The role of physiotherapy in the management of non-specific back pain and neck pain

J. Moffett and S. McLean

This paper provides an overview of best practice for the role of physiotherapy in managing back pain and neck pain, based mainly on evidence-based guidelines and systematic reviews. More up-to-date relevant primary research is also highlighted. A stepped approach is recommended in which the physiotherapist initially takes a history and carries out a physical examination to exclude any potentially serious pathology and identify any particular functional deficits. Initially, advice providing simple messages of explanation and reassurance will form the basis of a patient education package. Self-management is emphasized throughout. A return to normal activities is encouraged. For the patient who is not recovering after a few weeks, a short course of physiotherapy may be offered. This should be based on an active management approach, such as exercise therapy. Manual therapy should also be considered. Any passive treatment should only be used if required to relieve pain and assist in helping patients get moving. Barriers to recovery need to be explored. Those few patients who have persistent pain and disability that interferes with their daily lives and work need more intensive treatment or a different approach. A multidisciplinary approach may then be optimal, although it is not widely available. Liaison with the workplace and/or social services may be important. Getting all players on side is crucial, especially at this stage.

Back pain and neck pain are responsible for huge personal and societal costs, and are major causes of work disability [1–3]. Contrary to traditional thinking, neither back pain nor neck pain is a problem that always resolves itself. Recurrences are usual and their course is very variable [4–8].

Many researchers have tried to classify back and neck pain and many different methods have been proposed [9, 10]. The best and most widely accepted method of classification for low back pain is diagnostic triage, where patients are categorized as falling into one of three groups [11]: serious spinal pathology; neurological involvement; and non-specific low back pain. Similar categories could apply to neck pain patients.

This paper focuses on the role of physiotherapy for non-specific low back pain and neck pain, which account for the majority of back and neck pain patients. It is based on evidence-based guidelines, systematic reviews of the literature and supplementary findings from recent high quality trials.

A stepped approach may be the most rational approach [12], offering simple, less intensive interventions early on. (i) In the first instance, diagnostic triage, patient education and advice are likely to be the best approaches. (ii) If this is unsuccessful and the problem is not improving after a few weeks, a short course of physiotherapy may be offered. Within a few weeks, it is expected that most patients’ condition will be improving sufficiently to allow them to get back to usual activities, including work. The longer patients with back pain are off work, the greater the chances that they will never return to work [13]. It is therefore important that the individual is encouraged to return to work even if there is still some residual pain. (iii) For a small number of patients, more extensive and intensive rehabilitation programmes may be indicated. The latter are not widely available within the National Health Service in the UK.

The literature review in this paper is based mainly on systematic reviews, such as Cochrane reviews where they were available, and also draws information from individual randomized trials where appropriate. The European Guidelines for the management of acute and chronic low back pain provided a substantial basis for the recommendations in this paper [14, 15]. For the development of these guidelines, searches up to November 2002 were made in Cochrane, Medline, Health Star, Embase, Pascal, Psychinfo, Biosis, Lilacs and IME (Indice Medico Espanol). Keywords included ‘low back pain’, ‘back pain’ and ‘systematic’. Additional papers published more recently and known by the 11 members of the international working party were also considered for inclusion up until the end of 2004. Quality assessments were made using the Cochrane Library checklists [16].

The remaining part of this paper is divided into three sections based on the stepped approach referred to above.

First-line approach: diagnostic triage and patient education for back pain and neck pain

Traditionally, a diagnostic triage would be carried out by the physician, most commonly the general practitioner (GP), prior to referral to the physiotherapist. Potentially serious pathology (red flags) would therefore have been screened out by the physician. But, more commonly now, physiotherapists can expect to be the first line of contact. It is therefore imperative that the physiotherapist is familiar with the red flags (Table 1). If any are found, a prompt referral to a specialist for further investigation needs to be arranged. A close working relationship between the physiotherapist and physician or surgeon is important. Some physiotherapists can refer patients for imaging, including plain...
TABLE 1. Red flags [14, 29]

<table>
<thead>
<tr>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of onset &lt;20 or &gt;55 yr</td>
</tr>
<tr>
<td>Violent trauma</td>
</tr>
<tr>
<td>Constant progressive, non mechanical pain (no relief with bed rest)</td>
</tr>
<tr>
<td>Thoracic pain</td>
</tr>
<tr>
<td>Past medical history of malignant tumour</td>
</tr>
<tr>
<td>Prolonged use of corticosteroids</td>
</tr>
<tr>
<td>Drug abuse, immunosuppression, HIV</td>
</tr>
<tr>
<td>Systematically unwell</td>
</tr>
<tr>
<td>Unexplained weight loss</td>
</tr>
<tr>
<td>Widespread neurology (including cauda equina syndrome)</td>
</tr>
<tr>
<td>Structural deformity</td>
</tr>
<tr>
<td>Fever</td>
</tr>
</tbody>
</table>

X-rays and MRI. There is some evidence for the use of MRIs (even in the absence of red flags) in the orthopaedic setting, slightly improving treatment outcomes [17]. However, false positive findings, such as bulging discs, are common and can cause unnecessary concern [11]. Routine use of MRI for acute or chronic non-specific back pain is not recommended [15–17]. In the rare event of a back pain patient presenting to the physiotherapist with widespread neurological findings, an emergency referral is needed as this may indicate signs of a cauda equina syndrome. Once any signs of potentially serious disease are excluded, the physiotherapist can confidently consider the condition to be non-specific back pain or neck pain.

History taking and the physical examination
The physiotherapist carries out a subjective assessment (history) followed by the physical examination. Active listening to the patient’s concerns—not only about their pain and its localization but also about the consequences of pain and how it is dealt with—is essential to good diagnosis and management [1, 18]. A physical examination should be based on the history of the problem rather than strictly following a proforma. Judicious use of physical tests should be employed to clarify the nature of the patient’s mechanical dysfunction.

Explanation of the condition to the patient
Once the history has been taken and the physical examination has been carried out, the physiotherapist needs to provide a careful explanation to reassure the patient that no serious disease or injury has been found. This may be the most important and most challenging part of the treatment. Physiotherapists need to avoid reinforcing patients’ fears about the threatening processes that might be going on in their spine. These fears or concerns can act as a barrier to recovery [19] and need to be properly addressed. Patients often expect to be given a label to describe their problem [20], but this can be fraught with difficulties. Great care is needed to select appropriate, non-threatening words that will not be misinterpreted by the patient [21]. Providing patients with biomechanical information about the spine that is not evidence-based can add to their concerns [22]. Psychosocial factors are at least as important and need to be addressed in both back pain and neck pain patients [14, 15, 23, 24].

Encouraging an early return to usual activities
The physiotherapist has an important role in encouraging active self-management, and this is an essential component of treatment for all back and neck pain patients. The primary aim is to help patients resume normal activities as far as possible, as soon as possible. This advice should be supported by offering a simple evidence-based educational booklet [25–29]. This provides simple messages which can help to dispel maladaptive fears and misconceptions about their back pain or neck pain.

Evidence for a brief intervention providing patient education
The term ‘brief intervention’, for the purposes of this paper, refers to any minimal intervention usually of one or two sessions only (www.backpaineurope.org). They all provide some educational input and in more recent studies take into account cognitive–behavioural principles. However, different authors use the term to encompass quite a range of approaches. A review of the literature shows that patient education in the form of a brief intervention can be effective even for chronic back pain [15]. The content and delivery can vary greatly. It can be delivered as a one-to-one by the physiotherapist, or in parallel with a physician consultation/education session. The European Guidelines group concluded that such an intervention (no more than two sessions) encouraging a return to usual activities can be as effective as usual physiotherapy or aerobic exercises for chronic back pain [15, 30–33]. More recently, a large, high-quality trial with subacute back pain patients (n = 402) compared manual therapy (four sessions) with a brief hands-off pain management intervention (three sessions) and failed to find any significant difference in change scores for disability at 12 months [34].

There is less evidence for the effectiveness of brief interventions and patient education strategies for patients with neck pain [35]. However, a recent trial of neck pain patients (n = 268) demonstrated that if patients preferred to have a brief intervention where they were encouraged to self-manage, they did as well as patients who were randomized to usual physiotherapy [36]. Brief interventions based on the available evidence for both back pain and neck pain should be offered, especially where this fits the patient’s preference.

Back schools and neck schools
One way of providing back and neck care education to patients is through a group intervention sometimes referred to as a ‘back school’ or a ‘neck school’, which might be cost-effective, since theoretically it uses fewer resources per patient. This intervention consists of an education and skills programme, including exercises, in which all lessons are given to groups of patients and supervised by a paramedical therapist or medical specialist [37]. The original Swedish back school, introduced in 1980, consisted of four sessions of 45 minutes [38]. Back schools vary greatly in their approach. The content, means and method of delivery are particularly important. Those that take place in a relevant setting, encourage a return to usual activities and take account of psychosocial issues may be more effective than those which concentrate on biomechanical factors. According to the most recent Cochrane Systematic Review [39], back schools, especially in the occupational setting, may be more effective in the short and intermediate term than exercises, manipulation, myofascial therapy, advice, placebo or waiting list controls for patients with chronic and recurrent low back pain. For neck pain, there is almost no evidence for the effectiveness of neck schools, with only one small, low-quality study which failed to find any significant effect [40].

Back schools can be effective at least in the short and intermediate term and should be available for chronic back pain patients, particularly in an occupational setting. Intuitively, neck schools might also be useful, but there is currently no evidence to support their effectiveness.
Physiotherapy interventions for patients who have not responded to a self-management approach

Psychosocial factors can predict a poor outcome of treatment

There is evidence that psychosocial factors are more important than biomechanical factors in influencing the development of back pain and probably neck pain too [41–43]. Barriers to recovery need to be identified [44]. This is a challenging but key role for physiotherapists. Psychosocial factors play an important role in persisting symptoms and disability, and influence the response to treatment and rehabilitation [1, 3, 14, 15, 43, 45]. The term ‘yellow flag’ is used to denote psychosocial predictors of a poor outcome for chronic back pain patients. It is derived from the New Zealand Guidelines for the management of acute back pain [46]. A successful Scottish campaign to help reduce work-related disability due to back pain (http://www.workingbacksscotland.com) has summarized these psychosocial predictors (Table 2). This website provides a list of possible questions to put to the worker with low back pain. These can be rephrased to suit the individuals concerned. If several issues are flagged up in the consultation, then the worker may be at risk (Table 3).

The use of cognitive–behavioural interventions

For both back pain and neck pain, there is evidence that cognitive–behavioural interventions can be successful [14, 15, 47]. Physiotherapists might increase their effectiveness, with additional training to enhance communication skills and incorporate cognitive–behavioural strategies in their usual practice. This has been attempted and evaluated in a few trials on both back pain [48] and neck pain [36], but the results have demonstrated varying degrees of success. The extent of training and the resulting skill levels that are required to deliver an effective cognitive behavioural intervention may be critical. Because of their undergraduate training, it may be difficult for physiotherapists to consider psychosocial factors ahead of biomechanical factors. They may have beliefs that link the report of pain with an injury model [49]. Appropriate additional training for physiotherapists and other health professionals may therefore be needed. All health professionals dealing with the patient need to provide the same message, encouraging a gradual return to normal activities, including work. Patients need to be clear that (i) although movement may hurt this does not mean that any damage is occurring; (ii) they should return to work (or usual activities) even if the pain is not completely resolved; (iii) they should use regular analgesies; and (iv) they may need to modify duties at work for a limited period. Early communication between the health professionals involved and the person’s work place may be a crucial link that is often missing. Psychosocial factors are very important and must be considered for each patient, especially those with chronic neck pain and back pain, in order to achieve maximum effectiveness.

Exercise therapy

Exercise therapy commonly forms part of the treatment offered by physiotherapists for patients with back pain or neck pain. It can vary greatly in content and method of delivery. It has been defined as: ‘any programme in which, during the therapy sessions, the participants were required to carry out repeated voluntary dynamic movements or static muscular contractions (in each case, either “whole-body” or “region-specific”: and either with or without external loading), where such exercises were intended as a treatment. The exercise was to have been supervised or “prescribed”’ [50].

### Table 2. Summary of yellow flags [46]

<table>
<thead>
<tr>
<th>Flag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>A belief that back pain is harmful or potentially severely disabling</td>
</tr>
<tr>
<td>Yellow</td>
<td>Fear-avoidance behaviour (avoiding a movement or activity due to misplaced anticipation of pain) and reduced activity levels</td>
</tr>
<tr>
<td>Green</td>
<td>Tendency to low mood and withdrawal from social interaction</td>
</tr>
<tr>
<td>Blue</td>
<td>Expectation of passive treatment(s) rather than a belief that active participation will help</td>
</tr>
</tbody>
</table>

### Table 3. Possible questions to elicit yellow flags

- Have you had time off work in the past with back pain?
- What do you understand is the cause of your back pain?
- What are you expecting will help you?
- How is your employer responding to your back pain? Your co-workers?
- Your family?
- What are you doing to cope with your back pain?
- Do you think you will return to work? When?

From Working Backs Scotland Online. Available at: http://www.workingbacksscotland.com/HealthProfessionals/yellowflags.htm

Specific exercise programmes

Specific exercises are often provided by physiotherapists. The rationale is that once the back or neck problem has been assessed by the physiotherapist, specific exercises can then be provided to deal with it. The choice of exercise programme is likely to be influenced mainly by the physiotherapist’s own training and experience. The European Guidelines do not recommend the use of any specific exercise programmes, such as stretching, strengthening, flexion or extension exercises for acute back pain [14]. For subacute and chronic back pain and neck pain, there is limited evidence for the use of any specific exercise programmes and in most guidelines no one programme is recommended [15, 51].

The McKenzie approach is one of the most frequently used types of physiotherapy for back pain [52–54] and probably neck pain. It is based primarily on the identification of a directional preference for spinal movement and can form the basis for prescription of exercises [55]. Improvement in symptoms is subsequently assessed in terms of ‘centralization’, a phenomenon that has been quite well documented [10]. To date, there is limited evidence in terms of randomized trials to support the effectiveness of the McKenzie approach for back pain or neck pain. One large trial of subacute and chronic back pain patients (n = 260) found that the McKenzie approach, when compared with intensive dynamic strengthening exercises, was slightly more effective at 2 months in improving function [56] but the difference was not maintained in the longer term. A recent systematic review of six trials concluded that there is some evidence for the effectiveness of McKenzie approach for subacute and chronic back pain patients, at least in the short term [57]. For neck pain, only one small and underpowered trial [58] compared McKenzie treatment to a general neck and shoulder exercise programme and a control group, and found that both exercise programmes were more effective than the control group.

The McKenzie approach, especially for subacute and chronic back pain, has the potential advantage of encouraging self-help and there is some evidence for its effectiveness, at least in the short term.

Spinal stabilization exercises (including Pilates) [59] for the management of back pain and neck pain are gaining popularity. To date there is only limited evidence to support their use. Specific muscle dysfunctions appear to be associated with pain. Atrophy of the multifidus muscle [60, 61] and altered recruitment of trunk muscle has been demonstrated in back pain sufferers [62]. A decline in deep cervical flexor function can lead to a compensatory increase in superficial muscle activity around the
General exercise programmes for back pain and neck pain

Physiotherapists appear to use general exercise programmes more often now as part of their approach for managing patients with longer-standing back pain. In spite of emerging evidence, this is not yet the case for patients with neck pain. A very large number of trials on exercise therapy for back pain and neck pain have been published. They vary greatly in quality and investigate a wide range of forms of delivering exercise.

The European Guidelines group concluded that exercise therapy can be recommended for chronic back pain patients, although no particular programme of exercises was singled out. A recent systematic review of exercise for chronic back pain concluded that individually designed supervised exercise programmes to include stretching and strengthening may relieve pain and improve function [67]. ‘Back to Fitness’ programmes encourage a return to physical activities through an exercise class. They are based on sports medicine principles and incorporate a cognitive–behavioural approach [68]. There is some evidence that such a programme can be effective for both subacute and chronic patients in the longer term [69, 70], although it has been shown to be ineffective in lower socioeconomic groups [71].

In line with the back pain evidence, emerging research now suggests that exercise-based neck/shoulder rehabilitation can be an effective way of managing cervicogenic disorders [24, 72]. Again, no one exercise regime stands out [51], although there is some evidence that both strengthening and endurance regimes have superior benefits over other forms of activity, such as stretching programmes or returning to normal activity [73, 74]. Multimodal treatment approaches that include the use of exercise therapy appear to be more effective than single treatments alone for the management of neck pain [75, 76].

General exercise programmes appear to be an effective way of managing back pain or neck pain that is not resolving over a few weeks. There are no clear guidelines as to the best way of setting up a programme of exercise classes.

Passive treatments

Manual therapy (spinal manipulation and mobilization). Manual therapy refers to any intervention that entails the use of the therapist’s hands on the spine. Some consider it to be a core skill for physiotherapists. The term ‘spinal manipulation’ usually refers to a high-velocity, low-amplitude thrust and is more commonly used by specialist physiotherapists, chiropractors and osteopaths. Gentle and more conservative techniques, such as ‘Maitland’s mobilizations’ [83], are frequently used by physiotherapists [52, 53], applying pressure through the therapist’s hands to move the vertebral joints passively through a given range. The conclusions from several systematic reviews have been somewhat unclear, mainly because of a dearth of high-quality trials [84]. One large national study (n = 1334) carried out in the UK recently found that primary care patients randomized to a spinal manipulation package, in addition to best-care GP management, reported modest but significant benefits compared with patients who only received best-care GP management. These differences were demonstrated at 6 and 12 months after a short course of treatment [85]. Based mainly on an examination of the most up-to-date systematic reviews of manipulation, the European Guidelines for both acute and chronic back pain concluded that short courses of spinal manipulation should be considered [14, 15].

Manual therapy techniques are also commonly used to treat neck pain [86, 87]. Several systematic reviews have concluded that manual therapy, on its own or combined with exercise, can be useful ways of treating patients with acute and chronic neck pain and cervicogenic headaches [76, 87–89].

Massage. This can considered as part of manual therapy. It is an ancient form of treatment that is still very popular for patients with back and neck pain, especially in European spas [90]. Its effectiveness is under-researched and it is usually not recommended in clinical guidelines. However, as a preliminary to more active forms of treatment, on pragmatic grounds its use should not be totally discounted.

Physical modalities. A wide array of physical modalities is commonly included as a part of physiotherapeutic interventions for back and neck pain. These include transcutaneous electrical nerve stimulation (TENS), heat/cold, traction, laser, ultrasound, short wave, interferential, corsets and collars. There is limited evidence to suggest that electrotherapy (laser therapy, therapeutic ultrasound and TENS) is not effective for reducing neck pain [24, 91]. However, the overall conclusions from systematic reviews is that there is too little evidence from good-quality studies to either support or refute the clinical use of physical medicine modalities for patients with back or neck pain [14, 24, 72, 91–94]. The placebo effects of passive modalities probably account for most of the benefits that are gained. This can be a powerful effect where both the therapist and the patient have faith in the treatment. However, dependency on physical modalities could encourage passivity, inactivity and disability behaviour [93]. They may sometimes have a role but only as an adjunct to a management
Physiotherapy in back and neck pain management

375

Approach that encourages a return to normal activities. The use
of these modalities as a sole treatment for acute or chronic back
pain is not recommended in international guidelines [14, 15, 95].

Patients with persistent chronic back pain or neck pain

Patients who have not responded to treatment and are unable to
resume normal activities, including a return to work, may need
more intensive approaches. There is strong evidence from at least
two systematic reviews [96, 97] that intensive multidisciplinary
biopsychosocial rehabilitation with a functional restoration
approach is effective. This approach is recommended in the
European Guidelines for chronic back pain [15]. Such a pro-
gramme has been demonstrated to reduce pain and improve
function in patients with chronic low back pain. It can also be
effective in returning patients to work. However, it is expensive and
not widely available in the UK. A recent large scale trial (n = 349)
in the UK compared an intensive functional restoration pro-
gramme with surgical spinal stabilization for chronic back pain
patients [98, 99]. It found that patients randomized to the surgery
reported marginally better outcomes 2 years later but at a much
greater cost and with a much larger risk of adverse effects
(complications from surgery). At this time it is unclear whether
an intensive multidisciplinary approach is effective for patients
with neck pain [97, 100].

If the aim is to return people to work, it may be important to
include specific components not only on functional restoration
and work hardening but also to help individuals focus on
overcoming the barriers to returning to work. Some evidence
is emerging that schemes such as ‘Pathways to Work’ can be
effective even in returning to work a sizeable proportion
of people who have been out of work for more than 2 years
[101]. In this type of programme the patient is offered vocational
rehabilitation (including practical help with applying for jobs)
as well as a physical activation programme.

Another approach that is currently becoming more widely
available in the UK is the ‘Expert Patient Programme’. This
is a lay-led programme designed for anyone with a persistent
disability. Ways of coping with longer-term conditions are
discussed in a group setting based on a well tested and tried
protocol using cognitive–behavioural principles. It was first
developed in the USA, initially for patients with arthritis [102]
and back pain [103], and subsequently in the UK for people
with chronic conditions [104]. Physiotherapists are well placed
to encourage their patients to participate in such programmes
to avoid dependency on health professionals.

Conclusions

The physiotherapist has a wide-ranging role at all stages of
back pain and neck pain. Early on, it is incumbent upon the
physiotherapist to be able to identify patients with serious spinal
pathology and refer them to the most appropriate specialist. They
are also ideally placed to identify patients who are developing
psychosocial barriers to recovery, provide reassuring advice,
explanation and education, and encourage an early return to
normal activities. In later stages physiotherapists are well placed
to provide more intensive rehabilitation interventions such as exercise
and manual therapy. Using cognitive–behavioural techniques may
maximize the benefit. Physical modalities should be used judi-
ciously. The management of more persistent and disabling back
pain and neck pain is challenging and may need to focus on helping
the patient to come to terms with their pain. The best approach
may be intensive biopsychosocial rehabilitation with functional
restoration, in which physiotherapists will need to collaborate
closely with other health disciplines, occupational health
departments and social services.

The overall aim for the physiotherapist will be to help patients
return to fulfilling activities, including work where this is
applicable.

Key messages

- Initially, the physiotherapist needs to exclude red flags and allay concerns.
- An active management strategy is recommended, encouraging return to
  normal activities and work as soon as possible.

Acknowledgements

Thanks are due to Jonathan Moffett for commenting on the
revised manuscript and Kathryn Gray for help in preparing the
manuscript.

No conflict of interest is declared by the authors.

References

1. SBU. Back pain and neck pain: an evidence based review.
Stockholm: Swedish Council on Technology Assessment in Health
Care, 2000.
2. Nachemson A, Vingard E. Assessment of patients with neck and
eds. Neck and back pain: the scientific evidence of causes.
Diagnosis and treatment: Lippincott Williams & Wilkins,
3. Carter J, Birrell L. Occupational health guidelines for the manage-
ment of low back pain at work—principal recommendations. London:
Faculty of Occupational Medicine, 2000.
is the long-term course? A review of studies of general patient
5. Hestbaek L, Leboeuf-Yde C, Engberg M, Lauritzen T, Bruun NH,
Manniche C. The course of low back pain in a general population.
Results from a 5-year prospective study. J Manipulative Physiol
patients with low back pain attending for manipulative care:
7. Cote P, Cassidy D, Carroll L. The factors associated with neck
pain and its related disability in the Saskatchewan population.
9. Quebec Task Force on Spinal Disorders. Scientific approach to the
assessment and management of activity-related spinal disorders:
10. Aina A, May S, Clare H. The centralization phenomenon of spinal
13. Waddell G, Burton A. Occupational health guidelines for the
management of low back pain at work: evidence review. Occup Med
14. European Commission. European guidelines for the manage-
ment of acute low back pain. Research Directorate General, European
paineurope.org


