity are assessed. The amount of 'downtime' (time spent reclining or inactive) *versus* 'uptime' (time spent engaged in productive or meaningful activity) is recorded. Some patients cope with pain by increasing their activity through walking or gentle exercise, while others refrain from all exercise and resort to rest and consumption of medication. The

pattern of activity can identify the current ability to pace activity. Activity levels in such patients can often be sporadic, contingent on pain level and responsible for periods of severe pain that are modifiable.

Pain Management Education

Patients need relevant and understandable information to help them make choices and change behaviour (Ley and Llewelyn, 1995). Education of patients starts at the first consultation. An initial explanation of pain management should give patients information that helps them make an informed decision about participating in it, and offer them a credible rationale for engagement. When patients first attend for assessment they may believe that they are about to embark on another round of medical interventions similar to their past experience. It may be quite a shock for them to find that they are being asked to accept an approach where 'curing' their pain is not to be the focus of treatment. The aims and objectives, level of commitment required and the components of pain management should be made clear.

In general, patients will have been given over-simple explanations in a pathology-based model. 'Trapped nerves' and 'slipped discs' however do not explain complex pain/dysfunction states many years down the road. It is more helpful to give more complete information, and this requires an unthreatening relationship for patients to feel able to ask when they do not understand. Consequently, not all this may be possible at the assessment stage, and is likely to have to be continued and reinforced through the treatment phase too.

In the course of their condition, patients may have been through a host of ineffective treatments and been given a lot of assurances about the efficacy of these treatments. In addition to this, they may have encountered professionals who are, to say the least, sceptical of their diagnosis. It may have been suggested or even stated baldly that there is nothing wrong with them. Patients are often angry at the medical system and sometimes with good reason. In our own clinic a specific education session taken by a physician discusses their previous medical care. This aims to help patients understand that many doctors and therapists, when confronted by distressed patients in a lot of pain, also respond emotionally. They try interventions simply because they wish to help with the

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This article was received on August 21, 2000, and accepted on September 4, 2000. It is based on a paper delivered at the World Confederation for Physical Therapy Congress in Yokohama, Japan, in May 1999.

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tools which they have available (drugs, manipulation). Additionally, patients can discuss their treatment history with medical staff.

Education is a cognitive event: the giving of information which, it is hoped, will then lead to cognitive reappraisal and finally behavioural change, with the application of the new knowledge to relevant situations. Good educational programmes in any walk of life require not only the giving of information from teacher to student, but the practical application of that information with correction, evaluation, feedback, explanation and ongoing practice. Moser (1990) demonstrated well that information alone, as given in a 'back school', is unlikely to change behaviour. Patients showed significant improvement in their *knowledge* of back protection and ergonomics after attending a back school over patients who did not attend. However they did not improve their *practice* after attending the back school, as measured by a videoed obstacle course designed to assess ergonomic skills and use of taught back protection measures.

There are some common themes that run through descriptions of the educational components of pain management. Information on the condition itself if the patient has a diagnostic label may be helpful, but information about chronic pain needs to be given to all patients, whether they have a pathology-based diagnosis or not. Patients require an explanation of the difference between acute and chronic pain, and how pain does not necessarily mean damage: separating the link between hurt and harm. It is helpful if they come to realise that increases in symptoms following mild exercise are a normal bodily response in a deconditioned system or, additionally, part of central hypersensitivity that they can perhaps see as abnormally amplified signals: 'imprinting' of pain in the CNS rather than signals of damage. This is an example of how a simple guide to pain physiology can be useful. This may also include an explanation of the pain gate theory, though it is important that this emphasises the complexity of pain. It is helpful if it reassures patients of the real and physical sources of their original nociception, and also puts the central influences on pain perception in context, ie modulating not causative. It is unlikely to be helpful if patients take a simplistic view of this, and merely move from searching for a single 'cure', to searching

for a single ideal 'gate closer' upon which they can rely for pain relief.

Educational sessions commonly also include an explanation of the effects of deconditioning and the benefits of exercise and healthy lifestyles. This explains to patients why they are being asked to undertake activities which may seem to involve taking risks of increasing their pain. Ergonomic influences on pain, including education and advice on safe lifting, working postures, and practices for efficiency of movement are also usually covered.

Some didactic teaching is necessary to put over the information that patients need, but education needs to be effective and engaging, so discussion groups and tutorial-based education, drawing on the experiences of the group, are also appropriate. They help to soften the message, aid recall and help patients feel they own the conclusions of the group. Wholly didactic information from a fit and pain-free professional may be seen as dull, not applicable to their situation, or even patronising.

In addition to the education sessions that are provided for patients, they will need guidance to filter information down from other sources (including their own experience) to that which helps them make changes. It is not possible to explain or inform until it is known what patients already understand; it is helpful to ask them first what they know or think about their condition. Unless misunderstandings are corrected at an early stage, a therapist's plausible but conflicting explanation can seem complete nonsense to them. For example:

Physiotherapist: 'You have a tight, over-tense muscle in your neck related to your posture, that needs exercise to help loosen it.'

Patient [thinks]: 'But the trapped nerve between my neck vertebrae is pinched when I exercise. The pain is really sharp – it is excruciating – I can't possibly do that, I might cause severe damage to the nerve.'

Goal Setting and Pacing

Pacing exercise has been described by Gil *et al* (1988) as moderate activity-rest cycling. It is a strategy to enable patients to control exacerbations in pain by learning to regulate activity and, once a regime of paced activity is established, to gradually increase their

activity level. The converse of this is the 'over-activity/pain/rest' cycle.

Chronic pain patients often report levels of activity that fluctuate dramatically over time. On questioning at initial assessment they report that they frequently persist at activities until they are prevented from carrying on by the ensuing level of pain. This leads them to rest until the pain subsides or until frustration moves them to action, whereupon they then try again until defeated by the increase in pain. How many times have we met patients who tell us that they do as much as they can on a good day, only to suffer for it over the following days? Over time, the periods of activity become shorter and those of rest lengthen, disability increases and individuals become more anxious and even fearful of activity, and the resultant pain increases. Patients may also misattribute the muscle aching and stiffness that are normal after unaccustomed exercise as further injury and damage. They may be reinforced in this by other health professionals:

'How do you expect my nerve block/manipulation etc to work if you keep aggravating it?'

'You shouldn't do it if it hurts.'

The physiological effects of this are a gradual physical deconditioning through the avoidance of exercise, characterised by reduced strength and aerobic capacity (Bennett *et al*, 1989; Jacobsen *et al*, 1991; Bengtsson *et al*, 1994). Excessive increases in pain following excessive exercise, engendered by post-exertional pain in unfit individuals, can also increase excitation of pain receptors in an already sensitive pain system, presumably through secondary central sensitisation (Coderre *et al*, 1993; Mense, 1994; Henriksson and Mense, 1994; Bennett, 1996).

The purpose of goal setting is to regulate daily activities and to structure an increase in activity through the gradual pacing of activity. Activity is paced by timing, or by the introduction of quotas of exercise interspersed by periods of rest or change in activity (Fordyce, 1976; Gil *et al*, 1998; Keefe *et al*, 1996).

Goals can be set in three separate domains: physical, which relates to the exercise programme patients follow and sets the number of exercises to be performed or the duration of the exercise and the level of difficulty; functional/task, which relates

to the achievement of functional tasks of everyday living such as housework or hobbies and tasks learned on the programme; and social, where patients are encouraged to set goals relating to the performance of activities in the wider social environment. It is important that these more immediate, as well as long-term, goals are personally relevant, interesting, measurable and achievable. Goal setting should be a matter of negotiation between patients and their therapists. We find the use of charts is essential. Patients set a target for activities each week, some of which should relate to their eventual long-term goals, and record their achievements on the charts. Through this exercise they not only monitor their progress but also become more accurate in setting attainable goals.

Confidence is often low when tackling new goals or returning to previously abandoned activities. In order to increase confidence, patients need to do something previously feared, achieve it, and recognise it as their own achievement. This involves use of a number of skills: pacing systematically from a manageable baseline; generalising information from professionals or gained from other pain patients' experiences and applying it to their own situation; recognising achievement from their own experience; regular practice; and a range of cognitive skills that can include (among others) challenging their unhelpful beliefs, 'should' statements, all or nothing thinking, and catastrophising.

Continued goal-attainment will reinforce self-efficacy (Bandura, 1977) and lead to a perception of mastery over the task or problem (such as managing to exercise despite the pain). It is therefore important that goals are set which encourage success but are sufficiently challenging to assure progress.

Physical Exercise

Limited physical capacity is due to various factors. Tight scar tissue may limit movement so that certain activities such as crouching or bending become extremely difficult and it is simpler to avoid them. Muscle tension habits and postures as a result of pain may preclude the normal relaxed use of a part during normal function, eg arm swing during walking; climbing stairs with one leg leading and the other kept straight, rather than relaxed use of both legs.

Conscious avoidance may occur when

patients are coached by health professionals, eg avoidance of jogging, lifting, cycling, sit-ups; avoidance of bending the lumbar spine in all situations, not merely for just lifting heavy weights; avoidance of all seating with less than 'perfect' ergonomic design.

Avoidance may also occur as a result of inappropriate aids, but this can be prevented by not prescribing them. Corsets, for example, do not in themselves appreciably limit lumbar movement nor cause wastage of abdominal muscles. It is possible to touch the toes and do a back bend in a long corset with steels, and the use of abdominal supports by weight lifters is unlikely to preclude use of their abdominal muscles in any way. Rather, by supplying an aid, the health professional makes an actual or explicit statement about the part being 'supported', ie that it is at risk or weak. The feeling of its presence or constriction then becomes the cue for automatic avoidance. It is this avoidance that weakens, stiffens and lowers pain tolerance, thus restricting function in chronic pain patients. Engaging in activity may then exacerbate the pain immediately or some time after the activity has finished.

Although more patients nowadays are educated to remain active despite the pain, it is necessary not to over-encourage this, or pain is likely to increase so much that patients are forced to limit their activity. Conversely, some patients avoid activity to such an extent that they do not achieve any improvement.

Pain is not the only consequence of avoidance and for some may be of secondary importance. Lost confidence may provide additional and far more powerful cues than pain alone. The very real sense of instability consequent to under-used balance skills, both of the middle ear and muscle and joint proprioceptors, from use of neck collars, walking aids and circumnavigation of furniture, can be harder to cope with than pain on weight-bearing or movement. In certain circumstances these can lead to quite disabling and restricting nausea and vomiting, clearly separate (though they can be concurrent) from similar effects due to medication or anxiety. Muscle tension such as bracing a leg stiffly when weightbearing or to prevent flexion when sitting, is equally a very real barrier to achieving a normal gait and relaxed posture. There are many other examples: ring-shaped cushions may cue a degree of partial relaxation when sitting without full direct pressure on the coccyx,

but their absence tends to cue much increased and widespread tension; the hypersensitivity that accompanies central sensitisation is compounded when it is added to by the hypersensitivity that results from absence of normal tissue stretch, compression and perfusion; avoidance of jolting by instituting smooth gliding movement rather than carefree movement with its consequent accelerations, more abrupt direction changes and reverberating pressure waves through the tissues can lead to feelings of vulnerability in crowds, and avoidance of any form of mechanised transport.

To put chronic pain sufferers' fitness levels and their improvement into context it is worth remembering the following:

- Although chronic pain patients are generally more unfit than people without pain, they generally do not have severe muscle wasting, indicating that they have not remained motionless in bed for long periods. They should perhaps rather than being accused of 'avoiding' activity, be congratulated for what they have managed to do, since this is likely to have been despite past admonitions to undergo strict bed rest when they have 'put their disc out' or had a flare-up of 'chondromalacia' or 'arthritis'.
- Although they are generally fairly sedentary in their lifestyle, it is unhelpful to blame chronic pain patients or think of them as somehow lazy or not trying. The difference between chronic pain patients' ability or willingness to undertake desired activities and the attitude of others may be more about lack of confidence, fear of unpleasant consequences (severe pain), and strongly learned habits or patterns of movement. These patterns may be incompatible with normal movement, and almost impossible to change without appropriate guidance – which may seem unavailable.
- When patients do not feel fully in control, it is not surprising that they behave differently when they are observed in different contexts. Other people, such as medical or benefits agency personnel, or 'motivating' physiotherapists, can be a source of fear, for example of being jostled or put off balance, or being forced to do things that previously resulted in weeks of agony, hospital admission, unpleasant increases in medication,

job loss, further family disruption, etc.

Thus they will provide very strong cues for defensive behaviours such as tensing with movement, or walking with a stick and a slow wide-based gait.

- Patients generally wish to improve their situation and try to the best of their ability, so they cannot be blamed if they are allowed to over-exercise, or if they are so frightened by past experiences that they show reluctance to exercise.
- A programme of non-weightbearing exercises for quadriceps muscles is unlikely to develop them as much as climbing a flight of stairs just once. Provided both legs take part in this activity, the quadriceps will be elevating the full body weight. More and more exercise will not necessarily be the most effective way of improving fitness. Once exercise has facilitated confidence in movement and improved function, more enjoyable functional activities are likely to be more suitable.

Exercise should have two major components: stretching to increase soft tissue length and joint mobility, and aerobic conditioning to increase fitness. Weight-resisted strengthening exercises are not contra-indicated, but should be introduced very gradually because of the likely effect of an increase in pain.

Stretching and Range of Motion Exercises

It has already been stated that chronic pain may have started with an initial injury or condition, or started insidiously with or without co-existing musculoskeletal problems. Although the pain may be widespread there may be areas where the greatest effects are felt. Stretching exercises need to be general and comprehensive to address the general loss of flexibility, as well as specific to individuals' needs.

Motion through a restricted range only results in limitation of joint range through the shortening of joint soft tissue structures, and an impoverishment of joint nutrition. Motion through complete joint range is required to help nutrition of the cartilage of synovial joints as well as in maintenance of the length and strength of the joint capsule, ligaments and muscles (Buckwalter, 1996).

There is a wide literature on the performance of stretching exercises and the physiological mechanisms will not be discussed here. There are two main schools

of thought on stretching technique. These are static/sustained where the muscle is taken to its limit and the stretch is maintained for at least five or six seconds, although many authors suggest longer and ballistic stretching where dynamic, rhythmic bouncing exercises are performed at the outer range of the muscle. Exaggerated guarding and increased myotatic stretch reflexes have been identified in those with painful muscles (Coderre *et al*, 1993; Mense, 1994). Additionally psychological factors have been demonstrated to be closely associated with abnormal patterns of muscle activity (Watson *et al*, 1997). Such abnormalities of movement could potentially lead to ineffective stretching, and at worst injury to the muscle, therefore ballistic stretching technique is inadvisable. Combining the muscle relaxation skills discussed below with stretching will increase the effectiveness of the stretch.

Patients are usually advised to perform their stretching exercises daily, forming part of a warm-up and warm-down from aerobic exercise sessions. Initially patients may not be able to sustain a stretch for more than a few seconds. Goal setting will encompass increases in the length of time the stretch is maintained as well as the number of stretches performed. Patients report that introducing regular stretching into daily work and home routines, especially between different activities and after periods of static work (eg reading, typing) is extremely helpful.

Aerobic Conditioning

The importance of aerobic conditioning in chronic pain was covered by other speakers at the WCPT symposium, so it is not discussed here, except to say that it should be presented within the goal setting and pacing approaches, and patients should be given information on how it relates to a healthy lifestyle as well as to pain management.

Exercise Adherence

Most exercise programmes have reported a reduction in exercise adherence following completion (Lewthwaite, 1990; Proschaska and Marcus, 1994). Wigers *et al* (1996) found that 73% of patients failed to continue an exercise programme when followed up although 83% felt they would have been better if they had done so. There is no record of whether patient-centred goal setting was part of this research.

Continuance with exercise is more likely if the individual finds it interesting and rewarding. Exercising in a gym may not be suitable for all. Some may not have access to such facilities, others may not be motivated by this form of exercise. Developing activities that are patient and family oriented, and can be integrated into the normal daily routine, will help to improve adherence with exercise. Exercise can then become part of life, not an intrusion into it, eg taking the stairs rather than the lift, or putting frequently used objects within reach but high up or low down to encourage regular squatting and reaching up. Patients can also be given access to information about local opportunities for activity, eg dancing, keep-fit clubs, rambling groups, etc, and be encouraged to contribute their own experiences and helpful tips to a 'sport and activity folder'.

Reducing Pain Behaviour

Pain behaviours are 'all outputs of the individual that a reasonable observer would characterise as suggesting pain' (Loeser and Fordyce, 1983). Most commonly these are verbal complaints, altered posture and movements, and deviation from normal behaviour (lying down, resting for long periods). Patients are relatively unaware of their demonstration of such behaviour and the effects that it has on other people. Pain behaviours are closely associated, not only with pain intensity, but also with fear of pain accompanying activity, low self-efficacy and psychological distress (Keefe and Block, 1982; Waddell, 1992; Buckelew *et al*, 1994; Watson and Poulter, 1997).

The most florid pain behaviour is often demonstrated during exercise sessions. Operant behavioural theories suggest that physiotherapists should ignore all pain behaviours and recognise only well behaviours and improved function (Fordyce, 1976). This may not be as productive as is often claimed. Patients with chronic pain have frequently experienced disbelief or felt that their condition has not been taken seriously in the past. Well behaviours and achievements should be acknowledged, but simply ignoring pain behaviour without explanation can be counter-productive. An explanation by a therapist to individuals or a group that they are all attending for a significant pain problem is helpful. The therapist can then acknowledge their difficulties with chronic pain, but that the focus will be on what is attempted

despite the pain, rather than responding to demonstrations of pain. The therapist needs to state that patients will never be asked to do things that may result in injury. By referring to the principles of pacing, patients can be reassured that the focus will be on little and often, with a slow systematic and gradual increase, while learning to relax with exercise rather than using habits of pushing on. This, and the experience or observation of frequent reinforcement, can do much to engage those whose pain behaviour may be ignored in favour of achievement, however small.

As mentioned above, family and partners often respond to pain behaviours in a solicitous manner and in doing so unwittingly reinforce the behaviour. This is rarely overt manipulation by patients. Asking patients and partners to identify the behaviours and their responses to them is a useful way of demonstrating the interaction between the expectation of pain, beliefs about pain and their own reactions. Video-recording patients during standardised tasks is an established method of recording pain behaviours (Keefe and Block, 1982; Watson and Poulter, 1997). Video recording of patients during the programme, however, especially when performing tasks and interacting with others, is a useful way of providing useful feedback of pain behaviour and its likely effects for patients. This can be done in a non-blaming way:

'I can see you are really trying hard there, can you see how I can tell?

'It's great that you are really putting a lot into this, but you seem exhausted.'

'Do you think you may be getting more pain from the muscle tension?'

'Try breathing out at that point/relaxing your shoulders/focusing on keeping your hands loose/swinging your arms gently. How's that? How could you remember to do that each time you practise?'

Relaxation

Suffering chronic pain is a stressful experience and patients often report feeling under stress from factors associated with the pain (poor family relations, guilt, anxiety) and have difficulty in truly relaxing, despite feeling fatigued. In addition, people who have muscle pain may increase their muscle tension in response to pain, which may also contribute to pain (Flor and Turk, 1989;

Watson *et al.*, 1998). To help counter this, relaxation is included in many pain management programmes. There is little or no evidence that relaxation alone is useful in widespread muscle pain (Arena and Blanchard, 1996) but it is a useful adjunct to pain management.

Relaxation in pain management consists of learning to remain alert and in control while reducing muscle tension and developing a state of emotional calmness. By training and practice in this skill, patients should be able to 'switch' into relaxation after a few minutes of application of the skills. There are a number of approaches to relaxation: patients may have to try more than one until they find the most effective for them in the various situations where relaxation is necessary. A combination of these techniques is favoured by many patients.

- In *imagery relaxation* patients imagine a peaceful and relaxing scene. They may choose, for instance, walking through a forest or lying in warm sunshine with the pleasant sounds, scents, feelings and associations that can accompany these. The purpose of this is to choose an image that they can access readily and rehearse until they are able to bring the image to mind within a few minutes of beginning the relaxation. Imagery is idiosyncratic and all patients have to develop their own strategies with the help of a therapist.
- With *autogenic relaxation*, patients concentrate on a phrase and repeat it quietly to themselves while developing a feeling of calmness. Once again, it is useful if patients develop their own phrases but there are lists of standardised phrases for patients to practise this technique (Blanchard and Andrasik, 1985).
- Deep *diaphragmatic breathing* is another very useful technique, and one that is easily incorporated into the techniques above. Many chronic pain patients breathe rapidly, and typically use primarily the upper chest during the breathing cycle. Using slow controlled diaphragmatic breathing, patients learn to reduce their breathing rate progressively until they reach a rate of about six to eight breaths per minute.
- We have found that *focusing* is often useful for patients whose strategies in the past have tended to rely on distraction from

pain. Distraction carries with it the risk that patients do not experience a sense of control over pain. It may provide temporary relief, but can encourage over-activity, so that when breakthrough pain occurs and patients are unable to distract any more, even with the help of their friends and families, they have no sense of where to go next. Patients begin in their least stressful situation, and are taught to focus directly on their pain. They may do this as a quasi-scientific experiment, attempting to define the pain in terms of volume, site, quantity, etc, while remaining emotionally detached. Many then find the pain begins to retreat or reduce in volume or quantity. Alternatively, the pain may be likened to something tangible, eg a sharp knife or burning fire, then while focusing on it, patients imagine turning that image into something else that is less emotive, or calming, cooling or softening the image to make it less frightening and more under their control.

Although the effectiveness of relaxation or breathing control as therapies in their own right is not established, and they are almost always used as adjuncts to other techniques, they do give patients a sense of control over their bodies and over their pain. This sense of control is important for giving them a feeling of optimism that they can use and develop self-management strategies.

Whichever strategy patients decide to adopt they should set aside time to practise relaxation at least twice a day. In addition, once patients identify those everyday situations which increase stress and tension, they require a relaxation strategy that can frequently be used to reduce it. Physiotherapy sessions are also useful times to guide patients in using the various techniques in practice, and for providing helpful and immediate reinforcement.

Sleep Management

Poor sleep is a very common feature of chronic pain and is implicated in the development and maintenance of muscle tenderness (Moldofsky, 1993; Wolfe *et al.*, 1990). It may have been managed medically by low-dose tricyclic antidepressants, especially amitriptyline and nortriptyline. These are rarely enough, however, as poor sleep is often due to a combination of factors, and as many factors as possible

should be addressed. Improving sleep in the presence of chronic pain is a difficult task. Advice on sleep management and good sleep hygiene is important. This can also be combined with the relaxation skills being taught to help reduce tension and tossing and turning; and cognitive challenging, eg that rest is almost as good as sleep.

Physiotherapists also check sleeping postures, changes of position, and the balance of activity and rest through the day and night. If patients have only one sleeping position available, then they need gradually to build up tolerance to other positions during the day, until they can maintain them long enough for use at night, ie about 30 minutes. If patients have problems of pain and stiffness due to keeping still too long, this may be helped by medication reduction (sleeping tablets, anxiolytics, antidepressants or opiates); practising turning over in bed and using other positions; problem solving to make more and/or less restricting sleeping space; using a timer to wake up regularly, move gently such as walk around or do some stretches, and learn to fall asleep again soon afterwards. Patients will soon find through experimentation how long to set the intervals between moving, to balance the optimal sense of rest against reduced stiffness. As patients' day-time stretch routines improve, they often find these times can be extended.

Cramp can be a quite severe problem at night. Again, bed-time stretch routines, particularly to the calf and hamstring muscles and the neural tissues, can be valuable. Sometimes night-time cramp can increase when stretch routines are first begun, so patients may be advised to stretch less vigorously for a while.

The body clock needs to be aware of the differences between night and day, so a gradual reduction in length of rest periods during the day and increasing activity will help. Some patients do not take enough breaks in the day, so that pain builds to a crescendo until the evening, when rest seems impossible. Again, the use of paced activity with short, frequent day-time rest and relaxation breaks without actual napping, usually bring about change eventually.

Relapse Self-Management

It is almost inevitable that patients will, at some stage, experience a flare-up of pain. It is valuable that they recognise and then prepare for the situations that might make

them prone to relapse. Patients are just as prone to strains, pulled muscles and injuries as the rest of the population once they become active.

Relapse may not be entirely caused by an individual physical event. The build-up of daily stresses may produce challenges to patients' daily coping resources and their ability to manage their pain. Differentiating what is a new pain, associated with new pathology, and their usual chronic pain is essential. The development of an 'emergency card' in collaboration with their family and partner can be useful in these situations. This is a written plan of how they will deal with increases in pain and/or new pathology. This includes developing criteria for visiting their physician, the taking of medication, relaxation, rest and pacing activity and returning to normal activity as soon as possible. This of course cannot cover all eventualities but helps patients to retain a feeling of control.

From time to time practitioners may encounter patients who have attended pain management, but who turn to them in times of increased pain, requiring help to manage the flare-up. It is essential that therapists who are not experienced in pain management, but to whom patients might turn as a source of short-term symptomatic relief, do not unwittingly encourage patients back into a round of treatments which threaten their sense of self-control and their self-management programme.

The first approach is to reassure patients that the increase in pain is not a sign of a worsening of the condition or an inevitable decline, but that it is part of the natural variation in the pain pattern as occurs with all chronic diseases. An increase in pain should not be taken by patients as failure, or evidence of an inability to manage their own condition. It is a challenge to their self-management, not the end of it. Reassurance on these points and getting patients to identify how successful they have been thus far can help 'rescue' patients at this stage. If new pathology is identified then the management of this must be incorporated into patients' own self-management. Control for the management of new problems should be developed with patients where possible and the benign nature of musculoskeletal pain communicated.

Although reduction of chronic pain symptoms has been reported (Granges *et al*, 1994), it is disingenuous of practitioners to suggest to chronic pain patients that

treatment or the pain management approach will be able to cure their condition. If any specific treatment is clearly indicated (eg manipulation, mobilisations, trigger point therapy) it must be time limited and should be presented to patients as a short-term measure to help them over the crisis, and to support them in getting back on track with their self-management programme (Vancouver Consensus Group, 1996). It is totally inappropriate to foster dependency through encouraging repeated consultations. This is very unlikely to be in a patient's best clinical or financial interest, even if it may serve the practitioner's.

Physiotherapists should question patients about their self-management strategies, particularly about their emergency relapse plans. Management can then focus on helping patients to implement this. Advice

should be sought from the individual patient's pain management programme where possible, and the opportunity of joint management should be discussed. In any event, resumption of a graded exercise programme is to be encouraged early on, with appropriate attention to pacing and goal setting.

Most evidence points to the unfortunate fact that those with chronic pain will have it for a long time, and possibly for life. Although a greater understanding of the problem will hopefully provide better treatments in the future, there is no current 'cure'. Symptom management will not solve the wider issues of incapacity associated with this condition. All practitioners have a duty to help patients to continue as independent a lifestyle as possible, free from further ineffective investigations and treatments.

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Key Messages

■ Pain management techniques should not be reserved until all other therapies have failed.

■ The principles applied by physiotherapists working in interdisciplinary chronic pain management can be integrated into usual physiotherapy practice.

■ Cognitive-behavioural techniques improve patient and therapist communication, potentiate the effects of treatment and encourage patient self-management.

■ Relating exercise to function improves fitness and joint biomechanics and is likely to be more effective and encourage maintenance better than prescriptive exercise.

■ Even when a significant reduction in pain might not be possible, by reducing the associated distress and fear, physiotherapists can help patients become more functional.

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